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May 24, 2022

-VIA ELECTRONIC FILING-

Adam Teitzman
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

RE: Docket No. 20220000-OT
Florida Power & Light Company's 2022-2031 Ten Year Power Plant Site Plan

Dear Mr. Teitzman:

Please find attached Florida Power & Light Company's responses to Staff's Third Data Request (Nos. 1-27). FPL's responses to Staff's Third Data Request Nos. 2, 8 and 12 are confidential and are being filed separately along with a Request for Confidential Classification. FPL is providing the non-confidential version of the responses to Staff's Third Data Request Nos. 2, 8, and 12 with the attached responses.

If there are any questions, please contact me at (561) 304-5662.

Sincerely,

/s/ William P. Cox
William P. Cox
Senior Attorney
Fla. Bar No. 00093531

WPC:ec
Enclosures
cc: Donald Phillips, Division of Engineering, DPhillip@psc.state.fl.us
Takira Thompson, Division of Engineering, TThompso@psc.state.fl.us

QUESTION:
Please provide all correspondence between Florida Power & Light (FPL or Utility) Company and FERC, NERC, and the FRCC regarding the 2021 Texas event and/or Florida's level of preparedness for similar winter weather conditions. As part of this response, please provide all press releases regarding FPL's system and preparedness level.

RESPONSE:
- In response to the 2021 Texas event, the North American Electric Reliability Corporation (NERC) issued the Recommendation to Industry Cold Weather Preparations for Extreme Weather Events NERC Alert on August 18, 2021. FPL's response to this NERC Alert was previously provided in FPL's response to Staff's Second Data Request No. 4. FPL did not receive an inquiry from the Federal Energy Regulatory Commission (FERC), in response to the 2021 Texas event.

- FPL provided a response to the SERC Reliability Corporation's (SERC) 2021/2022 Winter Weather Preparedness questions to Vince Ordax, Florida Reliability Coordinating Council (FRCC), on October 19, 2021. Please see Attachment No. 1 for SERC's letter to the FRCC and Attachment No. 2 for FPL's responses regarding the SERC's request.

- Please see Attachment Nos. 3 through 5 to this response for correspondence from the FRCC regarding extreme Winter loads.

- Lastly, please see Attachment No. 6 to this response for the responsive press release.

QUESTION:
Please refer to page 6.

a. Please define "extreme Winter event" as referenced to establish FPL's Recommended Plan. As part of this response, please indicate whether the extreme Winter event forecast is based on a single day with extremely low temperatures, or multiple days with extremely low temperatures.

b. The second paragraph, third sentence, reads "FPL experienced very high Winter loads in 1989 and 2010." Please provide a comparison of these two special winter events FPL experienced including, but not limited to, the minimum temperatures, heating degree hours (HDHs), daily peak demands, number of customer outages of varying durations, and the number of customers affected by blackouts.

c. Please provide all documentation used to determine the need to prepare for an extreme Winter event. This response should include any studies or reports completed, the scope and objective of any such study or report, direction from/presentations to management, etc., if any.

    i. Were any probability studies conducted to determine the chance of an extreme Winter event occurring in the future? If not, please explain why. If so, please provide these studies.

RESPONSE:
a. The Extreme Winter Peak demand forecasts reflect the expected winter peak demands during weather conditions like those experienced in December 1989. This extreme winter weather event resulted in early morning temperatures dropping below 30 degrees for 2 consecutive days, with a 28 degree minimum temperature for the event.

b. The 1989 extreme winter weather event was a shorter but more severe weather event compared to the 2010 extreme winter weather event. The 1989 extreme winter weather event lasted approximately 2 days, and the minimum temperature dropped down to 28 degrees. The 2010 extreme winter weather event lasted approximately 3 days, and the minimum temperature dropped down to 33 degrees. It is not appropriate to compare cumulative heating degree hours between those events because of differences in the duration of those events.

The 1989 extreme winter event saw a greater generation capacity shortage which required forced interruptions to avoid cascading outages on two days. Feeder interruptions were implemented in rotating cycles of approximately 15 minute duration. Affected customers experienced 2 to 5 outages on day one, and 5 to 6 outages on day two. FPL does not have records of the number of customers affected by load shedding or equipment outages.

On day one, the peak demand served was 13,988 MWH. During the hour of peak load shedding, the demand served was 13,986 MWH and the maximum load shed was 1,600MW. On day two, the peak demand served was 13,063 MWH. In the hour of peak load shedding, the demand served was 12,629 MWH and the maximum load shed was 2,800MW.

During the 2010 winter event there were no forced outages. While there were no customer outages due resulting from load shedding, there were 181,877 customer outages in the former FPL service area and 40,048 customer outages in the former Gulf service area from January 7 through January 13, 2010. The reported peak demand served was 24,346 MWH. FPL also reduced load by 561 MW through load control on hours surrounding the peak.

c. Please see attachments to this response and note the following:

- Attachment No. 1 is confidential in its entirety.

- Attachment Nos. 3, 4, 9, and 14 have yellow highlighting which cannot not be removed. These attachments are not confidential.

- Attachment No. 6 has redactions for non-responsive information.

i. There were no probability studies conducted to determine the chance of an extreme Winter event occurring in the future. FPL's extreme Winter planning has focused on modeling events similar to extreme Winter events that have occurred in Florida in the past, and therefore have historical precedence. FPL cannot predict when or how often such extreme Winter events will occur, but presented its Recommended Plan in order to serve its customers should one of these events occur again.

QUESTION:
Please refer to page 7.

a. Were either of the two steps discussed in the first paragraph incorporated following Order No. 22708, issued after the 1989 extreme Winter event? If not, please explain why not.

b. Please identify the dollar amount spent since FPL began the enhanced winterization of its generating units in 2021.

c. Will the backup fuel capabilities FPL intends to add at Manatee Unit 3 & Ft. Myers Unit 2 for extreme Winter events be accessible during the Summer as well in case of pipeline interruptions? If not, please explain why not.

    i. Please explain if there are any environmental restrictions for burning backup fuel at any of FPL's generating plants.

d. Please identify the original retirement date and the anticipated retirement date for each of the five generating units the Utility intends to delay retirement of. As part of this response, please identify the cost for delaying retirement of each unit, the total amount of additional Winter capacity (megawatts (MW)) each unit is expected to provide, and how quickly each unit can be ready for Winter service.

    i. Will each unit remain in retirement if FPL's Business As Usual Plan is deemed suitable for planning purposes? If not, please explain why.

e. Please identify what will be included in and the cost associated with the "upgrade packages" for some of FPL's existing combined cycle generating units.

RESPONSE:
a. The two steps discussed in the first paragraph of page 7 of FPL's 2022 Ten Year Site Plan are:

"(i) enhanced winterization of FPL's nuclear and fossil-fueled generating units, and (ii) enhanced cooperation and preparation between FPL and suppliers of natural gas and backup distillate fuel oil."

Both of these steps were incorporated in FPL's business and operations planning work following the 1989 extreme Winter event, and FPL has continued winterization and fuel supply coordination efforts since that time. FPL believes that the first step in preparing for extreme weather events (including very cold Winter events) is to prepare the existing generating units and fuel supply system to be able to withstand extreme conditions and keep operating.

However, the perspective for how extreme Winter conditions could actually be has now changed based on the 2021 Texas Winter event. The Texas utilities had to deal with colder temperatures – and the associated higher load – than any they had faced before. The consequences for their customers were severe.

In reviewing the details of the Texas event as part of FPL's 2021 planning effort, a decision was made to further increase FPL's winterization and fuel supply coordination efforts. The objective was now to prepare FPL's existing generating units and fuel supply system for temperatures that could be even lower than those experienced in 1989. In FPL's early analyses of potential extreme Winter load, temperatures of 8 to 10 degrees colder than were experienced in 1989 were considered. As a consequence, the new winterization efforts discussed on page 7 of FPL's 2022 Ten Year Site Plan are based on these even-lower-than-1989 temperatures.

b. As of April 2022, FPL has spent $93.1 million on enhancing the winterization of its nuclear and fossil-fueled generating units.

c. Yes.

   i. FPL's combined cycle combustion turbines with oil backup are limited on the number of allowed operating hours combusting oil by their Title V Air Operating Permit. In general, those units are limited to 500 hours of oil operation on an annual basis. FPL's Fort Myers Units 3A & 3B do not have operating hour limits on oil operation. FPL's planned contingency for disruption of gas operation assumes a 72-hour maximum event, where the 500-hour limit would provide sufficient oil operation for several events within an annual period.

d. FPL interprets "anticipated retirement date" to mean a new retirement date in the future after these units have been converted to Winter-only operation. At this time, the "anticipated retirement dates" for these units are still to be determined, but for resource planning purposes, each of these units is projected to be capable of extreme Winter only operation for the ten-year reporting period of this Site Plan.

   For each of the five units, the original planned retirement dates along with the projected Winter capacity of the unit are listed:

   Manatee Unit 1:12/31/2021; 819 MW
   Manatee Unit 2:12/31/2021;819 MW
   Gulf Clean Energy Center Unit 4:12/31/2024; 75 MW
   Gulf Clean Energy Center Unit 5:12/31/2026; 75 MW
   Lansing Smith Unit A:12/31/2027; 40 MW

   i. If FPL's Business as Usual Plan is deemed suitable for planning purposes and the Recommended Plan is not found suitable for planning purposes, absent clear direction to the contrary from the Commission, FPL would interpret this decision regarding its 2022 Ten-Year Site Plan to be a directive from the Commission that FPL should not plan for extreme Winter. In this scenario, FPL would plan to retire these units as scheduled, including the immediate retirement of Manatee Units 1&2.

e. The winter peak capability upgrade packages consist of combustion turbine generator and plant control system modifications, as well as upgraded balance of plant equipment. The overall costs for this work are approximately $200,000 per incremental MW of increased winter peak capability.

QUESTION:
Please refer to page 8.

a. Please identify all activities included in FPL's Recommended Plan that the Utility does not intend to complete if its Business As Usual Plan is deemed suitable for planning purposes.

b. Please refer to Table ES-1 for the following questions.

   i. Is the table based on FPL's 2022 Business As Usual Plan? Please explain.

   ii. Please explain in detail how the projected number of customer outages were derived for each year in the forecasting horizon. As part of this response, please indicate whether these values are before or after load management and interruptible service are accounted for, provide the total number of MW associated with these outages, and identify how many 30 minute outages were accounted for each customer/whether or not there are any repeats.

   iii. Please describe the forecasting technology, approach and model(s) used.

   iv. Please discuss all the underlying assumptions and the selection of input variables used to arrive at the projections.

   v. Please discuss the forecasting model(s) used to project customer outages. If they are statistical model(s), please provide the data series of the dependent variable, including also the predicted data series resulting from the model, as well as the forecast data for the dependent variable and the independent variables.

RESPONSE:
a. If FPL's Business as Usual Plan is deemed suitable for planning purposes and the Recommended Plan is not found suitable for planning purposes, absent clear direction to the contrary from the Commission, FPL would interpret such a decision regarding its 2022 Ten-Year Site Plan to be a directive from the Commission that FPL should not plan for extreme Winter weather. In this scenario, FPL will not continue with adding backup fuel capability to existing units, Winter upgrades to existing units, putting units into "Winter-Only" status in lieu of retirement, and adding capacity in the form of battery storage starting in 2027.

b. i.-iv. The customer outages projected in Table ES-1 are based on FPL's 2022 Business as Usual resource plan, and all assumptions and inputs are based on assumptions from FPL's 2022 Ten-Year Site Plan. Another assumption used in these outage calculations is the recognition that outage rotations are currently only possible at the feeder level and that certain feeders which serve critical customers (*e.g.*, hospitals and police stations) are not rotation eligible.

The projections of customer outages were developed using a look at the hourly loads over the multi-day period around the extreme Winter peak, for each year through 2031. For each hour, all available resources are dispatched to meet the load in that hour, in the following order:

1) Energy efficiency
2) Firm Purchases
3) Nuclear units
4) Solar units (if production is available during that hour)
5) Combined Cycle units
6) Combustion Turbine units
7) Steam Turbine units
8) Battery storage units (after accounting for duration constraints)
9) Demand Response

After all these resources are dispatched, any remaining load to be served is considered unserved energy. FPL's System Operations department provided a "rule of thumb" estimate that every MWh of unserved energy corresponds to 400 customers being out of power for 30 minutes. This projection accounts for some customers experiencing outages more than once if the high load is high enough and persists long enough.

v. FPL's calculation of customer outages is not a statistical model, and therefore the information requested in subpart (v) is not available. Subparts (i) through (iv) of this response discuss the model used to produce projections of customer outages.

QUESTION:
Please refer to page 11. Does FPL intend to reevaluate projected demand-side management reductions for the years 2025 through 2031 if the Recommended Plan is found suitable? If not, please explain why.

RESPONSE:
FPL intends to re-evaluate the cost-effectiveness of projected demand-side management (DSM) reductions for the years 2025 through 2034 as part of the next DSM Goals proceeding that will occur in 2024. This re-evaluation will occur regardless of whether FPL's Recommended Plan is found suitable. However, if the Recommended Plan is found suitable for planning, this re-evaluation of DSM will place a greater weight (in terms of avoided generation capacity) on Winter kW reduction than would be the case if the Recommended Plan is not found suitable for planning.

QUESTION:
Please refer to page 21.

a. Please explain why the Utility decided to begin incorporating batteries in 2027.

b. Please provide the critical date for FPL to determine whether or not to build the first batteries in 2027. As part of this response, please explain if the decision to build batteries can occur later than 2022.

c. Please explain if FPL has identified any potential operational or other concerns associated with batteries during multi-day outage events, such as loss of tax credits when recharging from non-renewable sources. If so, please list and describe these concerns.

RESPONSE:
a. FPL projects that its "near-term" capacity additions in its Recommended Plan (converting existing units to "extreme Winter Only" operation and upgrading existing combined cycle units to increase their capacity during extreme Winter events) would allow FPL to meet the extreme Winter peak load and therefore minimize and/or eliminate customer outages through 2026 without additional Winter capacity. As FPL projects continued load growth for 2027 through 2031, minimization and/or elimination of customer outages during an extreme Winter event would require the addition of new Winter capacity such as that provided by battery storage units.

b. FPL projects that new battery storage units have lead times (including siting, permitting, and construction) of approximately 36 months. Therefore, in order to meet a possible extreme Winter peak (and avoid customer outages during that event) in 2027, the "critical date" for deciding to build these batteries would be in late 2023/early 2024.

c. FPL incorporates the duration limitations of batteries, as referenced in FPL's response to Staff's Third Data Request No. 4, in the planning it performed for the Recommended Plan through multi-day events.

As indicated in response to subpart (a) above, the need for batteries during the period from 2027 through 2031 is for the minimization and/or elimination of customer outages during an extreme Winter event. As such, in a multi-day outage, FPL's priority would be to recharge the batteries from either renewable or non-renewable sources to ensure system reliability and minimize customer outages, regardless of any potential tax implications.

QUESTION:
Please refer to pages 21 through 22. Please verify that there are no changes to the retiring of units through 2025 between FPL's Recommended and Business As Usual Plans.

RESPONSE:
The retirements listed in Tables ES-2 and ES-3 are consistent through 2025 in both the Recommended Plan and Business as Usual Plans.

QUESTION:
Please refer to pages 34 and 90.

a. Please explain why the Exelon Generation/Hillabee plant and Rainbow Energy/Oleander PPA (Winter 2022 PPAs) contracts were entered into for the Winter of 2021-2022. As part of this response, please explain if these contracts were entered into due to extreme weather concerns. If not, please explain why.

   i. If these contracts were entered into due to extreme weather concerns, please explain how FPL determined that these assets would be capable of providing capacity during an extreme Winter event.

   ii. Were the Exelon Generation/Hillabee plant PPA resources and/or the Rainbow Energy/Oleander plant PPA resources necessary in meeting FPL's Winter 2021/2022 load?

b. Please explain the discrepancy between the 320 MW Rainbow Contract and the 310 MW Oleandar Plant PPA.

c. For each of the Winter 2022 PPAs, please provide at a minimum: the cost of the contract, cost per MW of the contract, and the term length of the contract.

   i. For each PPA, how much, if any, energy did FPL receive during the term? As a part of this response please detail whether the PPA delivered energy during the winter peak.

d. Please detail the timeline leading to FPL entering into each of the Winter 2022 PAAs. This timeline should include at a minimum: when FPL identified the need, when FPL began its internal approval process, when FPL began the bidding process, and when FPL entered the agreement.

e. Please explain how FPL chose each of the Winter 2022 PPAs. This response should include an explanation of the bidding process, the number of bids FPL received, and how FPL determined that each PPA was the most cost-effective PPA.

f. Please detail the number of bids FPL received, if any, in the process that resulted in the Winter 2022 PPAs.

g. How did FPL determine that the Winter 2022 PPAs were the most cost effective way to meet the projected Winter 2021/2022 load?

h. Did FPL explore alternatives to meeting the needs besides the Winter 2022 PPAs? If so, please detail the alternatives that FPL explored.

i. Explain if FPL considered the Winter 2022 PPAs necessary on a reserve margin basis. If so, please explain why FPL would consider them necessary given the lower values assumed in the later years of FPL's recommended plan.

RESPONSE:

a. The purchases were entered into for the purpose of meeting a forecasted capacity shortfall under an extreme winter weather event during the 2021/2022 Winter.

i. 1. Exelon Generation/Hillabee (EGH): EGH has firm gas transportation rights to supply gas to the EGH facility. FPL has previously purchased capacity and energy from EGH with no delivery issues.

2. Rainbow Energy/Oleander (REO): Although REO does not have firm gas transportation rights to supply gas to the REO facility, it is interconnected to the FGT pipeline on which FPL has firm gas transportation rights. Thus, FPL would be able to manage gas supply to the facility should it be needed.

ii. Yes, these power purchase agreements (PPA) resources were necessary in meeting FPL's winter 2021/2022 load should a forecasted extreme winter weather occur. However, in real time, neither EGH or REO were actually called on for energy as a forecasted extreme winter weather event never transpired.

b. The contract with Rainbow Energy Marketing Corporation for the purchase of power from the Oleander Plant was for 310 MW. The "320" value was a typographical error.

c. The total cost of the Exelon contract was [redacted]. The total cost of the Rainbow Energy contract was [redacted] The contract term for both agreements was January 1, 2022 to February 28, 2022. FPL did not purchase energy pursuant to either contract, so the cost reflects the amount paid for capacity.

   i. FPL did not call on and, therefore, did not receive energy pursuant to either contract as an extreme winter weather event never transpired.

d. During the summer of 2021, FPL identified an approximately 500 MW capacity need for the January-February 2022 period. Based on the identified need, FPL began to identify counterparties that were directly interconnected to the FPL transmission system and had available capacity. A counterparty directly interconnected to FPL is desirable as it reduces the overall cost of transmission and is generally more reliable. This effort resulted in the identification of only one counterparty, Rainbow Energy/Oleander that met the requirements. Therefore, FPL began discussions with Rainbow Energy/Oleander to purchase up to 310 MW of capacity. Those negotiations concluded in October 2021. In conjunction with those negotiations, FPL began looking at other counterparties located outside of FPL's Balancing Authority, such as Effingham Combined Cycle, Santa Rosa Combined Cycle, and Exelon Generation/Hillabee from which to procure the balance of capacity needed. Exelon Generation/Hillabee was chosen as the most cost-effective. FPL concluded negotiations to purchase 160 MW from Exelon Generation/Hillabee in the October 2021 timeframe.

e. The Florida market does not have much excess generation capacity. The majority of generation resources are already under contract to other end users such as Seminole and FMPA. Thus, FPL worked with counterparties that FPL knew had available capacity in the January-February 2022 timeframe. When approaching a tight capacity market, such as Florida, FPL is cautious not to alert the market so that counterparties recognize FPL is short capacity. To prevent the market from attempting to take advantage of the situation by increasing their prices, FPL approached both Exelon Generation/Hillabee and Rainbow Energy/Oleander directly for capacity. FPL negotiated pricing that was determined to be favorable to the Company, given the limited options available to purchase capacity.

f. Please see FPL's response to subpart (e) above.

g. Please see FPL's response to subpart (e) above.

h. & i. FPL was not analyzing the need for short-term PPAs for the then coming Winter of 2021/2022 from a reserve margin standpoint. Instead, FPL determined it was prudent to secure short-term PPAs to better protect its customers from a possible extreme Winter event (such as has just occurred in Texas the prior Winter) due to some uncertainty at the time regarding the ability to successfully be able to restart Manatee Units 1&2 on short notice. FPL did restart Manatee 1&2 successfully, which is one reason that short-term PPAs for Winter only are not projected in subsequent years in FPL's Recommended Plan.

QUESTION:
Please refer to page 57.

a. In second full paragraph, 1., please identify the threshold temperatures used to determine the HDHs and cooling degree hours (CDHs) for the respective residential, commercial, and industrial energy models. Please explain whether these thresholds are the same as those that were used in previous TYSPs.

b. In third full paragraph, referring to the statement "[t]he temperatures for each weather station are weighted based on the energy sales associated with that region," please explain if the "energy sales" are the actual data through 2021; and whether the "weight" associated with each weather station is updated annually and thus reflects 2021 energy sales by region in this TYSP.

RESPONSE:
a. The degree hours used in all energy sales models are an average for the monthly billing cycle and the threshold temperatures used to calculate the degree hours are listed below. These threshold temperatures are the same as those used in previous TYSPs. Please note that the degree hour threshold temperatures were also provided in FPL's response to Staff's First Data Request No. 14, subpart (a).

FPL residential energy sales
HDH56: heating degree hours less than or equal to 56 degrees
CDH7280: cooling degree hours greater than or equal to 72 and less than 80 degrees
CDH80: cooling degree hours greater than or equal to 80 degrees

Gulf residential energy sales
CDH67R1: cooling degree hours greater than or equal to 67 and less than 75 degrees
CDH67R2: cooling degree hours greater than or equal to 75 and less than 85 degrees
CDH67R3: cooling degree hours greater than or equal to 85 degrees
HDH59R1: heating degree hours less than or equal to 59 and greater than 50
HDH59H2: heating degree hours less than or equal to 50

FPL Small Medium Commercial energy sales
CDH66: cooling degree hours greater than or equal to 66 degrees

Gulf Small Commercial energy sales
CDH67C1: cooling degree hours greater than or equal to 67 and less than 75 degrees
CDH67C2: cooling degree hours greater than or equal to 75 degrees
HDH59C1: heating degree hours less than or equal to 59 degrees

FPL Large Commercial energy sales
CDH66: cooling degree hours greater than or equal to 66 degrees

Gulf Large Commercial energy sales
CDH60C1: cooling degree hours greater than or equal to 60 and less than 73 degrees
CDH60C2: cooling degree hours greater than or equal to 73 degrees
HDH50C1: heating degree hours less than or equal to 50 degrees

FPL Small Industrial energy sales
CDH72: cooling degree hours greater than or equal to 72 degrees

b. The energy sales for each region are actuals through 2021 and are updated annually. The composite temperatures in this TYSP reflect the sales by region in 2021.

QUESTION:
Please refer to the statistical customer forecasting models discussed on page 58.

a. Please identify all the input variables used in each model.

b. Please identify, with explanation, how many years of input data were used for the development of each model.

RESPONSE:
The number of historical months used for the customer models for FPL and NW FL (Gulf) varied by model. The included variables and the number of historical months used in each model are identified below.

FPL Residential Customers:
Total_HH: Total households for the state of Florida
Recession: Binary variable for March to November 2001 and December 2007 to June 2009
Binary Variables for the months of April, May, Jun, July, August, September, and October
Binary Variables for years 2015, 2015, 2016, and 2017
Years of Input Data: 21 Years

Gulf Residential Customers:
Total_HH: Total households for the state of Florida.
LagDep: Lag Dependent Variable.
Michael: Binary variable for October 2010
MA: Moving average
SMA: Seasonal moving average
Years of Input data: 15 years and 7 months

FPL Small and Medium Commercial Customers:
RES_CUST_Fcst: Residential Customer Forecast
LagDep: Lag Dependent Variable
d2013m10: Binary Variable for October 2013
d2013m11: Binary Variable for November 2013
d2018m12: Binary Variable for December 2018
d2019m1: Binary Variable for January 2019
Covid: For the months of March, April, May, June, and July of 2020
Lag_Unemp_Rate_6: 6-month lag applied to unemployment rate
Years of Input data: 11 years

Gulf Small Commercial Customers:
Gulf_Retail_Sales: Retail sales for the Gulf service area
MA: Moving average
LagDep: Lag dependent variable
Years of Input Data: 26 years and 7 months

FPL Large Commercial Customers:
Exponential smoothing, no variables used
Years of Input Data: 11 years and 7 months

Gulf Large Commercial Customers:
Exponential smoothing, no variables used
Years of Input Data: 3 years and 7 months

FPL Small Industrial Customers:
FL_Total_Hstrts: Total housing starts for the state of Florida
Vero: Binary variable for December 2018
d201601: Binary Variable for January 2016
LagDep: Lag Dependent Variable
Years of Input Data: 14 years and 7 months

FPL Medium Industrial Customers:
Exponential smoothing, no variables used
Years of Input Data: 8 years and 7 months

FPL Large Industrial Customers:
Exponential smoothing, no variables used
Years of Input Data: 5 years and 7 months

Gulf Industrial Customers:
Exponential smoothing, no variables used
Years of Input Data: 30 years and 7 months

FPL Other Customers:
Exponential smoothing, no variables used
Years of Input Data: 11 years and 7 months

QUESTION:
Please refer to page 62.

a. Please elaborate on the "energy efficiency variable." Is it a binary variable?

b. Please elaborate on "[t]he estimated impacts from code and standards are based on the energy efficiency variables in the respective energy models."

RESPONSE:
No, the energy efficiency variable is not a binary variable. This model variable represents the estimated MWh impacts from changes in energy efficiency codes and standards. The estimated MWh impacts were from an analysis performed by an external vendor. Separate impacts were estimated for residential and commercial customer classes. These MWh impacts were then transformed to be consistent with the units for the dependent variable for each respective model. For example, the energy efficiency variable for the residential energy usage model was transformed to kWh per customer per average billing day, which is consistent with the units for the dependent variable in the residential usage model.

Energy efficiency variables were included in the following energy usage models; FPL residential, FPL small/medium commercial, Gulf residential, and Gulf small commercial. These models are multiple linear regression models, where the value of the dependent variable is equal to the sum of the contributions from each of the independent variables. This can also be stated generically using the following example equation:

$y_t = ax_{1t} + bx_{2t} + c$
Where:
y_t = dependent variable at time t
a = coefficient of the first independent variable
x_{1t} = value of the first independent variable at time t
b = coefficient of the second independent variable
x_{2t} = value of the second independent variable at time t
c = constant term

Using the equation above, if we assume the dependent variable is residential energy usage and the first independent variable is the energy efficiency variable, the impact of the energy efficiency variable on residential energy usage is simply calculated as the product of the energy efficiency coefficient and the value of the energy efficiency variable.

QUESTION:
Please refer to page 63.

a. Please detail the derivation of the projected private solar-caused NEL reduction, in the amount of 4,000 gigawatt-hour (GWh) by 2031, vs. 2,000 GWh by 2030 projected in FPL's 2021 TYSP. Please also explain the reasons or causes for the significant difference.

b. Please provide FPL's latest private solar forecasts (the respective annual customer numbers by class and the annual solar energy generation by class) in MS Excel format. Please also identify the associated assumptions and forecasting model(s) utilized with specifications of the input variables and forecasting method employed.

RESPONSE:
a. As detailed in FPL's response to Staff's First Data Request No. 17, FPL's forecast of private solar adoption used in the 2022 TYSP is driven by Wood Mackenzie forecasts for installed MWdc in the state of Florida, adjusted according to the FPL's recent actual percentage share of the state. Because Wood Mackenzie does not regularly release a ten-year forecast on a quarterly basis, FPL has chosen to use their most recent (available at the time the FPL forecast is developed) five-year forecast for the first five years and the most recent ten-year forecast to extrapolate incremental growth in years six through ten. In the case of the 2022 TYSP, the Wood Mackenzie forecasts used were the *U.S. Solar Market Insight: Q3 2021* and the *U.S. Solar Market Insight: 2020 Year in Review*, respectively. For the 2022 TYSP, the Wood Mackenzie forecasts used were the *U.S. Solar Market Insight: Q3 2020* and the *10-year US solar PV installation forecast* (published October 2019), respectively.

For the 2022 TYSP, the cumulative installed capacity for the state of Florida derived from the best available Wood Mackenzie forecasts was 7,379 MWdc for year-end 2030. FPL extrapolated Wood Mackenzie's forecast by one year, by adding 10% (based on the average of Wood Mackenzie's 2029-2030 projected growth of 14% and EIA's growth 2030-2031 growth of ~6%) and arriving at 8,199 MWdc for year-end 2031 – and mid-year 2031 average of 7,789. Multiplying this amount by the FPL/Gulf combined share of the state (38.7%), an annual solar output of 1,539 kWh/kWdc (based on NREL's PVWatts tool), and a cumulative degradation factor of 97% (based on 0.5% per year) results in an expected cumulative solar generation of approximately 4,500 GWh. When adjusted to reflect only the energy impacts of new solar installations beginning August 2021, the result is an expected incremental solar generation of 3,986 GWh by 2031.

For the 2021 TYSP, the cumulative installed capacity for the state of Florida derived from the best available Wood Mackenzie forecasts was 3,906 MWdc at year-end 2029 and 4,500 at year-end 2030 – a mid-year 2030 average of 4,203 MWdc. Multiplying this amount by the FPL/Gulf combined share of the state (37.4%), an annual solar output of 1,539 kWh/kWdc (based on NREL's PVWatts tool), and a cumulative degradation factor of 97% (based on 0.5% per year) results in an expected cumulative solar generation of approximately 2,300 GWh. When adjusted to reflect only the energy impacts of solar installations beginning August 2020, the result is an expected incremental solar generation of 1,991 GWh by 2030.

Thus, the large increase between the 2021 and 2022 site plans was a result of increased projections in the underlying third-party forecasts. One driver of this increase was the extension of the federal investment tax credit (ITC) signed into law in December 2020, which was after the load forecast for the 2021 TYSP was developed. Per Wood Mackenzie's *U.S. Solar Market Insight: 2020 Year in Review*: "Looking ahead, we expect residential solar will reach double-digit growth in each of the next three years. The majority of the market will be customer-owned thanks to the dominance of residential solar loans, and a higher ITC value, which makes these sales even more compelling. […] The most significant increases to our outlooks are in 2022 (which was previously the first year of ITC-related market contraction) and 2023 (which is now characterized by demand pull-in before the ITC phases down)."

b. FPL's latest complete private solar forecast was that used in the 2022 TYSP. Please see confidential Attachment No. 1 for the forecast model in Excel and reference FPL's response to Staff's First Data Request No. 17 for discussion of methodologies.

QUESTION:
Please refer to page 64 for the following questions regarding the energy-efficiency codes and standards (EECS).

a. Please explain why the impact of the EECS on the Summer peak load is significantly higher than that on the Winter peak load.

b. FPL's 2022 TYSP projected that the cumulative impacts from the EECS will effectively reduce the Summer peak by approximately 19% by 2031, vs. 17% by 2030 which was projected in the 2021 TYSP. Please explain the reason and/or causes for the increased projections.

c. Please detail the derivation of the projected EECS-contributed Summer peak reduction, in the amount of 1,640 MW approximately by 2031.

RESPONSE:
a. The impacts of energy efficiency codes and standards to FPL's Summer Peak loads are significantly higher than the impacts to FPL's Winter Peak loads because air conditioning and heating loads are the largest contributors to summer and winter peak demands, respectively, and changes in energy efficiency codes and standards have had a larger proportional impact on reducing summer air conditioning load compared to winter heating load.

b. The minor change in the cumulative impacts from the energy-efficiency codes and standards (EECS) variable between the 2021 TYSP and the 2022 TYSP is due to a minor change in the estimate coefficient for the EECS variable. As discussed in FPL's response to Staff's Third Data Request No. 11, the impact of a single variable, such as EECS, on the forecasted value is calculated by multiplying the value of the variable times the variable's coefficient. The coefficients are estimated by the model and as additional historical observations are added, the coefficients can and do change. In this specific instance, the EECS coefficient was -0.888 in the 2022 TYSP, compared to -0.846 in the 2021 TYSP.

c. Please see Attachment No. 1 to this response.

QUESTION:
Pages 65 through 66 read:

For the second step of the process [of determining peak demand under conditions of extreme weather], the P50 normal weather peak loads were then adjusted to reflect the additional load associated with the difference in normal weather versus the actual weather conditions experienced in December 1989. Two multiple linear regression models were developed, one each for the FPL and Gulf legacy areas, using historical daily peak loads for those days with heating load and weather variables that are consistent with those utilized in the normal weather peak load models.

a. Was the 1989 weather event the most extreme winter weather event Gulf legacy area has had historically? If not, what was it?

b. Please identify all the assumptions and source of the data used in the development of the multiple linear regression models. Clearly identify the source dates of each data series.

c. Please identify and describe all dependent and independent variables in each of these regression models.

d. In MS Excel format, please provide for each model: (1) the data series of the dependent variable, including also the predicted data series resulting from the regression; (2) the forecast data for the dependent variable and the independent variables.

e. Please explain how FPL validated these regression models.

f. Please explain how FPL expects to evaluate the accuracy of its forecasts resulting from these regression models.

g. Please elaborate on "using historical daily peak loads for those days with heating load and weather variables that are consistent with those utilized in the normal weather peak load models." As in, please clarify with explanation the following:

    i. "those days,"

    ii. the specific date/period of the "historical daily peak loads" utilized,

    iii. the specific date/period of the "heating load" utilized,

iv. the specific date/period of the "weather variables" utilized.

h. Please elaborate on "[t]his was done by developing multiple linear regression models based on historical daily data for those days with heating load." As in, please clarify with explanation for the following:

i. the specific date/period of the "historical data,"

ii. "those days,"

iii. the specific date/period of the "heating load" utilized.

i. What is FPL's basis for relying upon an extreme weather assumption (December 1989), in conjunction with historical normal load profiles, to model Winter Peak demand, and to use such models to prepare its annual Winter Peak demand forecast, thereby replacing the normal weather assumption FPL has traditionally relied upon to prepare its models and forecasts for generation planning?

j. Please provide all documents FPL relied upon supporting the need for FPL's second step in its two step approach to modelling its Winter Peak load.

k. Please identify any other utility(ies) known to FPL which rely upon extreme weather assumptions to prepare its models and forecasts of Winter Peak Demand for purposes of preparing its primary recommendation for generation planning to regulatory authorities.

l. If applicable, please identify any generation planning orders or decisions, known to FPL and issued by regulatory authority(ies), that were supported by utilities' winter peak demand forecasts prepared using models and forecast data based on extreme weather assumptions.

m. Did FPL consider any models and/or methodologies for representing extreme winter weather impacts to its Winter Peak Demand forecasts other than the method described under the heading "System Winter Peak?" If so, please provide a description of all such models and/or methodologies and provide all related supporting documents.

i. If FPL did consider other models or methodologies, please explain why such models/methodologies were ultimately not proposed by FPL in its 2022 TYSP.

ii. If FPL did not consider other models or methodologies, please explain why not.

RESPONSE:

a. The 1989 weather event was the most extreme winter event Gulf has had historically due to temperatures remaining below freezing for almost 4 days. In 1985, there was a similar event in which the Gulf territory experienced single digit temperatures, but temperatures only remained at or below freezing for about 2 days.

b. The 2 linear regression models are structured identically, where the dependent variable for each model is peak kW per customer and the independent variable is the daily minimum temperature. Both models also include a constant. The daily peak kW per customer values were calculate by taking the daily peak kW value and dividing that by the number of customers. The minimum temperatures were from the respective weather station(s), as described in the 2022 TYSP. The source of the FPL legacy daily peak kW was FPL's system control historical data and the source of the Gulf legacy daily peak kW was Northwest Division's system control historical data. As provided in the FPL's response to Staff First Data Request No. 14, the weather data was provided by WSI, an industry weather data vendor. These sources are consistent with those used for the P50 Winter Peak Demand models.

c. The 2 linear regression models are structured identically, where the dependent variable for each model is peak kW per customer and the independent variable is the daily minimum temperature. Both models also include a constant.

d. Please see Attachment No. 1 for FPL and Attachment No. 2 for Gulf.

e. These models were validated by examination of the adjusted R-squared values and p-values of the independent variables. The adjusted R-squared values were .662 and .763 for the FPL legacy and Gulf legacy models, respectively and the p-values for all independent variables were 0.0%. Additionally, the significance F statistics for both models were 0.000, which indicate the models are statistically significant.

f. It is not expected that the accuracy of these models can be tested directly because the weather conditions underlying the forecasts are extreme by definition and are not expected to occur each year. However, these models are statistically significant, and it is expected that the actual Winter Peak Demands would be similar to these forecasts if another 1989 extreme weather event were to occur.

g. The phrase "those days with heating load" refer to any day between January 1, 2010 and December 31, 2020 with a minimum daily temperature of 46 degrees or lower. The specific days of the historical daily peak loads, heating load, and weather variables utilized are included in the models are provided in the attachments listed in subpart (d) of this response.

h. These models were based on any historical day between January 1, 2010 and December 31, 2020 with a minimum daily temperature of 46 degrees or lower. The specific days included in the models are provided in the attachments listed in subpart (d) of this response.

i. The extreme weather assumption (December 1989) was not combined with a normal load profile; instead, the extreme weather assumption regarding the expected peak hourly demand (December 1989) was combined with an extreme winter weather load profile (January 2010) to arrive at the forecasted hourly loads that were used for generation and resource planning purposes. The January 2010 hourly profile was selected for a number of reasons, including being more recent than December 1989 and also reflecting a longer duration extreme weather event. As discussed in FPL's response to Staff Third Data Request No. 2, subpart (b), the January 2010 extreme winter weather event was somewhat milder than December 1989 but over a longer duration. The purpose of using extreme winter weather conditions for developing the load forecasts was to allow FPL to take steps to better prepare for such extreme winter weather events.

j. FPL does not possess documents supporting the need for a two-step process for forecasting extreme winter peak demands. However, it is generally recognized that models perform poorly when attempting to estimate for conditions that were not observed in history (effectively extrapolating) and the extreme winter weather conditions were well beyond those included in the historical data used to develop the P50 forecasts. Therefore, it was FPL's judgement that the extreme winter peak demand forecasts should not be developed solely using the P50 forecasting models.

k. FPL is not currently aware of any other utility relying on extreme winter weather assumptions when preparing Winter Peak Demand forecasts for purposes of preparing its primary recommendation for generation planning to regulatory authorities. However, due to the fact that the impetus for FPL deciding to plan for extreme winter events was so recent, *i.e.*, the February 2021 Texas event, it may be too early to tell if other utilities across the U.S. have made, or will make, a similar change in their planning approach.

l. FPL's decision to plan for extreme winter events is consistent with the Florida Public Service Commission's Order No. 22708. This order addressed actions electric utilities were to take in the wake of the extreme winter event that occurred in Florida in 1989. In that Order, the FPSC listed a number of "suggestions for improvement". The relevant suggestion in regard to resource planning reads as follows: *"10. Utilities should reflect the impact of the cold weather experienced during the Christmas holidays in their load and energy forecasts and generation and transmission plans."*

m. FPL did not consider other models or methods for representing the impacts of extreme winter weather on peak demands. The rationale for using the two-step process was that this would ensure the Company had a business as usual (P50) peak demand forecast that is consistent with prior forecasts while also having a reasonable estimate of the additional peak demand associated with a severe winter weather event. As FPL becomes aware of other methods of estimating the impact of severe winter weather, the Company would be able to test and adopt, as deemed appropriate, those improvements without fundamentally altering the P50 Winter Peak Demand forecasting methodology.

QUESTION:
Please refer to page 66, which states that rationale for FPL's extreme weather winter peak demand forecasting approach using normal weather are inadequate for estimating peak demand under extreme weather such as occurred in December 1989.

a. Is FPL's recommendation to rely upon its extreme weather winter peak demand forecast based on an assumption that all, or nearly all, customer interruptions due to extreme winter weather in the future should be prevented?

b. If the answer to question (a) is affirmative, please explain why FPL has made this assumption.

RESPONSE:
a. Yes, FPL's Recommended Plan is designed to minimize and/or eliminate outages from possible extreme Winter events while minimizing the incremental cost to customers. This approach allows a high degree of certainty that FPL will be able to serve all of its customers during extreme Winter events and avoid outages similar to what occurred in Texas in 2021 and Florida in 1989.

b. FPL has made the assumption that customer interruptions due to extreme Winter weather in the future should be minimized and/or prevented, while minimizing the incremental cost to customers, based on the customer hardship and damage to the economy that was seen in the recent 2021 Texas cold weather event.

QUESTION:
Please refer to page 70, Business as Usual Case - P50 Winter Forecast Schedule 2.1, Column (9) Commercial Average kWh Consumption Per Customer. Please explain the reasons or causes for the projected steady annual reduction in projected consumption per customer throughout the forecasting horizon.

RESPONSE:
The projected decline in Commercial Average kWh Consumption Per Customer is primarily due to changes in the mix of commercial customers. For modeling purposes, FPL separates the commercial class into 2 groups: small/medium commercial and large commercial customers. The number of small/medium commercial customers, which have a lower average consumption per customer, is projected to grow at a faster rate than the number of large commercial customers. This difference in customer growth rates results in small/medium commercial customers becoming a larger proportion of total commercial customers, which also results in a lower average consumption per customer for the total commercial class. Additional reductions in usage come from the impacts of increasing energy efficiency codes and standards.

QUESTION:
Please refer to page 71, Schedule 2.2 FPL History of Energy Consumption, Column (12) Industrial Average kWh Consumption Per Customer. Please explain the reasons or causes for the 2021 annual reduction in projected consumption per customer, from 259,969 kWh in 2020 to 247,894 kWh in 2021, or 1.2 percent approximately.

RESPONSE:
The primary driver for the decline in the Industrial Average kWh consumption Per Customer from 2020 to 2021 was the change in the industrial class customer mix. There was an increase in the number of small industrial customers, which have significantly lower average use per customer than medium and large industrial customers, the result was a decrease in the total industrial average kWh consumption per customer.

The increase in the number of small industrial customers was primarily due to growth in the number of Temporary Service Poles, or TSPs. TSPs are service accounts which provide temporary electric service to installations such as construction projects. The increase in residential housing construction has resulted in an increase in the number of TSPs.

QUESTION:
Please refer to page 72, Business As Usual Case - P50 Winter Load Schedule 2.2 Forecast of Energy Consumption, Column (12) Industrial Average kWh Consumption Per Customer. Please explain the reasons or causes for the projected reductions in projected consumption per customer in 2022 and 2023.

RESPONSE:
The primary driver for the decline in the Industrial Average kWh consumption Per Customer from 2022 to 2023 is the change in the industrial class customer mix. Small industrial customers are forecasted to grow at a higher rate than medium and large industrial customers. Because small industrial customers have significantly lower average use per customer than medium and large industrial customers, the result is a decrease in the total industrial average kWh consumption per customer.

The forecasted growth of small industrial customers is primarily due to the projected strength of residential housing starts. Residential housing starts are a driver of small industrial customer growth because Temporary Service Poles, or TSPs, are included in small industrial customers. TSPs are service accounts which provide temporary electric service to installations such as construction projects.

QUESTION:
Please refer to pages 77 and 78.

a. Please refer to Schedule 3.2 – FPL History of Winter Peak Demand, Column 10, and Schedule 3.2 – Forecast of Extreme Winter Peak Demand, Column 10. Please explain why FPL anticipates an increase in Net Firm Demand from 14,993 MW in 2021 to 30,270 MW in 2022.

b. Please refer to page 181, Schedule 7.2, Column 9. Please explain the discrepancy in the values between Schedule 7.2, Column 9, and Schedule 3.2 – Forecast of Winter Peak Demand, Column 10.

RESPONSE:
a. The projected increase in Winter Peak Net Firm Demand of 14,993 MW in 2021 to 30,270 MW in 2022 is primarily due to weather. The 2021 number was the actual reported winter peak and reflects the impacts of milder than normal weather conditions, whereas the forecasted 2022 number reflects the impacts of the severe winter weather conditions experienced in December 1989. Additionally, the forecasted 2022 number reflects the impact of continued customer growth.

b. The differences for years 2022 through 2024 were due to a 12 MW difference in the amount of load management listed in those schedules. The differences in years 2025 through 2031 are due to rounding.

QUESTION:
Please refer to page 78, Schedule 3.2 – Forecast of Extreme Winter Peak Demand, Columns 6 and 7. Please explain how these values were determined, and why these values are increasing annually.

RESPONSE:
Column (6) of Schedule 3.2 represents the projected amounts of Residential Load Management in FPL's service territory, while Column (7) represents the amount of incremental residential energy efficiency. Both values are increasing in line with FPL's currently approved demand-side management (DSM) Plan through 2024 plus previously projected cost-effective incremental additions of DSM programs in subsequent years.

QUESTION:
Please respond to the following questions regarding the table below. The table compares FPL's Business As Usual Plan for Winter Peak Demand Forecast versus FPL's Extreme Winter Peak Demand Forecast for the ten year time horizon contained in FPL's 2022 TYSP, using the data appearing on FPL 2022 TYSP, page 78, Schedule 3.2.

a. Is the annual difference between FPL's Extreme Winter Demand Forecast and its Business as Usual Winter Peak Demand Forecast, shown in the last two columns of the table (i.e. 9,107 MW to 10,365 MW, or approximately 43 percent annually) an accurate representation of the increase in Winter Peak demand which FPL is requesting the Commission to recognize for planning purposes relative to what FPL would have requested using normal weather assumptions similar to that used in prior years?

b. In recommending its 2022 Extreme Winter Peak Demand forecast, does FPL believe that an extreme winter event such as that of December 1989 is expected to occur with approximately the same frequency as in the past? If not, please explain any change in frequency expected and provide all relevant support.

c. Is it correct that FPL has prepared past Winter Peak Demand models and forecasts with the expectation of minimizing its forecast error rate, in an attempt to drive forecast peak demand error rate to be as close to zero as possible?

d. How does FPL believe its winter peak demand forecast error rate will be impacted by its use of the proposed Extreme Weather Forecast for Winter Demand?

e. For years in which normal weather prevails, does FPL anticipate that its average forecast error associated with its Extreme Weather Forecast for Winter Demand would be approximately 43 percent (the difference between FPL's normal weather and extreme weather demand forecasts)? Please explain why or why not?

f. If FPL does expect that its forecast error associated with its Extreme Weather Forecast for Winter Demand will approximate 43 percent for those years in which normal weather prevails, please explain why such a result would be acceptable from a regulatory perspective in Florida.

Table 1: FPL Winter Peak Demand Forecasts Comparison

Year	FPL's Recommended Plan - Extreme Winter Net Firm Demand (MW)*	FPL's Business as Usual Plan - P50 Winter Net Firm Demand (MW)*	Difference (MW)	Difference Percentage
2022	30,270	21,163	9,106	43.0%
2023	30,783	21,527	9,256	43.0%
2024	31,312	21,894	9,418	43.0%
2025	31,675	22,121	9,554	43.2%
2026	32,125	22,438	9,687	43.2%
2027	32,494	22,673	9,821	43.3%
2028	32,938	22,982	9,956	43.3%
2029	33,406	23,318	10,088	43.3%
2030	33,844	23,632	10,212	43.2%
2031	34,364	23,999	10,364	43.2%
*Source:	FPL's 2022 TYSP, Schedule 3.2			

RESPONSE:

a. Yes.

b. FPL's recommendation to use the extreme winter peak demand forecast for resource planning purposes does not assume expectations of a change in the frequency of future occurrence of such weather events, which are infrequent and unpredictable. Instead, FPL's recommendation to use the extreme winter peak demand forecast was based on the Company's determination that the prudent course of action is take steps to be better prepared for such an extreme winter event.

c. Yes, it is correct that FPL's previous Winter Peak Demand forecasts were P50 forecasts, which would be expected to produce the lowest possible forecast errors. FPL's current Business as Usual Plan is based on a P50 Winter Peak Demand forecast, which is consistent with prior forecasts.

d. FPL expects forecast error rates calculated using the Extreme Winter Peak Demand forecast to be higher than the forecast error rates calculated using the current Business as Usual Plan forecast, which is consistent with prior forecasts.

e. Generally, yes, FPL would expect future forecast error rates for normal weather years to be approximately 40% greater than historical forecast error rates when compared to the Extreme Winter Peak Demand forecast. FPL would expect future forecast error rate for normal weather years to be similar to historical forecast error rates when compared to the current Business as Usual Plan forecast. The higher expected forecast error rate for the Extreme Winter Peak Demand forecast is due to increase in the winter peak over the P50 Winter Peak Demand forecast.

f. FPL believes that the use of an Extreme Winter Peak Demand forecast should be acceptable from a regulatory perspective in Florida when considering that the objective of using such a forecast is to better prepare FPL to serve its customers when another extreme Winter event occurs. In regard to forecast error rates, an increased error rate that compares the Extreme Winter Peak Demand forecast versus the current Business as Usual Plan forecast is to be expected in years in which an extreme Winter event does not occur. However, FPL believes that planning to serve customers when an extreme Winter event occurs is a more prudent course of action compared to not planning for such an event due to concerns over a forecast error rate metric.

QUESTION:
Please refer to page 86.

a. Please explain why the Utility decided that batteries were the best option for resource planning.

b. Please explain what alternatives, other than batteries, were considered in resource planning. As part of this response, please explain if combustion turbines were considered.

c. Please provide a detailed cost comparison of FPL's Recommended Plan to its Business As Usual Plan. As part of this response, please identify the annual and cumulative present value revenue requirement, and the estimated residential bill impact for each plan.

RESPONSE:
a. FPL considered both new solar PV units, batteries, and combustion turbines while developing its 2022 resource plans. Batteries were not considered the "best option" categorically, but they were selected in both of FPL's resource plans as they provide significant firm capacity for both Summer and Winter and can be deployed incrementally to meet resource needs. FPL did consider combustion turbines as an option at various stages of the planning analysis process, but combustion turbines were eventually not selected for the final resource plan.

b. Please see FPL's response to subpart (a) above.

c. Please see Attachment No. 1 to this response. Note that FPL has included annual revenue requirements and bill impacts for the Recommended Plan if FPL only experienced a normal "P50" load but still added resources to meet a higher Winter load. This scenario represents the most accurate rate and bill impacts to customers as it excludes the variable cost increases caused by modeling a higher Winter load every year from 2022-2031. FPL believes that should an extreme Winter event occur, variable costs will be higher in both plans. Therefore, the only meaningful additional costs are fixed costs, which is shown by the Recommended Plan with a P50 load forecast. Note that these bill impacts only account for the incremental new capacity cost to customers in each plan.

QUESTION:
Please refer to page 96.

a. Please provide a similar summary of larger resource additions/retirements for FPL's Business As Usual Plan.

b. Please explain the benefit that FPL expects battery storage to provide for the immediate extreme weather conditions that FPL is planning for if the first battery is not anticipated to be in service until 2027.

RESPONSE:
a. A summary for major resource additions/retirements for FPL's Business as Usual Plan is below:

- In the Business as Usual Plan, new solar (PV) additions from 2022 through 2031 of approximately 9,389 MW (nameplate);
- A new transmission line (the NFRC line) by mid-2022 enabling a bidirectional transfer capability between FPL and FPL Northwest Florida of up to 850 MW;
- The modernization of the existing Lauderdale power plant site in mid-2022 with the new DBEC Unit 7 CC (approximately 1,267 MW);
- Expiration (as per terms of the contract) of 885 MW from the Shell power purchase agreement (PPA) in May 2023;
- The retirement of FPL's ownership portion of the coal-fueled Daniel Units 1 & 2 (approximately 500 MW) by the beginning of 2024;
- Capacity upgrades at several of FPL's existing CC units through 2026;
- The retirement of FPL's 25% ownership portion of the coal-fueled Scherer Unit 3 (approximately 215 MW) by the end of 2028; and,
- In the Business as Usual Plan, a total of approximately 1,800 MW of battery storage in 2029 through 2031.

b. FPL projects that its "near-term" capacity additions in its Recommended Plan (converting existing units to "extreme Winter Only" operation and upgrading existing combined cycle units to increase their capacity during extreme Winter events) would allow FPL to meet the extreme Winter peak load and therefore minimize and/or eliminate customer outages through 2026 without additional Winter capacity. As FPL projects continued load growth for 2027 through 2031, minimization and/or elimination of customer outages during an extreme Winter event would require the addition of new Winter capacity such as that provided by battery storage units.

QUESTION:
Please refer to page 179.

a. Please refer to Schedule 7.2, Column 2. Please identify the annual MW of solar for 2022 through 2031.

b. Please refer to page 181, Schedule 7.2, Column 2. Please explain the discrepancy between 2022 through 2025 in Schedule 7.2 for the Recommended Plan and the Business As Usual Plan.

RESPONSE:
a. Please see Attachment No.1 to this response for a table detailing the annual nameplate MW, Firm Summer MW, and Firm Winter MW for both the Recommended Plan and Business as Usual Plan.

b. The difference between the firm capacity projected in Schedule 7.2 for the Recommended Plan versus the firm capacity projected in Schedule 7.2 for the Business as Usual Plan is from three sources: 1) Adjustments to existing unit ratings for Extreme Winter temperatures, 2) Projected Winter-specific upgrades to FPL's combined cycle fleet, and 3) Converting several existing units to "Extreme Winter Only" operation. These adjustments, upgrades, and conversions are present in the Recommended Plan but not in the Business as Usual Plan.

QUESTION:
Please refer to FPL's 2022 TYSP and 2021 TYSP (presented as Attachment No. 1 of FPL's Response to Staff's First Data Request) for the following questions.

a. FPL's 2021 TYSP (page 60 of Attachment No. 1) reads "Residential energy sales are projected to grow at an average annual rate of 1.2% during the forecast period." FPL's 2022 TYSP (page 59) reads "2022 residential energy sales […] are projected to grow at an average annual rate of 1.5% over the forecast period." Please identify/explain the major drivers of the increased projection of residential energy sales.

b. FPL's 2021 TYSP (page 61 of Attachment No. 1) reads "Commercial energy sales are projected to grow at an average annual rate of 0.9% during the forecast period." FPL's 2022 TYSP (page 60) reads "2022 commercial energy sales […] are projected to grow at an average annual rate of 0.7% over the forecast period." Please identify/explain the major drivers of the decreased projection of commercial energy sales.

c. FPL's 2021 TYSP (page 62 of Attachment No. 1) reads "Industrial energy sales are projected to remain mostly flat during the forecast period, only growing at an average annual rate of 0.5%." FPL's 2022 TYSP (page 60) reads "2022 industrial energy sales […] are projected to remain flat over the forecast period." Please identify/explain the major reason(s) for the further reduced industrial energy sales projection (de minimis vs. 0.5% growth over the forecast horizon).

RESPONSE:
a. The primary driver of the slight increase in residential energy sales growth in the 2022 TYSP was a slight increase in projected use per residential customer growth compared to that in the 2021 TYSP. The slight increase in projected residential use per customer was primarily due to an increase in projected Electric Vehicle charging.

b. The primary driver of the slight decrease in commercial energy sales growth in the 2022 TYSP was a slight decrease in projected use per commercial customer growth compared to that in the 2021 TYSP. The slight decrease in projected commercial use per customer was primarily due to a change in commercial customer mix, where small/medium commercial customers represent a larger proportion of total commercial sales compared to large commercial customers.

c. The primary driver of the decrease in industrial energy sales growth in the 2022 TYSP was the absence of increased industrial energy sales due to the impacts of economic development tariffs. The 2021 TYSP industrial energy sales forecast included an increase in industrial energy sales due to the impacts of economic development tariffs but the inclusion of those impacts resulted in an over-forecast of industrial energy sales so the 2022 TYSP did not include those impacts.

QUESTION:
FPL's 2021 TYSP, pages 55 through 56, indicated that FPL's system winter peak forecasting model includes a binary variable "to account for the lack of a Winter post-2011." Does FPL's respective 2022 P50 Winter model and Extreme Winter model include the same type of binary variable? Please explain your response.

RESPONSE:
FPL's 2022 P50 Winter model includes the same binary variable "to account for the lack of a Winter post-2011" that is seen in FPL's 2021 TYSP. The Extreme Winter peak demand forecast was developed using a two-step process, where the P50 Winter Peak demand forecast was adjusted to reflect the impacts from weather conditions experienced during the 1989 extreme weather event. The model used to estimate the adjust for the 1989 extreme weather event did not include a binary variable for post-2011 winters.

QUESTION:
FPL provides monthly as-available energy data to the Commission broken down into five regions (South, Southeast, Northeast, West, and Northwest). Please provide a description of which counties make up the different regions. Also, please estimate the winter peak demand increase, either in MW or percentage, for each region based upon FPL's extreme weather planning assumption.

RESPONSE:
A listing of which counties are included in each as-available region can be found in Attachment No. 1 to this response. A map showing the regions and counties can be found in Attachment No. 2 to this response. FPL's forecast of the extreme winter peak demand was for the total system only.

SERC RELIABILITY CORPORATION

September 28, 2021

Vince Ordax
Director of Operations
Florida Reliability Coordinating Council, Inc.
3001 North Rocky Point Drive East, Suite 410
Tampa, Florida 33607

Re: 2021/22 Winter Weather Preparedness

Vince,

In support of our focus on a highly reliable and secure Bulk-Power System, SERC is looking to better understand the level of winter preparedness for the SERC region as we enter the 2021/2022 winter season. As such, SERC is gathering information about winter weather plans, lessons learned from the previous winter, improvements from this past winter, and implementation of best practices within the SERC footprint.

As part of this effort, SERC would like to better understand the cold weather preparations that are underway, especially related to generation preparedness, for your Reliability Coordinator (RC) Area. Please provide a document or presentation that addresses the cold weather plans for the Balancing Authorities or Local Balancing Areas within your RC footprint no later than November 19, 2021.

The following attachment has a list of topics to consider in your response.

Please feel free to reach out to Melinda Montgomery (Sr Director, Engineering and Advanced Analytics) at mmontgomery@serc1.org (o: 704-940-8206 or m: 704-975-3341) or me at teponseti@serc1.org (m: 423-240-4276) with any questions or concerns.

Best regards,

Tim

Tim Ponseti
Vice President, Operations
SERC RELIABILITY CORPORATION

cc: Stacy Dochoda, FRCC President and CEO

Richard Gilbert, FRCC Director of MS Regulatory

Attachment

ATTACHMENT A

The following topics (if applicable) should be addressed for each Balancing Area (BA) or Local Balancing Area (LBA) within your RC footprint that is larger than 1000 MWs. Information below should include (if applicable) information regarding preparation and plans around generation, fuel supply, transmission system, winter season load forecast, and plans for extreme winter weather events.

1. Winter Season Peak forecast
2. Total generation capacity and market purchase capacity available for winter season peak
3. Plans to manage energy and capacity requirements of extreme winter weather
4. Potential energy and/or capacity constraints
5. Load forecasting practices that consider extreme events
6. Generation and Fuel Supply preparations; including winter weatherization adjustments, if applicable
7. Plans to maintain / improve Generation and Fuel availability during winter weather events
8. Best practices and Lessons Learned from the last several winters, and improvements made for this winter (generation, fuel supply, transmission system, load forecasting)
9. Operator training exercises
10. Plans for initiating and maintaining communications with neighboring balancing areas, generating resources, transmission operators, making public appeals (as applicable)
11. BA/LBA Plans to maintain coordinated communications with Reliability Coordinator
12. Plans for communicating with natural gas providers (suppliers and pipelines) to assess natural gas availability, and to coordinate gas/electric interactions during emergencies
13. Activities that promote a high-level of situational awareness related to regional energy. This includes, but is not limited to, maintaining awareness of fuel inventories and replenishment plans at critical facilities, status of dual fuel and demand response resources.
14. Considerations to minimize duration and unintended consequences of emergency extreme actions, such as load shedding.

1. Winter Season Peak forecast

The FPL P50 2021/2022 Winter peak forecasted value for FPL is 20,309 MW. FPL is also examining two forecasts that assume more extreme Winter temperatures. One of these considers a high Winter peak of 26,960 MW. The other forecast is one that is based on the actual temperatures experienced in the Winter of 1989. (The 1989 Winter event was one of only three severe Winter events that have occurred in the last 45 years and it was the event that most impacted FPL's customers.) The forecasted Winter peak load for a 1989-actual temperature forecast for the Winter of 2021/2022 is 29,607 MW.

Note: All of the above referenced load amounts include 1,886 MW of non-firm load that is addressed by FPL's demand side management (demand response) programs.

2. Total generation capacity and market purchase capacity available for winter season peak

FPL's current projected total 2021/2022 winter generation and market purchased capacity is 27,422 MW. In addition, FPL has 1,886 MW of demand side management of FPL non-firm load.

3. Plans to manage energy and capacity requirements of extreme winter weather

FPL System Operation plans for TOP and BA operations, which start a year ahead and then continue the focus on weeks ahead, then days ahead and finally day ahead, to ensure an adequate level of transmission capacity and generation resources in the event of extreme winter weather. This "all available" plan also ensures that transmission capacity is maximized for purposes of the provision of transmission service to facilitate purchases and sales of power.
Additionally, since significant cold fronts can be forecasted with 5 to 7 days of notice, during the winter period necessary short-term transmission and generation outages are managed with clear-up times of 3 days and 5 days or less, respectively.

4. Potential energy and/or capacity constraints

None

5. Load forecasting practices that consider extreme events

FPL's Summer and Winter peaks are typically based on a P50 load forecast. Regarding potential severe Winter peaks, FPL's load forecasting group also provides other forecast scenarios. These include a higher peak forecast and a forecast based on temperatures experienced in the Winter of 1989 which was the Winter event that most impacted FPL's customers in the last 45 years. (See FPL's response to Question # 1.)

Additionally, in the operational time frame as actual weather forecast become available (7 - 10 days out) and then as the time frame gets closer, FPL forecasts loads taking into consideration expected temperatures. As part of this operational process FPL considers multiple weather service forecasts and uses multiple load forecasting tools to determine potential system needs.

6. Generation and Fuel Supply preparations; including winter weatherization adjustments, if applicable

Each year, FPL's power plants execute a Winterization preventive maintenance process which verifies administrative and plant physical readiness for winter operations, including freeze protection and insulation condition assessment as well as operator refresher training. This annual process has been routinely updated with lessons learned from prior winter operations experiences and historical extreme winter events on our system. FPL's plants with dual fuel capability, maintain liquid fuel readiness through a year-round process in which routine testing of liquid fuel capability is performed and tracked along with live data of liquid fuel inventories throughout our system. An FPL capacity notification outlines plant capability based on summer and winter ratings, is provided to FPL's TOP and BA operations annually.

Fuel Supply Preparations - Distillate Fuel Oil

FPL uses distillate fuel oil as an emergency back-up fuel in case of any interruption to natural gas supply or during times when natural gas requirements exceed FPL's delivery capability due to extreme demand, which for FPL primarily occurs during winter peaks related to cold fronts that reach far into South Florida. Approximately 65% of FPL's combined cycle and simple cycle CT fleet can operate on distillate fuel oil. FPL has approximately 1.5 million barrels of distillate fuel oil storage capability across 9 sites that can provide an average of 88 hours of full load operation for approximately 12,000 MW of combined cycle and simple cycle CT generation. Distillate is resupplied predominately via tanker trucks which can be a slow process and depending on requirements, consumption rates can exceed replenishment rates. Therefore, FPL's target is to maintain full inventory at all facilities that have back-up distillate fuel oil on a year-round basis. At FPL's more recently modernized plants along the east coast of Florida, distillate fuel oil can also be supplied via waterborne vessels. While the lead time on bringing in supply via waterborne transportation can be longer than resupply via tanker trucks, the advantage is that larger quantities can be delivered at one time, potentially helping FPL prepare for a possible second contingency more quickly. FPL also has the capability of executing tank-to-tank transfers directly with several suppliers located within the footprint of the supply port at one of its larger combined cycle sites. FPL's distillate fuel oil system is comprised of varying tank

sizes, resupply options, and proximities to supply locations. The unique characteristics of each individual location allow FPL tremendous flexibility during contingency events to manage its distillate inventory by dispatching its fleet based on real-time resupply conditions.

Fuel Supply Preparations – Natural Gas Storage
FPL holds 4.0 BCF of firm natural gas storage capacity in Alabama and 1.0 BCF of firm natural gas storage capacity in Mississippi. Storage capacity improves reliability by helping mitigate the impact of supply disruptions and increases FPL's ability to manage supply and demand on a daily basis. Inventory levels will generally vary throughout the winter season based on several factors, including system conditions on a daily basis. Inventory levels will be adjusted, as necessary, in response to projected weather forecasts for FPL's service territory, as well as surrounding natural gas supply regions.

7. Plans to maintain / improve Generation and Fuel availability during winter weather events

a. Following the ERCOT winter storm of 2021 FPL Operations conducted a thorough review of its generation sites to be able to operate through a severe cold weather event. As a result, FPL is in the process of upgrading all the sites (including gas yards). The scope of work includes:
   i. Heat Tracing on critical piping*
   ii. Insulation on critical piping*
   iii. Insulated and/or heated enclosures for critical transmitters* and other instruments that could cause mis-operation if frozen.
   iv. Shelters to protect critical valves that are outdoors or could otherwise be exposed to freezing rain
   v. Wind Barriers to protect critical valves.

   * Critical Piping includes both Process piping and control/sensing lines that could cause miss operation.
b. The following sites will be completed prior to Jan 1st 2022: Turkey Point and St. Lucie nuclear units, Sanford, Okeechobee, Cape Canaveral, Manatee, and West county. The remainder of the sites will be completed prior to May 1st 2022.

<u>Natural Gas Availability</u>
FPL consumes approximately 650,000,000 MMBtu of natural gas on an annual basis and holds more than 2,600,000 MMBtu/day of firm transportation capacity across three delivery pipelines connected to its generation facilities. FPL also holds roughly 600,000 MMBtu/day of firm transportation capacity on several upstream pipelines that provide access to additional natural gas supply points. Given the size of its natural gas portfolio, FPL transacts for natural gas with numerous suppliers on an annual, monthly, and daily basis. FPL considers the historical

performance of its suppliers, particularly during extreme weather events, as it builds and adjusts its supply portfolio on a continuous basis. FPL maximizes the availability of natural gas to its generation fleet by maintaining a diverse portfolio of firm transportation capacity, maintaining a diverse supply portfolio, transacting with suppliers that have demonstrated high standards of performance, and improving contractual performance language when appropriate.

Distillate Fuel Oil Availability

FPL routinely utilizes multiple distillate fuel oil suppliers as part of its normal process in an effort to maintain a "pool" of suppliers that are familiar with FPL's facilities and understand FPL's process for receiving distillate fuel oil deliveries. With a "pool" of experienced suppliers, delays in resupply can be avoided, particularly during extreme weather events where timing is critical. FPL will typically engage in conversations with its distillate fuel oil suppliers in advance of an extreme weather event to create situational awareness and to discuss strategies and logistics if it should become necessary to begin resupply operations.

8. Best practices and Lessons Learned from the last several winters, and improvements made for this winter (generation, fuel supply, transmission system, load forecasting)

FPL has not experienced severe weather events in over 10 years.

However, FPL has made improvements to load forecasting, generation, fuel procurement and management, and transmission facilities based on lessons learned from extreme winter conditions that were experienced during the last three winter extreme high load events that affected FPL in the last 45 years (i.e., 1977, 1989 and 2010). FPL also leverages industry lessons learned from extreme weather events to make process improvements, ensure awareness of key operating issues and continuously improve operating processes and procedures during emergency conditions.

- Load Forecast: In addition to continuing to use a P50 forecast for its resource planning work, FPL is now augmenting that forecast with one or more additional load forecasts based on colder Winter temperatures that result in higher Winter loads.
- Generation: FPL Operations winter readiness procedure has incorporated lessons learned from prior events as well as emergency readiness drills. FPL has reviewed and incorporated applicable lessons learned from the last major winter events across the US (2011, 2014, 2018 and most recently 2020). In addition, please refer to question 7 for improvements being made for this winter.
- With respect to fuel procurement and management please refer to the response to question 13.
- Transmission: FPL has an equipment design philosophy that specifies the ratings of equipment, taking into account cold weather conditions, to meet or exceed National Electrical Safety Code (NESC) requirements. FPL also has full visibility to current and forecast loads being fed by the Transmission and Substation infrastructure. Extreme cold

weather forecast has been incorporated into the annual capacity planning process which is a driver for additional capacity required in the Transmission and Substation system.

FPL has implemented a number of lessons learned from prior extreme cold weather events that affect both equipment design/philosophy and operational posture:

- Automated and remote auto-restoration restriction during periods of high loads (typically extreme heat/cold) to address the risk of substation transformer overload condition
- Auto and Power Transformer design philosophy was changed to allow for a 150% overload capacity for three hours (winter rating) mitigating peak loading concerns
- Enhanced response posture to system alarms and post event equipment reviews
  - Strategic pre-arrangement of first responder personnel
  - Alarm response (low gas/oil/fluid)
  - Assessment of equipment (high operations, semaphores, etc.)

9. Operator training exercises

FPL holds multiple training exercises associated with generation capacity shortfalls as evidenced below. These exercises include the team involved in BA and TOP operations, as well as other corporate teams that would be involved in such event (e.g., Fuel procurement team, energy procurement team, field operations, Marketing and Communications, Customer Service, Governmental outreach; Demand side management). Specifically, for 2021;

- Annual Capacity Shortfall Dry Run held in April. This full day drill coordinated by FPL's Emergency Preparedness Organization simulated a significant loss of generation resulting in capacity shortfall. Various corporate teams simulated the deployment of emergency processes and tools via desktop exercises, scenario injects, and mock reports.
- Annual Capacity Shortfall Workshop scheduled for December. This half day session will include participation by System Operations, Demand Side Management, Marketing and Communications, and other customer service teams. During this session the teams will present the latest processes and tools to be deployed in the event of a winter capacity event.
- System Operator training:
  - Capacity Shortfall training held in the Spring. This training, including EMS simulation exercise of capacity shortfall response, included detailed review of EEA alerts, peaking capabilities, curtailing non-firm transactions, and non-firm and firm load control tools.
  - Conservative Operations training held during the Fall. This training involved the review of conservative operation posture including extreme weather conditions and minimum regional generation requirements at high system loads.
  - Energy Marketing and Trading (EMT) training held during the Fall. EMT is responsible for the procurement of fuel for FPL's generation resources and purchased

power to serve FPL's customers. EMT provided an overview of gas pipelines and critical gas supply facilities serving FPL generation resources and the fuel procurement process.

- Power Coordinator / BA training delivered during the Fall. This training provided a review of the priority of dispatch of resources during a capacity shortage, including peaking capability of specific resources, curtailment of non-firm sales, deployment of non-firm load control tools and entrance criteria for EEA levels. Also, the training covered operator tasks for the buying and selling of emergency power.
- Renewables and Power System Stabilizer training provided during the Fall. This training covered the FPL West area expected contingency loadings on facilities during high winter peak loads and the use of FPL's new 409MW battery for mitigation of any potential overload contingencies.

- Generator operator training as noted in previous responses

10. Plans for initiating and maintaining communications with neighboring balancing areas, generating resources, transmission operators, making public appeals (as applicable)

The "FPL Emergency Plan for Capacity Shortages/Transmission Limitations and Long Term Fuel Shortages" describes the coordinated processes followed during a generating capacity shortfall. In addition, this Plan specifies internal roles and responsibilities in communicating with local and state emergency management agencies, regulatory and governmental agencies, major commercial and industrial customers, and the media for public appeals for conservation.

With respect to FPL's coordinated interaction with the Florida Reliability Coordinating Council (FRCC), FPL follows a statewide process for assessment of capacity performed through the FRCC. FPL capacity assessment is provided to the FRCC and FPL initiates requests for any declarations and notifications relative to the FPL system.

Also, FPL's Conservative Operations procedure specifies the notification to the FRCC RC, as well as other BAs, TOPs and GOs via the FRCC hotline and Florida Transaction Management System (FTMS) messaging system, that FPL is commencing conservative operations for extreme weather conditions.

Based on the information that FPL (as well as other entities) provides to the FRCC, the FRCC aggregates such information and provides a coordinated area wide assessment and communications of capacity issues, operating reserve margin, transmission availability, customer appeals and any plans of demand side management or Load Shed.

11. BA/LBA Plans to maintain coordinated communications with Reliability Coordinator

The FRCC coordinates information with the FRCC RC and coordinates state response to expected or actual energy emergency alerts. As mentioned in response to Question 10, the FRCC has established a statewide process for assessment of capacity. FPL's capacity assessment is provided to the FRCC and the FRCC RC initiates any declarations and notifications relative to the FPL system.

Also, Conservative Operations declarations by FPL's BA/TOP are provided to the FRCC RC, as well as other BAs, TOPs and GOs via the FRCC hotline and FTMS messaging system.

Based on the information that FPL (as well as other entities) provides to the FRCC, the FRCC aggregates such information and provides a coordinated area wide assessment and communications of capacity issues, operating reserve margin, transmission availability, customer appeals and any plans of demand side management or Load Shed.

- Note: The FRCC has been contacted regarding their supplemental input for response to this question

12. Plans for communicating with natural gas providers (suppliers and pipelines) to assess natural gas availability, and to coordinate gas/electric interactions during emergencies

In the normal course of business, FPL is constantly communicating with its natural gas suppliers. During extreme weather events, these communications become more focused on potential supply problems and options for resupply if disruptions are projected to impact FPL.

Florida's unique geographic position and pipeline delivery system requires the highest level of electric-gas coordination to ensure reliability, and therefore, FPL engages in consistent coordination with the natural gas pipelines that serve FPL's power plants. This communication takes place on a daily basis for normal operations, periodically throughout each year for planned maintenance and outages, and immediately for unplanned maintenance and outages. Consistent coordination provides an opportunity to discuss and quickly address any operational issues. With generation located at the terminus of all three interstate pipelines, the coordination of planned and unplanned maintenance and outages is imperative to ensuring reliability. For example, for planned pipeline maintenance that will impact a specific power plant or group of plants, FPL works together with the pipeline to identify opportunities to perform the pipeline maintenance in conjunction with FPL's planned generation outages to help limit the overall impact. Coordination prior to and during extreme weather events such as cold weather and hurricanes is also critical for ensuring reliability. In these cases, understanding pipeline conditions and sharing FPL's projected demand eliminates surprises and helps both FPL and the pipelines adjust more quickly to changing conditions.

FPL has developed the tools necessary to monitor real-time pipeline information relative to its generation facilities, including consumption and pressures on the system. FPL's operational

personnel that are responsible for fuel management monitor and understand appropriate pressures and flows at all times, allowing for the quick recognition of "abnormal" conditions and the implementation of procedures to address those conditions.

FPL also maintains a "Critical Facilities" list for each pipeline. Critical Facilities lists are reviewed, updated, and confirmed on an annual basis. Electric service to these facilities is excluded from load shedding and load control programs at FPL. Critical Facilities lists include information such as facility type, address, substation, feeder number, feeder rank, and whether back-up generation (along with fuel type) is installed. Critical Facilities that are served by other electric providers are also reviewed between companies.

- Note: The FRCC has been contacted regarding their supplemental input for response to this question

13. Activities that promote a high-level of situational awareness related to regional energy. This includes, but is not limited to, maintaining awareness of fuel inventories and replenishment plans at critical facilities, status of dual fuel and demand response resources.

FPL maintains organizational awareness of natural gas and distillate fuel oil availability during extreme weather events through multiple intra-day coordination calls between System Operations, PGD, and EMT. These coordination calls are utilized to convey real-time fuel availability information and to develop dispatch plans in response to fuel availability, inventory levels, distillate fuel oil resupply conditions (by location), resource availability on distillate fuel oil, and system demand.

Distillate fuel oil inventory across the fleet is viewable by all personnel through an on-line tool that was created as a result of the January 2010 cold weather event that impacted FPL's service territory. This on-line tool provides, by location, distillate fuel oil inventory (updated nightly), full load hours available, percent full for each tank, available ullage for each tank, the number of trucks that are projected to be available for resupply, the number of trucks required to fill each tank, and the number of days to fill each tank based on the projected truck availability. System dispatch is coordinated, in part, based on inventory availability by location and the resupply conditions by location.

14. Considerations to minimize duration and unintended consequences of emergency extreme actions, such as load shedding

Each day FPL performs a seven (7) day assessment and a Next Day Study process based on actual weather forecast. Through these assessments FPL is able to identify and plan its operations for the potential significant cold weather event resulting in high peak loads. In the event such cold weather conditions (and attendant high loads) are forecasted, FPL would

commence recalling any short term transmission and generation outages (respectively, 5 and 3 days in duration) such that all such facilities are in service or available for service. Additionally, FPL would commence communications with teams involved in fuel and purchase power procurement, Field Operations, Demand Side Management, Marketing and Communications, Governmental Affairs, FRCC RC, neighboring BAs and TOPs, etc.

Also, in the event of extreme winter weather related conditions resulting in high peak loads, a declaration of 'Conservative Operations' may be implemented. Associated actions include returning to service scheduled transmission outages and postponing scheduled work both transmission and generation clearance as needed for system reliability, evaluating available generation, purchases and operating reserves, and taking actions to ensure resources are available to meet demand.

Furthermore, FPL's load shedding programs and tools used by operators are designed to exclude Critical Infrastructure, Critical Customers and Facilities, etc.

Planning Committee Action Item:
Develop Current System Load Forecasts based on 1989 and 2010 Winter Conditions

Purpose:
During the 10/27/21 Board meeting discussion on the Long-Term Tasks Preliminary Work Plans (Task A1), Board members considered the importance of having an additional set of extreme winter load forecasts for this winter based on consistent definitions of what constitutes "extreme winter" conditions across the membership. Accordingly, the Board directed the PC to work with the Resources Subcommittee and Load Forecasting Working Group to develop two additional load forecasts, which are to be based on two significant winter weather events experienced in the FRCC area during the winters of 1989 and 2010. The Board requested that the PC complete this work by December 1, 2021.

Details and Assumptions:

The PC was directed to work with the RS and LFWG to develop 2 additional extreme winter load forecasts:

1) Utility load forecast for weather conditions experienced during the December 1989 winter event.
   Assumptions and entry conditions:
   Assume current load and customer profile
   Reference weather condition Dates: 12/22/1989 -12/25/1989
   Assume 12/25/1989 weather conditions are peak load day
   Assume morning peak load is a Monday (non-Holiday)
   Identify estimated use of DSM if any
   Identify estimated peak load and time for your utility
   Identify potentially unserved load if any

2) Utility load forecast for weather conditions experienced during the January 2010 winter event.
   Assumptions and entry conditions:
   Assume current load and customer profile
   Reference weather condition Dates: 1/2/2010 -1/10/2010
   Assume 1/10/2010 weather conditions are peak load day
   Assume morning peak load is a Monday (non-Holiday)
   Identify estimated use of DSM if any
   Identify estimated peak load and time for your utility
   Identify potentially unserved load if any

The calculations within this document were based on very low probability scenarios developed to hypothetically maximize electrical load during an extreme cold weather event. The purpose of these calculations is to identify potential operations related communication or coordination improvement opportunities at FRCC and should not be construed as an FRCC member planning criteria

Results

1. Aggregation of "December 1989 Extreme [1], [7] Winter 2021/22 Load Forecast" Data

Entity	Base Case Peak Total Winter 2021/22 Load (MW)	December 1989 Extreme Case Peak Total Winter 2021/22 Load (MW)	Percent Difference (%)	MW-Weighted Percent Difference (%)	MW-Weighted Recalculated December 1989 Total Load (MW)	Available Demand Response	MW-Weighted Recalculated December 1989 Net Load
DEF	8,813	12,256	39%	7.7%	12,256	1,071	11,185
FMPA	1,279	1,646	29%	0.8%	1,646	0	1,646
FPL	19,605	29,724	52%	24.7%	29,724	1,381	28,343
GRU	357	401	12%	0.1%	401	0	401
JEA	2,845	4,057	43%	2.8%	4,057	100	3,957
LAK	677	965	43%	0.7%	965	0	965
LWBU	61	87	43%	0.1%	87	0	87
OUC	1,212	1,540	27%	0.7%	1,540	0	1,540
RCI	162	150	-8%	0.0%	150	0	150
SEC	3,803	5,371	41%	3.6%	5,371	224	5,147
TAL	562	688	22%	0.2%	688	0	688
TEC	4,464	5,185	16%	1.3%	5,185	208	4,977
Non-TYSP	255	0	N/A	0.0%	364	0	364
Total	**44,095**			**42.6%**	**62,434**	**2,984**	**59,450**

The calculations within this document were based on very low probability scenarios developed to hypothetically maximize electrical load during an extreme cold weather event. The purpose of these calculations is to identify potential operations related communication or coordination improvement opportunities at FRCC and should not be construed as an FRCC member planning criteria

2. Aggregation of "January 2010 Extreme [1], [7] Winter 2021/22 Load Forecast" Data

Entity	Base Case Peak Total Winter 2021/22 Load (MW)	January 2010 Extreme Case Peak Total Winter 2021/22 Load (MW)	Percent Difference (%)	MW-Weighted Percent Difference (%)	MW-Weighted Recalculated January 2010 Total Load (MW)	Available Demand Response	MW-Weighted Recalculated January 2010 Net Load
DEF	8,813	11,003	25%	4.9%	11,003	1,071	9,932
FMPA	1,279	1,609	26%	0.7%	1,609	0	1,609
FPL	19,605	26,257	34%	16.1%	26,257	1,381	24,876
GRU	357	397	11%	0.1%	397	0	397
JEA	2,845	3,612	27%	1.8%	3,612	100	3,512
LAK	677	860	27%	0.4%	860	0	860
LWBU	61	77	27%	0.0%	77	0	77
OUC	1,212	1,438	19%	0.5%	1,438	0	1,438
RCI	162	151	-7%	0.0%	151	0	151
SEC	3,803	4,341	14%	1.1%	4,341	224	4,117
TAL	562	666	19%	0.2%	666	0	666
TEC	4,464	5,018	12%	1.1%	5,018	208	4,810
Non-TYSP	255	0	N/A	0.0%	324	0	324
Total	**44,095**			**27.0%**	**55,753**	**2,984**	**52,769**

Footnotes

The calculations within this document were based on very low probability scenarios developed to hypothetically maximize electrical load during an extreme cold weather event. The purpose of these calculations is to identify potential operations related communication or coordination improvement opportunities at FRCC and should not be construed as an FRCC member planning criteria

[1] Refer to the preamble of this document for descriptions of how the word "extreme" was applied to each sensitivity case. Assumes 100% coincident peak timing among entities, which may vary operationally and result in a lower actual instantenous observed peak.

[2] Certain entities did not provide an extreme winter peak forecast. The percent differences reported by all other entities has been weighted and applied to non-reporting entity peaks to support a consistent analytical basis for the aggregated forecast.

[3] Raw percent difference weighted by the size of the entity.

[4] Equal to the entity provided peak unless "N/A" is shown under the "Percent Difference" column.

[5] Demand response estimates reflect base case firm seasonal capabilities as reported to FRCC during the most recent Load and Resource Database collection effort (supporting the 2021 Ten Year Site Plans).

[6] Assumes all firm seasonal demand response resources perform as expected.

[7] Forecasts provided by entities do not vary other explanatory factors that could impact load, such as economic conditions, relative to the Base Case. The sensitivity is an "all else equal" re-simulation of existing models to account for deviations from normal weather conditions only.

[8] Reedy Creek is a heavy cooling (chilled water) peaking system and has very little electric supplied heating. Almost all of the heating on property is direct natural gas fired. Subsequently, cool or even colder temps reduce and/or eliminate all chilled water consumption, thereby reducing electrical consumption relative to normal weather conditions.

The calculations within this document were based on very low probability scenarios developed to hypothetically maximize electrical load during an extreme cold weather event. The purpose of these calculations is to identify potential operations related communication or coordination improvement opportunities at FRCC and should not be construed as an FRCC member planning criteria

3. Comparison of Base Case and Extreme Load Winter 2021/22 Projected Reserve Margins [1], [4]

Scenario	Total Available Capacity [2]	Total Peak Demand [3]	Generation Capacity Margin w/o Exercising Demand Response [4]		Net Firm Peak Demand [5]	Generation Capacity Margin with Demand Response [4], [6]	
	MW	MW	MW	%	MW	MW	%
Base Case	55,327	44,095	11,232	25.5%	41,111	14,216	34.6%
December 1989 Case	55,327	62,434	-7,107	-11.38%	59,450	-4,123	-6.93%
January 2010 Case	55,327	55,753	-426	-0.76%	52,769	2,558	4.85%

Footnotes

[1] Refer to important footnotes regarding the basis of the load forecast used in a given sensitivity case in the preamble to this document above.

[2] Available capacity is consistent with firm ratings used in the 2021 Ten Year Site Plan process. Assumes that all entity resources are available for dispatch during the time of the winter peak without unforeseen forced outages. Also assumes that maintenance and other operational coordination that may be required to ensure unit availability is performed outside the boundary of typical winter peak hours.

[3] Same as Tables 1 & 2. Excludes firm seasonal demand response.

The calculations within this document were based on very low probability scenarios developed to hypothetically maximize electrical load during an extreme cold weather event. The purpose of these calculations is to identify potential operations related communication or coordination improvement opportunities at FRCC and should not be construed as an FRCC member planning criteria

[4] Reserve margin assumes otherwise normal operating conditions, and does not account for other compounding factors that could alter operational reserve margin, such as gas supply curtailments, forced outages, insolvency of the transmission system versus typical transfer capabilities, and misalignment of maintenance coordination, among other factors.

[5] Same as Table 1 & 2. Includes firm seasonal demand response.

[6] Assumes all firm seasonal demand response resources perform as expected.

The calculations within this document were based on very low probability scenarios developed to hypothetically maximize electrical load during an extreme cold weather event. The purpose of these calculations is to identify potential operations related communication or coordination improvement opportunities at FRCC and should not be construed as an FRCC member planning criteria

Cruz, Krysten

From: Deptula, Ryan <rdeptula@frcc.com>
Sent: Wednesday, December 1, 2021 2:37 PM
To: Planning Committee
Cc: Resource Subcommittee (RS); LFWG; Prieto, Frank; Byrne, David; Senkowicz, Eric; Dochoda, Stacy; Wehlage, Mark; Navid Nowakhtar; Whitley, Andrew
Subject: RE: Revised PC Email Ballot Due 12/1 - Board Directed Additional Extreme Winter Load Forecast - R3

PC Members,

Thank you for replying to this request. Quorum has been reached, and the PC has approved the *Additional Extreme Winter 2021/22 Load Forecast Data and Write-up*.

Please note that we were notified this afternoon that a member noticed an error in their data submittal and provided us with updated numbers. This change causes the aggregate load forecasts to *increase* by approximately 200 MW.

See attached for the final documents. If these changes raise any concern or you would like to change your vote, please let us know as soon as possible.

Confirmation of this approval will also be captured in the minutes of the December 7th, 2021 PC meeting.

Let me know if there are any questions.

Ryan Deptula
Planning Engineer
Florida Reliability Coordinating Council
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Tampa, FL 33607
813-605-3642
rdeptula@frcc.com

Our Vision is to be the premier organization for grid reliability and security in North America.

Florida Power & Light Company
Docket No. 20220000-OT
Ten-Year Site Plan
Staff's Third Data Request
Request No. 1
Attachment 5 of 6
Tab 1 of 3

Entity	Base Case Peak Total Winter 2021/22 Load (MW)	December 1989 Extreme Case Peak Total Winter 2021/22 Load (MW)	Percent Difference (%)	MW-Weighted Percent Difference (%)	MW-Weighted Recalculated December 1989 Total Load (MW)	Available Demand Response	MW-Weighted Recalculated December 1989 Net Load
DEF	8,813	12,256	39%	7.7%	12,256	1,071	11,185
FMPA	1,279	1,646	29%	0.8%	1,646	0	1,646
FPL	19,605	29,724	52%	24.7%	29,724	1,381	28,343
GRU	357	401	12%	0.1%	401	0	401
JEA	2,845	4,057	43%	2.8%	4,057	100	3,957
LAK	677	965	43%	0.7%	965	0	965
LWBU	61	87	43%	0.1%	87	0	87
OUC	1,212	1,540	27%	0.7%	1,540	0	1,540
RCI	162	150	-8%	0.0%	150	0	150
SEC	3,803	5,371	41%	3.6%	5,371	224	5,147
TAL	562	688	22%	0.2%	688	0	688
TEC	4,464	5,185	16%	1.3%	5,185	208	4,977
Non-TYSP	255	0	-100%	0.0%	364	0	364
Total	**44,095**			**42.6%**	**62,434**	**2,984**	**59,450**

Florida Power & Light Company
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Entity	Base Case Peak Total Winter 2021/22 Load (MW)	January 2010 Extreme Case Peak Total Winter 2021/22 Load (MW)	Percent Difference (%)	MW-Weighted Percent Difference (%)	MW-Weighted Recalculated January 2010 Total Load (MW)	Available Demand Response	MW-Weighted Recalculated January 2010 Net Load
DEF	8,813	11,003	25%	4.9%	11,003	1,071	9,932
FMPA	1,279	1,609	26%	0.7%	1,609	0	1,609
FPL	19,605	26,257	34%	16.1%	26,257	1,381	24,876
GRU	357	397	11%	0.1%	397	0	397
JEA	2,845	3,612	27%	1.8%	3,612	100	3,512
LAK	677	860	27%	0.4%	860	0	860
LWBU	61	77	27%	0.0%	77	0	77
OUC	1,212	1,438	19%	0.5%	1,438	0	1,438
RCI	162	151	-7%	0.0%	151	0	151
SEC	3,803	4,341	14%	1.1%	4,341	224	4,117
TAL	562	666	19%	0.2%	666	0	666
TEC	4,464	5,018	12%	1.1%	5,018	208	4,810
Non-TYSP	255	0	-100%	0.0%	324	0	324
Total	**44,095**			**27.0%**	**55,753**	**2,984**	**52,769**

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Scenario	Total Available Capacity [2]	Total Peak Demand [3]	Generation Capacity Margin w/o Exercising Demand Response [4]		Net Firm Peak Demand [5]	Generation Capacity Margin with Demand Response [4], [6]	
	MW	MW	MW	%	MW	MW	%
Base Case	55,327	44,095	11,232	25.50%	41,111	14,216	34.60%
December 1989 Case	55,327	62,434	-7,107	-11.38%	59,450	-4,123	-6.93%
January 2010 Case	55,327	55,753	-426	-0.76%	52,769	2,558	4.85%

Florida Power & Light Company
Media Line: 561-694-4442
Jan. 22, 2022
@FPL_Newsroom

FPL offers ways to save energy and stay safe while keeping warm in cold weather

JUNO BEACH, Fla. – As temperatures drop this weekend, Florida Power & Light Company (FPL) is monitoring and preparing for the cold weather and encourages customers to be prepared, too. Heating homes can actually cost more than cooling them, driving bills higher if customers don't manage their energy use during cold weather.

Customers can implement these low-to-no-cost tips to save energy and money:

- Set and keep your thermostat to 68 degrees. Every degree below that can save you 5% on heating costs.
- Avoid changing your thermostat by more than 2 degrees at a time. This helps prevent backup heating elements from coming into play.
- Keep your water heater temperature at 115 degrees to still provide plenty of hot water and save money.
- Use electric blankets or a heated mattress cover as these are more cost effective than heating the entire home. Most importantly, use these safely and avoid running cords under your mattress.
- Let the sun in during the day by keeping south-facing windows open for natural heat.
- If you have an older home, consider reviewing your insulation and crawl space. Proper floor and attic insulation, along with tightly sealed windows and doors, are critical to keeping warm.

Be safe when using space heaters:

- Only use space heaters for limited amounts of time and not as a primary heat source. Direct space heaters to warm people, not rooms.
- Keep flammable materials and furniture at least three feet away from the heater.
- Turn off and unplug the space heater when leaving the room for an extended period of time.
- Avoid using extension cords.

Customers can activate the free FPL Energy Manager, an all-in-one tool that helps customers see when, where and how their home uses energy, so they can take full control of it.

For more information, visit FPL.com/waystosave.

Broll: http://newsroom.fpl.com/digital-library?item=1049

Florida Power & Light Company

Florida Power & Light Company is the largest vertically integrated rate-regulated electric utility in the U.S. as measured by retail electricity produced and sold. The company serves more than 5.7 million customer accounts supporting more than 11 million residents across Florida with clean, reliable and affordable electricity. FPL operates one of the cleanest power generation fleets in the U.S and in 2021 won the ReliabilityOne® National Reliability Excellence Award for the sixth time in the last seven years. The company received the top ranking in the southern U.S. among large electric providers, according to J.D. Power's 2021 Electric Utility Residential Customer Satisfaction Study℠ and 2021 Electric Utility Business Customer Satisfaction Study℠. The company was also recognized in 2020 as one of the most trusted U.S. electric utilities by Escalent for the seventh consecutive year. FPL is a subsidiary of Juno Beach, Florida-based NextEra Energy, Inc. (NYSE: NEE), a clean energy company widely recognized for its efforts in sustainability, corporate responsibility, ethics and compliance, and diversity. NextEra Energy is ranked No. 1 in the electric and gas utilities industry in Fortune's 2021 list of "World's Most Admired Companies" and recognized on Fortune's 2021 list of companies that "Change the World." NextEra Energy is also the parent company of NextEra Energy Resources, LLC, which, together with its affiliated entities, is the world's largest generator of renewable energy from the wind and sun and a world leader in battery storage. For more information about NextEra Energy companies, visit these websites: www.NextEraEnergy.com, www.FPL.com, www.NextEraEnergyResources.com.

FPL’s response to Staff's Third Set of Interrogatories No. 2, Attachment No. 1 Bates Nos. 000021-000023, is confidential in its entirety.

Turkey Point

Extreme Temperature

Reassessment

March 2021

Executive Summary

In February 2021, a low temperature event resulted in a widespread loss of electricity production over region operated by the Electric Reliability Council of Texas, Inc. (ERCOT). This was due to poor extreme weather preparation by utilities. NEE reviewed the Turkey Point design for potential temperature related challenges to availability due to equipment and license issues. Based on the Miami, Fl, historical record temperatures of 27 °F and 100 °F, this evaluation examines temperatures -10 and -20°F below the record low and +10 and 20°F above the record high.

Sections in the report highlighted in yellow designate the vulnerabilities that would likely result in the units shutting down. Extreme hot temperatures for a 7-day duration would likely result in reaching the Technical Specification ultimate heat sink limit of 104°F. In addition, containment temperature limit could also be reached. On the secondary side, the Turbine Plant Cooling Water system is predicted to be limiting. Review of extreme cold temperatures for a 7-day duration identified potential vulnerabilities in uninsulated, stagnate lines that could result in Tech Spec Action Statement entries. On the secondary side, the intake screens were identified as a vulnerability to freezing.

Immediate actions are recommended for the current winter:

- none

Upcoming summer readiness actions

-

Longer term corrective actions

-

Table of Contents

1. Temperature Vulnerable Locations

Lead: Michael Coen

Review history of outdoor weather and determine several extreme weather events. Evaluate impact on of temperature transient and estimate area temperatures for various plant locations:

Table 1
Plant Location Maximum and Minimum Assumed Temperatures

Location	Basis	Historical		Analysis Limit	
		High	Low	High	Low
Outdoors	This report evaluates sustained temperatures 20 °F more and less than those expected based on the record low and high conditions for Miami, Fl.	100°F	27°F	120°F	7°F

2. Exposed Instrumentation

Lead: Rafael Leavitt Barreto

Summary

For the EDGs, electronics and instrumentation would be the most impacted by high temps. DBD 5610-023-DB-002, Emergency Power System, Section 2.4.5. states the maximum environmental temperature for electronics (and by extension, instrumentation) is 104°F. Above this, component function may be compromised.

Site PTN **System / Component**	**Historical High / Low (Deg F)**	**Heat Sink and / or Ambient Limit (Deg F /** **Max and Min**	**Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)**	**Effect + 10F / + 20F**	**Effect – 10F / -20F**	**Comments**
Immersion Heaters for: SSGFP, EDGs, DDFP, 3/4 CD, AFW L.O., and Security Diesel	Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7 °F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower	No lower limit in reference to outdoor or indoor components with South Florida historical low ambient temperatures.	ONOP dictates criteria for reaching temperature thresholds and actions to be taken. No known issues, no WOs in for deficient Immersion heaters on components.	AFW lube oil is Shell Turbo T32. The maximum temperature for the oil is 215 C (419F). The immersion heater inside the LO reservoir is controlled by a temperature switch that turns the heater off at 110 F +/- 10 F. Based on this and high temperature resistant of the AFW turbine oil, there is no adverse effect. With the EDGs running, their respective SR vent fans and radiator fans (U4 only) maintain the room temps below the 104°F limit for electronics and instrumentation. If	AFW lube oil is Shell Turbo T32. The minimum temperature for the oil is -33 C (-27.4F). The immersion heater inside the LO reservoir is controlled by a temperature switch that turns the heater off at 110 F +/- 10 F. An auxiliary oil pump is installed in each AFW pump skid with the purpose of injecting warm oil to the AFW bearings. The AOP starting logic is controlled by a temperature sensor that starts the pump at 65 F +/- 5. Based on this and low temperature	Built into ONOP for cold weather at different trigger points. Example: Stage room heaters in EDG building.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect – 10F / -20F	Comments
				this criterion is being approached with the engines in standby, the respective vent fans and radiator fans (U4 only) may be manually started.	resistance of the AFW turbine oil, there is no adverse effect.	

Scope

3. Air handling / Heating

Lead: Jorge Garcia, Angelica Baez Roman

Summary

Add discussion here of recommendations, highlights and briefly describe scope

Site **PTN** **System/ Component**	**Historical High / Low** **(Deg F)**	**Heat Sink and / or Ambient Limit** **(Deg F /** **Max and Min**	**Operability or Functional Limit based on additional analysis/calculation** **(Deg F / Describe)**	**Effect + 10F / + 20F**	**Effect – 10F / -20F**	**Comments**
Containment TS limit	Historically high 120°F Historically low 100°F during power operations	Heat sink limit is 104°F (cooling canal)	120°F in containment counts hours for EQ. 125°F in containment requires shutdown	No effect on compressor operation. Reduced cooling performance possible.	No effect on NCC operation.	
025 / Control Room HVAC	69°F to 84°F	Personnel comfort for control room operators is limiting temperature. Vendor manual specifies a minimum ambient air temperature limit for compressor operation of 23 deg F.	The Control Room Ventilation System should maintain Control Room temperature less than 120°F and 95% relative humidity. Normal Control Room temperature is maintained at approximately 75 °F and 60% relative humidity. (FSAR Section 9.9)	Condenser fans will be on constantly, poor cooling will be achieved as refrigerant will not condense at 120 deg F ambient.	Will experience compressor cycling or tripping off on low pressure.	Control room condensing coils were replaced. Ensure units are fully charged. Consider installing Carrier Winter Accessory Package 38AE900021. Ensure compressor crankcase heaters are functioning properly.
060, 026 / Aux Building HVAC (Includes DC Equipment Rooms), Rad Waste Building HVAC	Building Temps 85F Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7°F 2015 -2016 - OOS°F 2014 – 2015 – 47.1°F 60M EPLAN met tower 85°F	Non-safety units run normally. SR units start at elevated temperature of 86 deg F. Minimum E231/E232 compressor suction pressure (low pressure switch setpoint) is 25 psig. The high pressure switch activates at 346 psig. This corresponds to R-407C refrigerant pressures of -5 deg F and 139 deg°F, respectively.	104°F is the administrative temperature limit of the Electrical Equipment rooms. No lower limit is specified.	No effect on compressor operation. Reduced cooling performance possible.	No effect on compressor operation.	** E233 & E234 Non-Safety Related HVAC for DC equipment rooms is I/S and available for cooling. Weekly walkdowns performed by maintenance to resolve low margin issues prior to weekend.

Site PTN System/ Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect – 10F / -20F	Comments
		For the NNS chillers E233 and E234 (Size 016 units), the Carrier vendor manual states: **High ambient temperature operation** High outdoor ambient chiller start-up and operation is possible for standard 30RAP chillers at ambient temperatures up to 120°F (50°C) at nominal voltage. The unit will additionally be able to stay running at reduced capacity up to 125°F (52°C). **Low ambient temperature operation** Units will start and operate down to –20°F (–29°C) on size 011 and 016 units, 45°F (7°C) on size 018-030 units, and 32°F (0°C) on size 035-150 units as standard.				
070 / Turbine Building Ventilation (LC/SWGR Rooms)	With A/C failures, historical building temps have reached >99 °F Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7°F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower	Components located in environmentally controlled rooms – Temperature Alert for room set at 95°F. Chiller alarm limits are as follows: Evaporator Water Freeze: 36°F. With Glycol: 12.6 °F Low evap pressure unload: 100 psi High condenser pressure unload: 600 psi Low Ambient Lockout: 35.1°F	The UFSAR design limit for the equipment in the Load Center and Switchgear Rooms is 104 deg F. The administrative limit is 95 deg F.	Reduced cooling performance. Potential compressor high pressure trips if coils are dirty.	Chillers can trip off on Low Ambient Lockout.	Multiple degraded chillers with restoration actions which do not impact winter readiness. Weekly walkdowns performed by maintenance to resolve low margin issues prior to weekend. Recommend adding glycol for low temperature operation and lowering the Low Ambient Lockout alarm setting. Ensure units are fully charged with refrigerant and coils are clean for high temperature operation.

Site PTN System/ Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect – 10F / -20F	Comments
	With A/C failures, historical has reached >99°F					
108 / EDG Building Ventilation	73°F to 83°F	None For Rooftop units, vendor manual specifies a min operating ambient temp of 40 °F and a max operating ambient temperature of 115°F.	104°F for long term reliability of control panel equipment	May cause reduction in performance and reliability or a protective action by the unit's internal safety devices above 115°F.	Internal safety devices will cause compressor to lock out.	Weekly walkdowns performed by maintenance to resolve low margin issues prior to weekend. RTU package units were replaced in 2019. Consider installing a Carrier economizer for low ambient cooling at outside air temperature below 40°F in rooftop units. Our units do not come equipped with an economizer or Winter Start Kit. Normal and emergency fans will provide backup cooling if RTUs do not function.

Scope

4. BOP / Support Systems

Lead: Dominic Marra, Mike Caselli

Summary

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
008 / Turbine Plant Cooling Water	Ambient plus heat loads Turbine lube oil coolers, generators, HDPs, etc. Ambient (High) 2020 – 90.8°F (to 8/10) 2019 – 92.5°F 2018 – 92.9°F Cooling Canal System (High) 2020 – 96.3°F (to 8/10) 2019 - 96.7°F 2018 - 95.2°F 2017 - 97.8°F TPCW supply Temp max 2017 U3=99°F, U4=100.7°F 2018 U3=98.5°F, U4=102.5°F 2019 U3=98.9°F, U4=99.4°F	Components located Outdoors, South Florida Ambient – TPCW cooling to secondary provided via ICW/TPCW HX. 1 HX is I/S at a time with a standby HX available for swap. UHS limit by TS was 100°F, raised to 104°F July 2014.	105°F – Max ICW outlet temp from TPCW HX 12,000gpm – Max ICW flowrate through TPCW HX for normal operation 110 °F – High Temp Alarm on TPCW supply temp Estimated TPCW will not be able to remove heat from uprated Main turbine generators at elevated temperatures and turbine lube oil temperatures will become elevated if no mitigating strategies are implemented.	No changes in previously reviewed results. Expect Main Turbine Generator high temperature alarms and shut down of generator. Elevated turbine lube oil temperatures, elevated other secondary cooling loads such as HDPs, SGFPs, Condensate pumps.	No changes in previously reviewed results.	Normal periodic cleanings conducted based on fouling rates. Plan to maintain standby HX clean and perform cleaning timely if fouling rates warrant HX swap. Contingency to place supplemental cooling in service, and/or place the 2nd redundant pump in service for additional flow. TPCW SCS – Annual PM of Chillers needs to be completed before summer. Standby HX cleaned prior to June 15th 3/4-NOP-008 Section 5.2 has guidance for operating with elevated temperatures.
009, 011 / Intake & Traveling Screens Screen Wash	Cooling Canal System (CCS) Historical Ambient (Low) 2018 – 2019 – 67°F 2017 – 2018 – 60.4°F 2016 – 2017 - 65.5°F 2015 -2016 – 64.5°F 2014 – 2015 – 66.1°F Ambient (High) 2020 – 90.8 °F (to 8/10) 2019 – 92.5°F 2018 – 92.9°F	Components located Outdoors, South Florida Ambient UHS limit 104°F	No T.S or FSAR limits. Production and MW generation related. If screen wash pressure drops too low, (<65 or 75 psi), alarm received. Causing system not to run in auto. Ops action required to connect alternate screen wash supply (service water) to have traveling screens run. Condition related to pressure switch failure, sensing line blockage or	No effect to MDS predicted for durations of 7 days	Extreme low Temperatures- Unit offline. Extreme low temperatures are expected to cause freezing damage and loss of the MDS screens if screen wash is left in service. If MDS is taken out of service for	South Florida is not typically subject to temperatures low enough to cause freezing of the high saline content canal water on the intake screens. No known issues to impact ER from winter temperatures. Other: – 3A2, 4A2 & 3B2 Traveling Screen gearboxes excessively leaking oil. Low oil level in gearbox could challenge operation of traveling screen. Capital funding approved, expected to work Spring 2020. Not a winter seasonal readiness issue.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
	2017 - 91.9°F Cooling Canal System (High) 2020 – 96.3°F (to 8/10) 2019 - 96.7°F 2018 - 95.2°F 2017 - 97.8°F		pump blockage or failure. Condition not related / independent of summer elevated ambient and canal temperatures. Typical debris increased loading occurs in the summer "Rainy" season. "Winter" season is a dry season with little rainfall and subsequent very infrequent increased debris challenges to intake.		prevention of freeze damage, expect DP across screen to reach threshold for resultant loss of Circ Water pumps which are secured by procedure when DP across MDS screens meets thresholds. Reduced circ water flow will result in loss of vacuum and turbine trip. Mitigating strategy could be heated water for screen wash.	Automatic traveling screens are continuously monitored with alarms in control room for deficiencies. 3A2, 4A2 & 3B2 Traveling Screen gearbox oil leaks capital funding approved, may work spring 2020 via alliance partner BHI as part of summer readiness, (Yellow WOs). Intake wells for each unit raked on alternating weekly basis (every two weeks if Ops has resources). 0-NOP-011 provides guidance to align service water alternate supply connection available. As the fixed large course 'Grizzly' screens develop issues with cleaning/ raking operations, MM contracts divers to dive and clear the fixed screens and/or guide tracks for the large rakes used manually. Traveling screen as well as Circ Pp are secured for the particular intake bay or well that is to be worked. A small loss of MW generation (8-12 MWe) is normally incurred.
010 / Circ Water	For Historical High, see ESOMs data. (Margin exists for Circ Pp motor bearing temperature Alarm = 235°F) Historical: Margin from alarm point	Components located Outdoors, South Florida Ambient UHS 104°F	No T.S or FSAR limits. Production and MW generation related. 235°F – Motor Bearing High Temp alarm 248°F – Motor Bearing High Temp trip criteria	Predicted shut down of Circ Water Pumps due to exceeding motor temperature thresholds, loss of circ water will result in low vacuum trip of turbine, unit offline.	No impact predicted.	Circ Motor bearing temperatures have margin. Not expected to be an issue for summer readiness. Motor filters are replaced on a PM to keep air flows optimum. PM for motor filter replacements ongoing.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						Contingency can be to revise existing Temporary Mod to place spot air conditioner units, (spot coolers) at motor intakes as needed. No issues expected.
012 / Service Water & Lube Water	Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7°F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower Cooling Canal System (CCS) Historical Ambient (Low) 2018 – 2019 – 64°F 2017 – 2018 – 60.4°F 2016 – 2017 - 65.5°F 2015 -2016 – 64.5°F 2014 – 2015 – 66.1°F Ambient (High) 2020 – 90.8°F (to 8/10) 2019 – 92.5°F 2018 – 92.9°F Cooling Canal System (High) 2020 – 96.3°F (to 8/10) 2019 - 96.7°F 2018 - 95.2°F	Components located Outdoors, South Florida Ambient	No T.S or FSAR limits. NOTE: Terminology/ Nomenclature delta: At Turkey Point, Service Water is potable water for lavatories, not SR heat sink. Previously relied upon for makeup water to the process, (demin water) however EC now has demin water source = well water and service water as a backup supply. Used in EOPs for temporary cooling to the charging pump speed changers but low safety significance.	No impact for the 7-day duration, expected elevated air-cooled pump motors.	Expect sensing lines to pressure gages and pressure switches to freeze. Frozen pressure switch for P235D will cause auto start thinking low pressure on system. Also, multiple facilities/buildings expected to experience frozen broken damaged service water piping.	Service water equipped with 3 electric motor driven pumps and one standby diesel driven pump. Water demand less now that fossil side has been torn down and now that EC for new WTP supplied by well water is up and operational. No heat exchangers associated with service water. Current existing configuration includes 3 electric driven and 1 Diesel driven service water pump. Only a radiator for the P235D DDSWP, no cleaning expected/required. System also used to provide backup system pressure/source to the fire protection system if needed, (however that is currently isolated due to an over-pressure condition, no impact to summer readiness.)
013 / Instrument Air & Service Air	Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F	Cooling for I/A provided by internal coolers, along with 2 parallel 100% capacity external aftercoolers at outlet of compressors	135°F – Temp limit for resin in Air Dryers 110 °F – Hi Temp Alarm	For all compressors, Atlas Copco flow calculations performed at an ambient temperature of 104 °F and 100%	For 3/4CD, diesel fuel does gel and coagulate at relatively high temperatures. At about 34°F, you	Water intrusion due to degraded cabinet gaskets was addressed on all 4 Compressor with gasket replacements.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
	2016 – 2017 - 41.7 °F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower 132 °F – Air Receiver historical hi temp.		ONOP has steps dependent on dew point, to blow down various components. No known issues for winter readiness.	R.H. show that the compressed air discharge temperature in this case would be 142°F. For the external aftercoolers, the vendor performed a sizing run using 917 SCFM of air at 120 psig and 128 °F, and the external aftercoolers can obtain a 12 °F approach temperature (107 °F). All compressors have a high temperature alarm at 124°F.	begin to see the start of the process where fuel in the tank starts to get cloudy. By 10 – 15°F, gelling occurs that can block up filters, lines, and fuel rails. Review use of heaters or fuel additives to ensure diesel fuel stays in its liquid state.	3/4CM instrument air compressor corrosion has led to reliability challenges. Both have been replaced. 3/4-ONOP-013 Redundant system has 2 Diesel driven IA compressors and 2 electric motor driven IA compressors- cross tie capabilities. Temp I/A Compressor used to support maintenance activities. .
014 / Condenser	Recurring vacuum transmitter spiking on U3 resolved by EC mod to slope lines completed in RFO.	Alarm set point 22.5-inch vacuum dependent on air in leakage and canal temperature.	Variable vacuum alarm set points based on turbine load 68% / 25% - Hotwell Hi / Lo Level alarm setpoint.	Expected loss of vacuum and turbine trip.	No effect expected.	Some condenser tube bundles experiencing intermittent sodium intrusion from unknown source. Could challenge CEI limits in the SG but not suspect to be related to temperature nor summer readiness. Hot well Sample Pump(s) OOS leaving hot well chemistry monitoring not available. Again, not impacted by summer readiness and temperatures. Online Condenser Tube Cleaning System, (Amertap) cleans HX while online.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						Hydrolazing of HX performed during outages. No outage planned for summer. Loss of vacuum due to UHS elevated temperature. Improved condenser vacuum with lower temperatures.
015 / Amertap	Ambient (High) 2020 – 90.8°F (to 8/10) 2019 – 92.5°F 2018 – 92.9°F Cooling Canal System (High) 2020 – 96.3°F (to 8/10) 2019 - 96.7°F 2018 - 95.2°F (2014 - 101.8°F)	Components located Outdoors, South Florida Ambient Seal water to pumps provided by service water.	Smaller lines especially not in use, subject to freeze damage.	No effect expected	Potential sense lines for screen DP freeze damage, loss of automatic function.	'Amertap' is also known as online Condenser Tube Cleaning System (CTCS) at other plants which maintains thermal performance and condenser vacuum. Comp actions established for field operators to monitor and perform manual backwashes as required.
019 / Intake Cooling Water	Cooling Canal System (CCS) Historical Ambient (Low) 2018 – 2019 – 64°F 2017 – 2018 – 60.4°F 2016 – 2017 - 65.5 °F 2015 -2016 – 64.5°F 2014 – 2015 – 66.1°F Historical High/Low – Bearing temperatures: See ESOMS Cooling Canal System (High) 2020 – 96.3°F (to 8/10) 2019 - 96.7°F 2018 - 95.2°F (2014 - 101.8°F)	104°F – UHS TS Operability Limit	104°F – UHS TS Operability Limit 195°F – Motor Bearing Hi Temp Alarm	Canal water temperature will increase, may challenge the TS Limit. ICW motors have OE of high bearing temperatures and increased temp may challenge motor.	Potential for freezing in stagnant water, especially in basket strainers. Expect sensing lines to pressure gages and pressure switches to freeze. Valves / bearings may become more difficult to turn due to oil / grease viscosity increase.	No winter readiness items. Related CCW system. ONOP has affected pumps being run for at least 15 minutes every 4 hours as needed. No known issues. Supplemental cooling for this and/or related CCW system is normally placed in layup status for the winter. Contingency header restoration actions are covered during pre-job briefs for ICW pp ISTs. Canal project team monitors key water quality parameters (salinity, thermal efficiency and nutrients). Remediation

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						actions have improved water quality. Predictive models reviewed in CNO update meetings. ICW pp ISTs place system in SPV configuration with only 1 ICW pp providing cooling to the secondary plant. Contingency actions to restore cooling to secondary require time consuming manual field actions and CR valve manipulations and pp starts. ICW SCS chiller units are not functional due to multiple failed chiller units. Cool well water can still be aligned for injection to provide some supplemental cooling.
030 / Component Cooling Water	Cooling Canal System (High) 2020 – 96.3°F (to 8/10) 2019 - 96.7°F 2018 - 95.2°F (2014 - 101.8°F)	UHS TS Limit - 104°F SCS Limit – 104°F (Will isolate CCW SCS from CCW)	≤ 105°F - Normal Operation – Provide adequate RCP bearing and seal cooling 120°F – CCW Supply header hi temp alarm 180°F – CCW Return header hi temp alarm 158.6°F – Most limiting Post Accident supply header temp due to SI pp lube oil cooling	Higher ICW temperatures may challenge CCW Heat removal. Motors may have increased bearing temps.	Potential for freezing in stagnant water; ex. removing CCW Hx for cleaning. Expect sensing lines to pressure gages and pressure switches to freeze. Valves / bearings may become more difficult to turn due to oil / grease viscosity increase. Most components are located in AUX building and won't be subjected to lower temps.	U3 U4 CCW SCS is degraded. An AWA was issued for new SCS for CCW and is targeted for repair 2021 summer. May be an issue. 3/4-OSP-030.4 CCW HX Perf Test to monitor for degrading trends and predict cleaning schedule. Maintenance tube plugging available for failed HX tubes. HX cleaning - loss of 1 other remaining HX is 1hr SD Action Statement. Risk is addressed via CCW HX performance monitoring program prediction validation of health of in-service HXs prior to re-tubing a HX.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
073 / Condensate	Past summer 2017 Values / Margin to motor bearing alarm 3A- 168°F / 17°F 3B -173°F / 12°F 3C -173 °F / 12°F 4A-171°F / 14°F 4B-155°F / 30°F 4C-155°F / 30°F	Supplemental air cooling can provide extra cooling to pump / motor bearings if needed.	Extreme high temperature, expect to reach 185°F – Motor Bearing Hi Temp Alarm 200 °F – Trip criteria for Hi motor bearing temp	Expect to reach high motor bearing shut down criteria, reduce load, loss of Cond Pps.	No effect expected.	Were high temperatures in condensate pit, but EC mod to route hot motor exhaust up and out of pit has resolved issue, regained margin. Prior to mod Cond Pps routinely ran within a few degrees of alarm. Condensate pump bearing temps used to be impacted by extended U3 EDG runs. Highest temps listed for U3 were coincident with U3 24hr EDG run. No longer applicable since EC mod implemented.
074 / Feed Water	Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7°F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower Within margin – Lube oil high U3A=113°F, U3B=118°F	Two SGFP room ventilation fans generate air flow through rooms normally keeping temperatures with margin. For winter readiness, consider Diesel SSGFP immersion heater. Component is outside.	203 °F – Motor Brg Hi Temp Alarm 212F – Motor Brg Temp criteria to stop SGFP The item to consider for winter readiness would be the SSGFP with its diesel engine driver and an immersion oil heater which may be set at 170°F. No known issues.	Expected elevated lube oil temperatures since they are cooled by TPCW.	No effect expected.	4A SGFP motor elevated vibration monitored under ACMP. Ops and SE monitor. No maintenance planned until RFO. Unexpected maint on a SGFP would require a 50% load reduction.
087 / Turbine Lube Oil System	Historically lube oil temps maintained <120°F with automatic temp controller	TPCW provides cooling via lube oil coolers	115°F – 120°F – normal operating band for turbine lube and generator seal oil 125°F – Lube Oil Hi Temp Alarm 130°F – Begin lowering turbine load to control temp	Expect elevated temperatures	No effect expected.	Lube oil coolers not cleaned online. TPCW HX cleaned on demand as required. 3/4-NOP-008 Section 5.2 has guidance for operating with elevated temperatures.
089 / Turbine	Historically maintained within operating bands. Cooling Canal System (CCS) Historical Ambient (Low) 2018 – 2019 – 64°F	Turbine bearing cooling via turbine lube oil system.	170 °F – Turbine bearing Hi temp alarm 180 °F – Turbine trip criteria on bearing hi temp	Expect elevated temperatures	No effect expected.	No impact to lube oil temperatures or seal oil, or EHC temperatures from south Florida typical winter ambient temperatures. Adjustments to TPCW cooling water flow routinely adjusted as needed to maintain

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
	2017 – 2018 – 60.4°F 2016 – 2017 - 65.5 °F 2015 -2016 – 64.5°F 2014 – 2015 – 66.1°F					temperatures in band since it is manual vice auto control. ARP & ONOP guidance to mitigate temperature transients. 3/4-NOP-008 Section 5.2 has guidance for operating with elevated temperatures.
090 / Generator	(CCS) Historical Ambient (Low) 2018 – 2019 – 64°F 2017 – 2018 – 60.4°F 2016 – 2017 - 65.5 °F 2015 -2016 – 64.5°F 2014 – 2015 – 66.1°F Historical high 2017 Stator delta temperature 6.2 degrees C. Margin .7 degrees C	RTD stator temperature limits delta between groups variable with generator load, typical 6.9 deg C.	Generator RTD group temps alarm at 7 and action at 7.5 and shut down limit Dependent on TPCW flow and temperature which has Supplemental Cooling System (SCS) for increased margin during summer. Not used during winter.	Expect elevated generator winding temperatures and resultant shut down. Note turbine replacements have generators operating at higher MVA.	No effect expected	Main Generator, Hydrogen gas leak rate changes with changes in Temperature and related Pressure. An ACMP exists to maintain hydrogen gas temperatures. No issues expected. Generator gas temperatures impacted via TPCW shared heat loads. U3 has elevated H2 Leakage – ACMP in effect maintaining Stator Gas temps elevated (76C-78C). ~3-4C > U4. Generator RTD Hi Temp alarm unavailable on both units due to H2 Panel on ECO to repair fittings. Normal Ops & FPDC monitoring ACMP in effect for U3 Stator Gas Temps. Comp Actions Established for OATC to monitor generator RTD temps continuously with other critical parameters See System 008 for TPCW SCS actions. Generator gas temperatures impacted via TPCW shared heat loads. U3 has elevated H2 Leakage – ACMP in effect maintaining Stator Gas temps elevated (76C-78C). ~3-4C > U4.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / °F Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						Generator RTD Hi Temp alarm unavailable on both units due to H2 Panel on ECO to repair fittings.

Scope

5. Electrical Systems

Lead: Rafael Leavitt Barreto

Summary

Site **PTN** **System / Component**	**Historical High / Low** **(Deg F)**	**Heat Sink and / or Ambient Limit** **(Deg F /** **Max and Min**	**Operability or Functional Limit based on additional analysis/calculation** **(Deg F / Describe)**	**Effect + 10F / + 20F**	**Effect -10 F / – 20F**	**Comments**
002,092,004 / 240 KV Switchyard / McGregor Substation, Main & Aux Tx, Startup & C Bus Tx	Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7 °F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower Ambient (High) & Inches of Rain 2020 – 90.8°F (to 8/10) 2019 – 92.5°F - 53.8” 2018 – 92.9°F - 36.8” 2017 - 91.9°F - 46.1”	Components located Outdoors, South Florida Ambient. No lower ambient limit. Components located Outdoors, South Florida Ambient. No ambient limit.	No lower limit. The alarm setpoint for all transformers is oil temperature = 90C / 194°F Equipment designed with margin via 6 banks of cooling fans.	Transformer is designed to operate at an average ambient temp of up to 40°C (104°F). 8W breakers are designed to operate between from -50°C to 50°C (-58°F to 122°F).	Transformer is designed to operate at an average ambient temp of down to minus 5°C (23°F). 8W breakers are designed to operate between from -50°C to 50°C (-58°F to 122°C).	SAO/Switchyard: Routine daily monitoring in the SWYD by Operations and SAO. 0-ONOP-002 has guidance for loss of McGregor Substation. Loss of McGregor Substation would challenge primary, secondary & containment temperature controls due to loss of supplemental cooling systems. SAO is developing plan for extreme ambient temperature conditions, they will be reporting their findings to upper management. Transformers: Lower temperatures can aid the transformer with oil cooling. Extremely low ambient temperatures can bring in potentially false alarms such as low oil level alarms and/or gas sensing alarms. Extreme low temperature suggestion: all plant operators should be trained on how to recognize significant static electrification discharges in large transformers and what

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						actions should be taken when such a condition occurs.[1] For extremely high ambient temperatures instructions for Loss of Cooling in procedures 0-ONOP-092.X may be followed.
005, 006 / 4.16KV SWGR 480V LC	Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7 °F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower With A/C failures, historical has reached >99 F.	Components located in environmentally controlled rooms – Temperature Alert for room set at 104F and increasing No lower limit. NOTE: C 4kv bus metal house enclosure not environmentally controlled. Components located in environmentally controlled rooms – Temperature Alert for room set at 104F. PM frequency based on maintaining environment below 104F. NOTE: C 4kv bus metal house enclosure not environmentally controlled.	No lower limit. No T.S. or FSAR limits for room temperature and Operability or Functional limits - If room temperature exceeds 104F equipment still Operable/Functional, however engineering should be notified to consider re-evaluating PM frequency based on exposure to elevated temperature. Equipment expected to remain working at elevated temperature but exposure to elevated temperatures above 104F may impact service life which would be evaluated on a case by case basis.	See comments section	See comments section	<u>Summer Readiness Review Comments:</u> Summer readiness margin issues all related to degraded condition of HVAC system. See Sys 70 for specific margin items and contingency plans. No winter readiness concerns. Guarding of redundant train HVAC equipment during OOS times IAW OP-AA-102-1003. Increased monitoring of room temps during HVAC equipment or alarm OOS times. 3/4-NOP-070 has guidance for forced air circulation cooling through all SWGR & LC rooms if lost all HVAC cooling. No, Planned or Unexpected Maintenance place in SPV or SFV. **<u>Extreme Weather Review Comments:</u>** <u>Equipment in Temperature Controlled Environment):</u>

[1] EPRI Seasonal Readiness Guideline, Static Electricity in Oil Cooled Transformers

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						Electrical equipment inside of 4KV SWGR and 480V Load Center rooms (i.e. SWGR 3/4A, 3/4B, 3/4D, Load Centers 3/4A, 3/4B, 3/4C, 3/4D, 3/4E, 3/4F, 3/4G, 3/4H, Emergency Load Sequencers 3A, 3B, 4A, 4B) is not affected provided that the HVAC units associated with these rooms remain in-service and capable of performing their respective functions. Refer to section 2 of this document for HVAC assessment/actions needed. Feedback from the HVAC engineer indicates additional actions may be warranted to ensure HVAC equipment functionality during severe weather conditions. For extreme cold weather conditions heat tracing capability may need to be added to all HVAC units supporting the equipment referenced. Additionally, vendor manual V001070 for these HVAC units recommends "Add a year-round glycol solution to the chilled water system to provide freeze protection." For extreme hot weather conditions, the same manual indicates the HVAC units have a standard "Maximum operating ambient temperature" of 105 deg F which could be increased to 125 deg F provided the HVAC unit was supplied with an optional high ambient package. Overall HVAC unit efficiency/performance could be affected. Temporary modifications similar to EC 291227 may need to be considered and possibly identified as required contingencies.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						<u>Equipment not in Temperature Controlled Areas:</u> All 480V Load Centers are located in a temperature-controlled environment. 4kv SWGR 3/4C is located outdoors and it is not in a temperature-controlled environment. As such, under extreme hot weather temporary modifications similar to EC 291227 may need to be considered and possibly identified as required contingencies. The site should consider the installation need to ensure the SWGR space heaters are functional as part of cold weather preparations and drive corrective actions to completion if required.
007 / 480V MCCs/Load Centers	Historical Ambient (Low) 2018 – 2019 – 44F 2017 – 2018 – 41.8F 2016 – 2017 - 41.7F 2015 -2016 - OOS 2014 – 2015 – 47.1F 60M EPLAN met tower With A/C failures, historical has reached ~99 F.	Some Components located in environmentally controlled rooms – Temperature Alert for room set at 104F and rising. Some components in the plant, outdoor environment. PM frequency based on maintaining environment below 104F.	No T.S. or FSAR limits for room temperature and Operability or Functional limits – 80F – 3/4B MCC Room High Temp Alarm 104F – 3/4B MCC Room Temp limit for preventing circuit card failure in control rod drive cabinets	See comments section	See comments section	4B MCC HVAC degraded. 4B MCC provides power for rod control cabinets. Malfunction of rod control could result in Rx Trip. 3/4B MCC room temp alarm setpoint at 80°F. 4B MCC HVAC currently being replaced and tracked on DPSR as Operational Concern. ACMP has been issued. Forced air circulation and/or Temporary HVAC has been established as required to maintain room temps No, Planned or Unexpected Maintenance place in SPV or SFV **<u>Extreme Weather Review Comments:</u>** <u>Equipment in Temperature Controlled Environment):</u> 480V Motor Control Centers located indoors (i.e. MCC 3/4B, 4D, 3/4L, 3/4M,

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						3/4B43) are not affected provided that the HVAC units associated with these rooms remain in-service and capable of performing their respective functions. Refer to section 2 of this document for HVAC assessment/actions needed. Feedback from the HVAC engineer indicates additional actions may be warranted to ensure HVAC equipment functionality during severe weather conditions. For extreme cold weather conditions heat tracing capability may need to be added to all HVAC units supporting the equipment referenced. Additionally, vendor manual V001070 for these HVAC units recommends "Add a year-round glycol solution to the chilled water system to provide freeze protection." For extreme hot weather conditions, the same manual indicates the HVAC units have a standard "Maximum operating ambient temperature" of 105 deg F which could be increased to 125 deg F provided the HVAC unit was supplied with an optional high ambient package. Overall HVAC unit efficiency/performance could be affected. Temporary modifications similar to EC 291227 may need to be considered and possibly identified as required contingencies. <u>Equipment not in Temperature Controlled Areas:</u>

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						480V Motor Control Centers located outdoors (i.e. MCC 3/4A, 3/4C, 3D, NVD, 3/4E, 3/4H, F) need to ensure the MCC space heaters are functional as part of cold weather preparations and drive corrective actions to completion if required.
003 / 120V Vital AC/DC	With A/C failures, historical has reached >99 F	Components located in environmentally controlled rooms – Temperature Alert for room set at 104F. PM frequency based on maintaining environment below 104F.	No T.S. or FSAR limits for room temperature and Operability or Functional limits - If room temperature exceeds 104F equipment still Operable/Functional, however engineering should be notified to consider re-evaluating PM frequency based on exposure to elevated temperature. Equipment expected to remain working at elevated temperature but exposure to elevated temperatures above 104F may impact service life which would be evaluated on a case by case basis.	See comments section	See comments section	HVAC deficiencies and OOS times impact battery charger operability due to sensitivity of battery charger output to room temp fluctuations. HVAC equipment for the most part in a clean room. PMs on inlet filters keep coils clean. Coil cleaning not expected to be necessary. Multiple actions exist for degraded HVAC. See separate HVAC issues tracker. Increased monitoring frequency & Comp actions of battery chargers established by Ops and/or E/M during HVAC OOS times No load threat activities allowed or bi stables tripped on other protection channels during 3A CVT work window. Spare inverter available for re-alignment IAW ONOP guidance. 3A CVT Maint results in no backup for 3A inverter **Extreme Weather Review Comments:** All 120Vac/125Vdc equipment is located indoors and hence are not affected provided that the HVAC units associated with these rooms remain in-service and capable of performing their respective functions. Refer to section 2 of this

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						document for HVAC assessment/actions needed. Feedback from the HVAC engineer indicates additional actions may be warranted to ensure HVAC equipment functionality during severe weather conditions. For extreme cold weather conditions heat tracing capability may need to be added to all HVAC units supporting the equipment referenced. Additionally, vendor manual V001070 for these HVAC units recommends "Add a year-round glycol solution to the chilled water system to provide freeze protection." For extreme hot weather conditions, the same manual indicates the HVAC units have a standard "Maximum operating ambient temperature" of 105 deg F which could be increased to 125 deg F provided the HVAC unit was supplied with an optional high ambient package. Overall HVAC unit efficiency/performance could be affected. Temporary modifications similar to EC 291227 may need to be considered and possibly identified as required contingencies.

Scope

6. NSSS systems

Lead: Dave Lettsome/Caselli/Angelica Baez

Summary

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
020 / Primary Water	Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7°F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower	No lower limit Primary water is used for RWST, SFP and RCS make-up water via the CVCS blender. The RCP Flowserve seal vendor manual specifies a normal seal injection temperature range of 100°F to 145°F. Refer to SFP and RWST for temperature limits.	0-ONOP-103.2 dictates at which threshold to start Refueling Water purification pumps and Primary water make-up pumps.	The PWST air cooled PW Pps piping and auto start pressure switches (PS) are located outside. No impact for the 7-day duration expected: Hotter pump motor temps not expected to challenge Pp operation. RCS make-up to the VCT or chg Pp suction will mix with warmer or cooler process flow prior to the SWI flowpath. Short duration deviations from the recommended RCP seal injection temperature range of 100°F to 145°F not expected to challenge the RCPs.	Reduced air-cooled pump motor temps not expected to challenge Pp operation. 0-ONOP-103.2 provides guidance to minimize freezing effects. Pp auto start PS sense lines may freeze. Auto pp starts may not occur. Stagnate outside PW piping may freeze. Outside SFP and RWST make-up piping downstream of the CVCS blender may be stagenet and freeze.	4P16A Replace motor WO 40257378-01, 4P16B Complete grease PM WO 40388265-01, 3P16B No motor heater amps WO 40339279-01, 3P209 Needs coating WO 40582432-01, 4P209 Seal leak WO 40598488

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
					RCS make-up to the VCT or chg Pp suction will mix with warmer or cooler process flow prior to the SWI	
033 / Spent Fuel Cooling	Maintained within operating alarm limits during normal and refueling Ops	CCW via SFP HX	135F – Alarm Setpoint 140F – Limit for normal plant Ops with core offloaded 150F – Acceptance criteria for refueling outages 180F – Max allowable limit	No adverse effect expected on SFP temperature (refer to CCW Sys 030 for CCW comments)	Outdoor piping with stagnant water is expected to freeze (i.e. make-up to SFP)	3/4-ONOP-033.1 4B SFP HX Boroscope Inspection scheduled 08/27/18 – 08/28/18 → Only 1 SFP HX allowed I/S M1-4
041 / Reactor Coolant Pump Seal	Low RCP Seal Water injection (SWI) temperature is desired for RCP Flowserve seal reliability. SWI/VCT lowest normal temperature is 110F for U3 and 100F for U4. RCP SWI supplemental cooling system provides an additional 5F of SWI cooling for improved long term RCP seal reliability.	Seal Water Injection (SWI) temperature maintained as low as possible 100-113°F per ACMP. The RCP Flowserve seal vendor manual specifies a normal seal injection (SWI) temperature range of 100°F to 145°F.	SWI provides RCP seal cooling. High SWI temp can cause 2 phase seal face cooling that can result in degraded seal performance that results in elevated CBO temperature with the following limits: >155F – Impending seal failure (within 2-3 weeks) >195F - Hi CBO temp alarm >260F – 3/4-ONOP-041.1 entry conditions.	No adverse effect expected (refer to PW Sys 020 RCS make-up comments). Potential short term increased SWI temperature not expected to adversely affect current RCP seals.	No adverse effect expected (refer to PW Sys 020 RCS make-up comments) VCT/ Seal water temp can be maintained high via Non regen TCV-*144 (Regen Hx outlet temp)	Known design deficiency has led to premature seal degradation, which causes elevated CBO temperature with increased seal friction. U3 Regen Hx degraded performance & U3 RCP CBO ACMP – challenging automatic temperature control of letdown. ACMP in place to maintain SWI low in normal band. Other ACMP actions are not affected by summer conditions. FPDC developed and implemented continuous predictive modelling to provide early warning of degraded trends. CCW SCS help reduce SWI and containment temperatures per ACMP. ACMP has redundant means to maintain temperature and other parameters to maintain health of seal. Maintenance of any

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
						one does not create SPV or SFV for seal injection.
050 / Residual Heat Removal	No RHR Seal Water High Temp alarms during last 5 summers	CCW provides Seal water cooling to RHR Pps RHR HX is heatsink for core cooling.	No alarms associated with temperature limits on RHR pp. Operating limitations listed in 3/4-OP-050. Tech Spec 3.5.4 limits RWST solution temperature to less than 100°F or greater than 39°F.	No changes in previously reviewed results.	No changes in previously reviewed results.	Running RWST Purification pump per 0-ONOP-103.2 warms tank during extreme cold events. No known countermeasures for extreme heat events.
057 / Normal Containment Coolers	Past OE prior to Supplemental Cooling System (SCS) reaches alarm, 120°F Historical high 2019: U3: 116.3°F U4: 116.6°F 2018: U3: 114.3°F U4: 115.9°F U3: 115.7 F (4.3F margin) U4: 116.6 F (3.4F margin)	120 F in containment counts hours for EQ. 125F in containment requires shutdown	Provides containment cooling with the use of CCW.	No changes in previously reviewed results.	No changes in previously reviewed results.	NCC HXs are located inside containment, not cleaned while online. CCW SCS degraded. Being tracked in the DPSR. Expected complete prior to summer 2021 Can re-align CCW SCS to U4 if required during summer.

Scope

7. Diesel Generator

Lead: Robert Orozco, Angelica Baez Roman

Summary

Electronics and instrumentation would be the most impacted by high temps. DBD 5610-023-DB-002, Emergency Power System, Section 2.4.5. states the maximum environmental temperature for electronics (and by extension, instrumentation) is 104°F. Above this, component function may be compromised.

Lube oil (LO) is most impacted by low temps. LO temps must be kept at or above 85°F for EDG operability per DBD 5610-023-DB-002, Sections 11.3.13 and 12.3.20. Below this, oil flow to engine components would be impeded and lead to increased wear and potential catastrophic failure.

Diesel fuel is also impacted by low temps. The problem with low temperatures is the fuel's cloud point (point at which dissolved paraffin wax comes out of solution – evidenced by hazy fuel). Enough of this wax out-of-solution would lead to plugging of fuel filters and fuel injectors, impeding the performance of the affected engine. Cloud points tend to vary depending on the season in which the fuel is delivered (i.e. fuel with higher cloud points delivered during spring / summer months). At Turkey Point, cloud points have varied from as low as 5°F to as high as 32°F. Fuel that is found to be hazy would need to be warmed, filtered, diluted with kerosene or replaced.

Air start is also impacted by low temps. Moisture in the air will condense and could adversely affect air start components if transferred.

Site **PTN** **System / Component**	**Historical High / Low** **(Deg F)**	**Heat Sink and / or Ambient Limit** **(Deg F /** **Max and Min**	**Operability or Functional Limit based on additional analysis/calculation** **(Deg F / Describe)**	**Effect + 10F / + 20F**	**Effect -10 F / – 20F**	**Comments**
022, 023 / EDG	Historical Ambient (Low) 2018 – 2019 – 44°F 2017 – 2018 – 41.8°F 2016 – 2017 - 41.7°F 2015 -2016 - OOS 2014 – 2015 – 47.1°F 60M EPLAN met tower 90°F – U4 4B EDG Control Panel Room during HVAC failure.	Heat Sink provided via radiator and cooling water system. HVAC system for U4 Control building with ventilation fan backup.	Only EDG heaters a concern for winter readiness. Past history and issues with immersion heaters are resolved. System engineer noted that the immersion heater may not keep up if the temperature drops too low. See ONOP for actions whereby temporary heaters are staged to mitigate. Also, see last column. 90F – U4 EDG Control Building temperature alarm 90F – U4 EDG Control building ventilation fan auto start	With the engines running, their respective SR vent fans and radiator fans (U4 only) maintain the room temps below the 104°F limit for electronics and instrumentation. If this criterion is being approached with the engines in standby, the respective vent fans and radiator fans (U4 only) may be manually started.	Currently, the immersion heaters maintain the lube oil above the 85°F operability limit. If this is challenged by extreme low temperatures, 0-ONOP-103.2, Cold/Hot Weather Conditions, have heat blowers stationed in the rooms to keep the lube oil temps above the operability limit.	4B EDG Control Room HVAC Ground issue has been corrected. HX are the engine radiators and the lube oil coolers. No cleaning expected/required. U3 EDGS have new radiators as part of Fall 2019 CMM. Normal Ops and SE monitoring especially during surveillance runs. Also noted: AR 2296287 / WO 40645372 - TCV-4-111B leaks by, causing low lube oil temps during cold ambient conditions. Ops able to maintain lube oil temp above 100F alarm setpoint and 85F operability limit by manual control of immersion heater (previously evaluated under AR 1721697). Corrective action is to replace valve during next CMM 2021.

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect -10 F / – 20F	Comments
					If fuel is found to be hazy during low temperature conditions, the fuel would need to be warmed, filtered, diluted with kerosene or replaced. The fuel should be checked for haziness during extreme low temperature conditions. 0-ONOP-103.2 currently requires blowing down air start flasks to remove moisture during low temperature conditions.	

Scope

8. Biological / Chemistry / Environmental

Lead:

Summary

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect – 10F / -20F	Comments

Scope

9. Programs

Lead: Dave Laguardia, Mitch Guth

Summary

The information in this section was provided by the PdM engineers based on vibration, thermography, and oil analysis experience.

Site **PTN** **System / Component**	**Historical High / Low** **(Deg F)**	**Heat Sink and / or Ambient Limit** **(Deg F /** **Max and Min**	**Operability or Functional Limit based on additional analysis/calculation** **(Deg F / Describe)**	**Effect + 10F / + 20F**	**Effect – 10F / -20F**	**Comments**
ICW motor bearing temp						During elevated summer temps and no breeze, ICW motor brg temp alarms have occurred. The condition is typically resolved with replacing air filters and relocating temp equipment in the area blocking air flow. Also, not all the ICW motors have switched over to synthetic oil. The synthetic oil provides higher operating margin (higher kappa value) when operating at or above the bearing temp alarm set point. Switch over 3A, 4A, 4B ICW motors to X95 oil during the next scheduled motor PM's.

Scope

10. Material / fluids

Lead:

Summary

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect – 10F / -20F	Comments

Scope

11. Licensing / Environmental

Lead: Mitch Guth

Summary

Site PTN System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F / + 20F	Effect – 10F / -20F	Comments

Scope

12. Operations

Lead: Michael Coen

Summary

In response to elevated intake cooling canal temperatures in 2014, several initiatives were implemented in attempts to maintain margin to key systems.

- A Technical Specification change was approved raising the limit on ultimate heat sink temperature from 100 to 104F.
- Operating margin to hot temperatures was improved with implementation of supplemental cooling systems (Turbine Plant Cooling Water – available, Component Cooling Water – available, and Intake Cooling Water – removed).
- TPCW SCS is available and will be place in service prior to the summer readiness period. CCW SCS is in service and is split between bulk cooling CCW and RCP seal water injection cooling. ICW SCS is removed and will be a large expensive project to replace ($10M).
- Wells and pumps were installed to provide makeup to the canal system. This was used to lower canal temperature, reduce salinity, and makeup for lower canal levels. The wells installed near the intake to the plant, Loch Rosetta, are currently not in use. Other wells on the west end of the canal system are in service to address canal salinity. Efforts are in place to increase the well pump capacity from 18 MGD to 34 MGD by end of May 2021.
- A sprinkler cooling system was placed on top of containment. This was not effective and may have contributed to water intrusion problems.

Site **PTN** **System / Component**	**Historical High / Low** **(Deg F)**	**Heat Sink and / or Ambient Limit** **(Deg F /** **Max and Min**	**Operability or Functional Limit based on additional analysis/calculation** **(Deg F / Describe)**	**Effect + 10F / + 20F**	**Effect – 10F / -20F**	**Comments**

Scope

Operational guidance for extreme temperatures is contained in 0-ONOP-103.2, Cold/Hot Weather Conditions, and 0-ONOP-011.1, Intake Canal Low Level or High Temperature.

Hot temperature response guidance includes reducing power based on UHS temperature and generator cooling limits. Extreme hot temperatures (+10/20 F for 7 days) would likely result in plant shutdowns required based on exceeding Tech Spec temperature limits (ultimate heat sink, containment, and refueling water storage tank).

Cold temperature response guidance includes running diesel power components, staging and energizing heaters, moving water through idle systems/piping legs/tanks, and installation of insulation on instrument lines (Temporary Modification). Extreme cold temperatures could result in frozen instrument lines on Tech Spec required tanks (RWST, PWST, DWST, and CST) and the uninsulated vertical pipe between component cooling water head and surge tanks (stagnant water). Failure to maintain RWST (39F) and BAST room (62 F) temperatures above Tech Spec limits would result in plant shutdown.

Recommendations:

- Implement modification to run power and heaters to key plant areas to mitigate cold weather and prevent running power cables through high risk fire zones requiring continuous fire watches.
- Implement modification to install insulation on instrument lines (Tech Spec required tanks – RWST, PWST, DWST, CST; and Pumps/Components that have trip features – Feed pump low pressure trip)
- Develop strategy to prevent freezing of CCW head tank and associated piping.

Limiting operator response / activities

- Ultimate Heat Sink 104F. Tech Spec 3.7.4 – Hot Standby in 12 hours and Cold Shutdown within the following 30 hours
- Containment Temp 120 (14 days)/120F. Tech Spec 3.6.1.5 – Reduce within 8 hours, or Hot Standby within next 6 hours, and Cold Shutdown within the following 30 hours.
- Refueling Water Storage Tank 39F / 100F. Tech Specs 3.1.2.5/3.5.4 – Restore within 1 hours, or Hot Standby within 6 hours, and Cold Shutdown within the following 30 hours
- Boric Acid Storage Tank room 62F. Tech Spec 3.5.4 – Restore within 70 hours, or Hot Standby within next 8 hours, and Cold Shutdown with the following 30 hours.
- Main Generator RTD Hi / Hi Hi Temp Alarm (variable setpoints)- Reduce reactive load. Trip reactor and turbine.

13. ERCOT Failures Equipment Review

Lead:

Contact industry counterparts / review utility releases to determine causes of equipment failures

Scope

14. Turkey Point trip and down power review

Lead: Michael Coen

List all plant trips and whether they were at all temperature related

Scope

15. Comparison of recommendations versus summer and winter readiness plans

Lead: Michael Coen

Zachry Nuclear

ENGINEERING STUDY
R21002

FPL PTN WINTERIZATION STUDY

REVISION 0

QA CLASSIFICATION: NON-SAFETY RELATED

Prepared by:	Ronald D. Ploof	10-18-2021 Date
Reviewed by:	Lloyd E. Philpot	10/18/21 Date
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Project No. 114264

ZACHRY

Contents

1 PURPOSE

The purpose of this study is to present the results of the Phase 1 "winterization" evaluation for Florida Power & Light's (FPL) Turkey Point (PTN) site located in Homestead, FL. The intent of the evaluation is to identify plant systems, structures, and components (SSCs) that are critical to power generation and susceptible to the adverse effects of freezing during a postulated weather event. Fire protection (FP) systems are included as well since their proper performance is a condition of the PTN license. Phase 1 is intended to identify critical components and present options for preventing/mitigating the effects of the cold weather. Phase 2 performs walkdowns to confirm and select the most effective preventing/mitigating method on a component-by-component basis.

2 EXECUTIVE SUMMARY

The weather conditions selected for PTN are severe and as such many systems and components are affected and potentially threaten power production either directly or as a condition of the PTN license. The methods identified for mitigating the effects of cold weather were a combination of adding heat tracing, adding insulation, changing system operation, adding temporary heating, or repairing leaks as they occur. The selected method was based on the system and potential consequences of damage. Large scale temporary tenting and use of portable heaters was not deemed feasible given available personnel and the assumed advanced warning the station would have of the event.

3 BACKGROUND

In February 2021, a low temperature event resulted in a widespread loss of electricity production over the region operated by the Electric Reliability Council of Texas, Inc. (ERCOT). This was due to poor extreme weather preparation by the utilities.

On February 15, 2021, at 5:26 a.m., South Texas Project Unit 1 automatically tripped due to low steam generator water levels following the loss of feedwater pumps 11 and 13. The loss of the feedwater pumps was caused by a frozen sensing line for the feedwater pump low suction pressure trip. The sensing line is exterior to the turbine building and was not insulated.

FPL/NextEra Energy has elected to proceed with upgrading PTN to ensure uninterrupted power generation during the following postulated cold weather event:

Weather Parameter	PTN
Cold Weather Duration	96 hours
Wind Speed	10 mph
Maximum Temperature	37°F
Minimum Temperature	19°F
Temperature Profile	Sinusoidal (ASHRAE Diurnal)

Multiple power industry guides are available from the below list to assist utilities in establishing a cold weather mitigation plan and can serve as the basis for the recommended actions.

- U.S. Nuclear Regulatory Commission (NRC) Office of Inspection and Enforcement (IE) Bulletin No. 79-24: Frozen Lines, published in 1979 (Reference 1)
- Institute of Nuclear Power Operations (INPO), "Operating Experience Digest (OED) 2007-16 Cold Weather Preparations," September 2007 (Reference 2)
- INPO Rapid Operating Experience (OE) "Severe Weather Program – Extreme Cold," March 2021 (Reference 3)
- Information Notice No. 98-02: Nuclear Power Plant Cold Weather Problems and Protective Measures (Reference 4)
- NRC Inspection Manual, Inspection Procedure 71111, Reactor Safety-Initiating Events, Mitigating Systems, Barrier Integrity, Issue Date 10/28/2011 (Reference 5)
- U.S. Nuclear Regulatory Commission Regulatory Guide, Office of Nuclear Regulatory Research, Regulatory Guide 1.151, Revision 1, Instrument Sensing Lines (Reference 6)
- North American Electric Reliability Corporation (NERC) "Reliability Guideline Generating Unit Winter Weather Readiness – Current Industry Practices – Version 3" (Reference 7)

Existing FPL winter preparation procedures were consulted as part of this study. Where applicable, activities specified in these procedures were included within the recommended mitigation strategy:

- OP-AA-102-1002, Nuclear Fleet Administrative Procedure, Seasonal Readiness, Revision 35 (Reference 8)
- 0-NOP-103.2, Turkey Point Plant, Off Normal Operating Procedure, Cold/Hot Weather Conditions, Revision 11 (Reference 9)

4 INVESTIGATION

The investigation addressed by this study establishes the population of plant systems and components that need protection from freezing. The investigation is intended as a continuation of the study "Turkey Point Extreme Temperature Reassessment" dated March 2021, (Reference 10). The continuation of the study was conducted in four steps as described in the subsections that follow. Results of the investigation are provided in Section 6.

4.1 Phase 1 Step 1 – Analysis of Freezing Phenomena

Step 1 established the nature and extent of the freezing potential during the postulated weather event. This entailed the use of analytical methods to quantify the freezing process inside pipes of various sizes and the benefit of incremental mitigation steps taken to prevent or slow the freezing process such as the application of insulation of various thicknesses. This process uses analytical tools developed in Excel and GOTHIC Version 8.3. The methodology is provided in the attachments C and E to this study. The use of GOTHIC is documented in Reference (12) for tracking purposes only.

4.2 Phase 1 Step 2 – P&ID Screening

Step 2 conducted a rigorous screening and evaluation of system Piping and Instrumentation Diagrams (P&IDs) to identify components that are (1) critical to power generation and/or maintaining compliance with plant technical specification limiting conditions for operation and are (2) susceptible to the adverse effects of extremely cold temperatures to the point that, if not properly mitigated during these cold temperatures, could experience a loss of function. This screening was conducted as follows:

- Identify the population of systems and system P&IDs to be evaluated. This was accomplished via a master listing of plant documents provided by FPL and a specific search of these documents for drawings with flow diagram, P&ID, PID, or Piping and Instrument in the drawing title. The compiled list of drawings evaluated is included in Attachment A.
- Identify the priority of the P&ID:
    - Priority is "No" if components shown on the P&ID are within a building or enclosure. These P&IDs are not evaluated any further since critical components on any of these will automatically be addressed through the environmental controls taken for the enclosure (i.e., space heating of enclosed spaces).
    - Priority is "Yes" if one or more components shown on the P&ID are clearly indicated as being located outside and, therefore, subjected to the extremes of the postulated weather event. These P&IDs are evaluated more thoroughly to break down the "outside" portions of the system into unique segments for further evaluation.
    - Priority is "Maybe" if, subject to the limitations of the location identification characteristics of the subject P&ID, one or more components shown on the P&ID might be outside and, therefore, potentially subjected to the extremes of the postulated weather event. These P&IDs are also evaluated more thoroughly to break down the potentially "outside" portions of the system into unique segments for further evaluation.
    - Additional drawings such as General Arrangements or Plans and Sections were used if available for the areas of interest to provide further clarity on component locations.
    - Since the turbine building (TB) is an open deck structure, the turbine, steam, condensate, and feed systems were all treated as outside systems with priority of "Yes" or "Maybe".
- For Priority "Yes" and "Maybe" P&IDs, divide the system into unique segments and evaluate these segments for the function, susceptibility to freezing and recommended mitigation strategies. The detailed evaluation is documented in a separate spreadsheet whereas the P&ID markings provide the visual reference for component relative location in the system.

4.3 Phase 1 Step 3 – Evaluation of P&ID Segments

Step 3 documents the evaluation of each component type contained within the segments identified on the P&ID. Each segment has one or more corresponding evaluation rows in the evaluation spreadsheet. Each component type contained within the segment has a unique row in the evaluation spreadsheet as needed to capture any unique nuance of the component type's

susceptibility to freezing, the impact of freezing on component type's function, or the recommended strategy to mitigate the cold weather effects.

The evaluation captures the following specific information for each segment:

- ID – a unique row identification number
- Plant – identifies site
- Unit – uniquely identifies either Unit 3 or Unit 4
- System – identifies the unique system being evaluated. Attachment B lists the plant system designations as taken from 5610-M-3000, Sh. 1.
- P&ID – provides a cross reference to the specific drawing location of the subject segment.
- Segment – unique identifier for the selected P&ID.
- Types – a dropdown menu is used for consistent designation of component types of interest:
  - Cooling Towers & Intake Channel
  - Demineralizers
  - Heat Exchangers
  - Instr. Annunciation / Indication
  - Instr. Control / Protection
  - Instr. Local
  - Motor Operator Valve
  - Motors
  - Outdoor Tanks
  - Piping
  - Relief Valves
  - Strainers
  - Traveling Screens
  - Vents / Drains / Misc. Connections
  - Ventilation Dampers
- Component/Equipment – to identify the specific component of interest.
- Normally Operating – answer of Yes, No, or Standby used to identify if the segment as:
  - Yes (Main flow path flowing),
  - No (Not flowing), or
  - Standby (needed to be available to flow to perform a Safety Function)

- Operability/Functional Limit - Determine if the piping/component is required either for plant generation, or to maintain a Technical Specification with the Unit in Mode 1.
- Basis for Action – explains why this segment/equipment needs to be protected relative to impact on operability/functional limit above.
- Action Required – uses dropdown menu as follows:
  - Protect – physical plant change/modification (insulation, heat trace, etc.)
  - Mitigate – Operator Action required (e.g., swapping trains to keep water flowing in the system, opening valves to allow trickle flow)
  - None – no action required
- Recommended Strategies - documents the recommended strategy/strategies for the specific segment/component. Examples of protection strategies from least costly to more costly include:
  - No protection required,
  - Rotate operating trains to allow flow to prevent freezing in all trains,
  - Open selected vents and/or drains to allow for a limited trickle flow to prevent freezing,
  - Insulate the piping,
  - Insulate & heat trace the piping,
  - Note: in some instances, a strategy of enclosing subsets of systems or critical components and providing space heating to control the area temperature should be considered for more cost-effective temperature control. This alternative strategy was addressed in the walkdowns of the subsequent step.

4.4 Phase 1 Step 4 – Walkdown of Systems for Enclosures

Step 4 conducts a walkdown of the site to further investigate the compiled mitigation strategies documented in Step 3. The specific objective of the walkdown is to evaluate the feasibility of applying environmental temperature controls of specific areas of the plant that could be enclosed with the use of temporary barriers to contain the heat provided by the process piping (if warm enough) or through the operation of one or more temporary space heaters within the enclosed space. Space heating large areas could be a cost-effective way of addressing multiple critical components when compared to heat tracing and insulating. The results of the walkdowns will be applied to the evaluation spreadsheets through updated recommendations for mitigation strategies.

4.5 Phase 2 Step 1 – Walkdown of Components for Heat Tracing

Phase 2 Step 1 conducts a walkdown of the site for those portions of systems where protection was required and temporary enclosures or mitigating actions were not feasible based on Phase 1 Step 4 walkdown results. The walkdown will capture actual piping/tubing lengths and orientation of branch lines that do not have flow. In addition, general observations of local ambient conditions due to proximity of piping/tubing to warm equipment and building structures that could be used as basis for local ambient temperature remaining above freezing would be captured. Attachment N was created to capture individual branch line walkdown data. The

walkdown data will then be used to evaluate against the analysis data for branch lines in Attachment E.

4.6 Phase 2 Step 2 – Evaluation of Branch Line Field Data

Phase 2 Step 2 updates Attachment N with system operating temperatures and performs a check of the branch line length and temperature against the Attachment E curves to determine if insulation or heat trace is still required. System operating temperatures for PTN will be obtained from Piping Specification MN-3.10 Rev 9, Piping Class Summary Turkey Point Units 3 & 4 (Reference 14). If a deviation or explanation was required for the operating temperature chosen, Attachment N provides in the basis in the process temperature notes column. If a deviation or explanation was required for the operating temperature chosen, Attachment N provides the basis in the process temperature notes column.

5 ASSUMPTIONS

The following assumptions form the basis of the scope of this study and its approach:

1. Components located inside buildings or enclosures of any kind are considered managed by local space heating which is already a fundamental part of the FPL cold weather mitigation strategy (see References 8 and 9). No special heat tracing or insulation is targeted for components located in enclosures since enhanced containment with additional tarps and added heat with the use of space heaters will be an effective strategy to prevent freezing within the enclosures.

2. When addressing the addition of heat tracing and/or insulation, the threshold for freezing was set at 25% frozen for non-safety related components and 0% to 2% frozen for safety related components.

3. Stagnant or idle above ground systems process temperature is assumed to be 35°F.

4. Buried systems such as Fire Protection were assumed to be 40°F.

6 EVALUATION

6.1 The Freezing Phenomena (Step 1)

6.1.1 The Threat

Generally, water begins freezing when the temperature of the outside atmosphere reaches and is maintained below 32 degrees Fahrenheit. Water filled pipes freeze when heat is transferred from the water inside the pipe to the surrounding air. The material with which the pipes are made plays an important role in the bursting of pipes. Ice forms on the coldest surface (e.g., the pipe inner wall). The formation of ice will eventually grow radially and block the pipe. This has two primary effects that are to be prevented where possible:

- Blocked flow will cause a loss of function. This is most likely to occur in the smallest diameter pipes/tubes such as instrument sensing lines that are coincidently providing

critical input for component operation, control, and protection, loss of which could cause a loss of power generation.

- The water expands in volume by 9% when it freezes. If the water expands in a closed vessel or pipe and the pipe or vessel is not sufficiently strong to withstand the water volume increase, there is a chance the pipe or component will burst. This would result in a loss of pressure boundary integrity with common mode failure.

For the purposes of this study, the prevention/mitigation of freezing will only apply to stagnant lines. All power plant systems of interest that are operating (i.e., have water flowing) are not of concern because:

- Flowing water will not freeze when the flow rate is high enough. Generally, the minimum flow rate needed is very small compared to typical operating flow rates. See Section 6.1.2 for required flow analysis to prevent freezing of various pipe sizes and process temperatures under the assumed PTN ambient conditions.
- Operating temperatures are sufficiently above the freezing point preventing freezing from occurring at all.

6.1.2 Time to Freeze for Stagnant Systems with and without Insulation

A spreadsheet tool was developed for the FPL fleetwide assessment of the impact of the outside temperature on idle or stagnant water systems. The tool provides the percent freeze as a function of pipe diameter when the pipe contains stagnant water and is subjected to the postulated outside temperature and wind condition. The percent freeze is evaluated for each pipe diameter with no insulation to present a baseline condition and then evaluated with 1", 2", 3", or 4" of insulation to illustrate the positive impact of insulation on the reduction of the onset of or the degree of freezing that occurs.

6.1.2.1 The Effects of Insulation on the Time to Freeze for 4" Pipe

The time required to achieve the specified percent freeze is provided to establish a window of opportunity for taking prevention/mitigation actions such as initiating trickle flows or periodically swapping operating headers to minimize the duration of the stagnant condition. The following table provides an excerpt of the analysis of a stagnant 4" line with 0", 1", 2", 3", and 4" of insulation with a starting temperature of 35°F. The indicted time is in hours from the start of the postulated weather event. Times to freeze in excess of the event's duration of 96 hours are indicated with a "-".

Table 1 – PTN Time to Freeze for 4" Isolated Pipe Segment

Pipe	Ins.	Constant 10 mph Wind					No Wind				
Size	Thk.	0%	2%	10%	25%	50%	0%	2%	10%	25%	50%
(NPS)	(in)	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)
4	0	4.75	5.75	7.5	9.5	12	6.25	7.5	10.75	17.75	58.75
4	1	8.75	11.75	40	-	-	10	14	63.75	-	-
4	2	10.5	15.25	83.5	-	-	11.5	33.75	-	-	-
4	3	11.75	34.5	-	-	-	12.75	36.25	-	-	-
4	4	12.75	36.75	-	-	-	13.5	38.5	-	-	-

The basis for this analysis and the results for all pipe sizes are included in Attachment C.

6.1.3 The Effects of Trickle Flow on the Onset of Freezing

An effective method of preventing the occurrence of freezing is to maintain a minimum flow in what would normally be a dead leg. This can be accomplished through the selective opening of drains and/or vents in the system to maintain the desired minimum flow rate in the pipe of interest. The flow rate criterion is a function of the water type (fresh or salt water), the pipe diameter, the starting water temperature and the thickness of insulation, if any.

The tables below provide partial results of the PTN analysis for fresh water starting at 40°F with no insulation and with ½" insulation. Complete tables of results for both fresh water and salt water are included in Attachment D. The basis for this analysis was documented in Attachment N to Reference (11) and is also included in Attachment D for ease of reference.

Table 2 – PTN Minimum Trickle Flow to Avoid Freezing with 40°F Process Temperature

6.1.4 The Effects of Process Line Temperature on Dead Leg Branch Lines

Nominal Pipe Size (inch)	O.D. (inch)	Schedule -	I.D. (inch)	Nom. Header Temp. (°F)	Insulated (1/2-inch) (Y / N)	Minimum Flow to Prevent Freezing (Fresh Water) PTN (19°F)	
						(gpm)	(gph)
1/2	0.84	80	0.546	40	N	0.071	4.283
1	1.315	80	0.957		N	0.629	37.762
1 1/2	1.9	40	1.61		N	1.258	75.490
2	2.375	40	2.067		N	1.797	107.848
3	3.5	40	3.068		N	3.218	193.056
4	4.5	40	4.026		N	4.773	286.353
5	5.563	40	5.047		N	6.638	398.283
6	6.625	40	6.065		N	8.693	521.571
1/2	0.84	80	0.546	40	Y	0.0025	0.150
1	1.315	80	0.957		Y	0.0035	0.210
1 1/2	1.9	40	1.61		Y	0.0048	0.288
2	2.375	40	2.067		Y	0.0059	0.354
3	3.5	40	3.068		Y	0.0086	0.516
4	4.5	40	4.026		Y	0.0114	0.684
5	5.563	40	5.047		Y	0.0148	0.888
6	6.625	40	6.065		Y	0.0187	1.122

Branch lines without flow but not isolated from a relatively warm flowing process line can benefit from the convective and conductive heat from the warmer line. The extent of this benefit, in terms of avoiding freezing in the branch line, will be a function of the process line temperature, the branch line size and the length of the branch line (the distance from the process line). The

benefits are also a strong function of the orientation of the branch line connection relative to the process line. Upward vertical connections have the best benefit in that the natural circulation of the warmer water promotes heat transfer upward into the branch line. The opposite occurs for the downward vertical connection where natural circulation does not readily occur. The horizontal connection realizes some benefit but is substantially less than the vertical configuration. For example, a ½" line connected to a 200°F process line can be uninsulated for up to 15' in the vertical configuration but only up to 3.5' in the horizontal configuration. In the downward vertical configuration, a 200°F process line temperature offers no protection but is the low threshold for a protective benefit to start at higher temperatures albeit at much shorter lengths. Wind effects are substantial in that the outside convection film coefficient is a significant contributor to the heat loss from the branch line. To quantify the sensitivity of the branch line to wind effects, a separate analysis was conducted for the ½" line under the "no wind" scenario. Furthermore, recognizing that the addition of insulation (without heat tracing) may be a cost-effective method of avoiding freezing, all pipe/tube diameters were re-analyzed with 1" of insulation applied.

For illustration purposes, a summary of all cases for a ½" tube connected to a 200°F process line is as follows:

Table 3 – ½" Branch Line Freeze Protection with 200°F Process Line Temperature

	Branch Length (distance from process line) Without Freezing		
Scenario	**Upward Configuration**	**Horizontal Configuration**	**Downward Configuration**
Uninsulated with wind	15'	3.5'	0'
1" insulation with wind	>> 15'	9'	1.5'
Uninsulated with No wind	>> 15'	8'	1'
1" insulation with No wind	>> 15'	10'	2'

The basis for this analysis and the extensive tables of results are included in Attachment E. Reference (12) documents the use of GOTHIC, Version 8.3, for the analysis contained in Attachment E for tracking purposes only. The initial model that Zachry created for branch lines with vertical up orientation was found not to have enough cells to allow the natural circulation mixing that occurs for this orientation. A new model was created with significantly more cells. However, this caused the computational time to increase by a factor of 5. The prior model would produce answers in less than 24 hrs. while the new required 4 or more days. Reproducing all the different diameter curves with all the preliminary temperatures and lengths would have taken months to complete. Zachry reviewed the actual field data for branch lines to determine the most prevalent temperatures, diameter, and lengths for vertical branch lines. The vertical model was then run for the smaller set of conditions. Attachment E curves for the vertical orientation were then updated. Some vertical diameters, lengths and temperatures were not analyzed. However, data from the horizontal orientation can be used in these cases which is conservative. For some vertical orientation cases, pipe diameters and temperatures all the way up to 400 degrees were not analyzed. In these cases, linear extrapolation of the lower temperature curve was done. Based on the nonlinear shape of the curves for pipe diameters that did have the full range of temperatures evaluated, a linear extrapolation is considered conservative. Tables have been produced from the curves in Attachment E for the vertical up orientation, pipe size, and temperature. Where horizontal data was used or extrapolation to higher temperatures was used, notes indicate the alternate source of data.

6.1.5 Space Heating of Enclosures

A simple GOTHIC analysis was conducted that defines the amount of space heating required to maintain components located within the heated enclosure at a temperature above freezing. The amount of heat required is a linear function in relation to the size of the enclosure with slightly different relations based on the materials that form the enclosure. Three materials were considered, concrete, steel, and PTFE. The analysis is included in Attachment F. Reference (12) documents the use of GOTHIC, Version 8.3, for the analysis contained in Attachment F for tracking purposes only.

6.1.6 Turbine Building Enclosure Study

A GOTHIC model of the PSL TB was created to evaluate the feasibility of trapping process heat by hanging tarps on exterior of the building and, thereby, maintaining general area temperatures above freezing. This in turn would provide reasonable assurance that critical components in the enclosed area would be prevented from freezing. The results of this analysis are presented in Attachment G.

The general conclusion of this study is that too many gaps would exist between tarps due to obstruction extending beyond the TB boundary to effectively maintain temperatures above freezing within 10-20 ft of the exterior tarp. The vertical tarp gaps on exterior and the horizontal tarps on the Turbine deck create a chimney affect aided by the assumed 10 mph wind. Even relatively small opening has significant air flow and area wide temperature impact due to 16 F ambient temperatures. In addition, the number, size, and complexity of deploying tarps was considered prohibitive given all other station actions that would be required. After a walkdown of the PTN TB, the same general conclusions were reached and a PTN model was not deemed warranted.

Reference (12) documents the use of GOTHIC, Version 8.3, for the analysis contained in Attachment G for tracking purposes only.

6.1.7 Refueling Water Storage Tank Temperature Study

The minimum allowable temperature for the RWST allowed by the Technical Specifications LCO is 39°F for PTN. Since the tanks are required to be maintained well above freezing, a GOTHIC model of the Refueling Water Tank (RWT) was created to evaluate the temperature transient of the tank with the assumed plant ambient conditions. The results of this analysis are presented in Attachment H. GOTHIC model runs have confirmed that with no insulation and an initial RWT temperature of 54°F, the minimum RWT temperature falls to 39°F over the four-day cold snap (Attachment H). The PTN RWST tanks are coated internally and painted on exterior. These coatings will provide some insulating properties. However, their heat transfer properties could not be found and were not included in the model. In addition, the ambient temperature modeled for PTN varies between 19°F and 37°F but the RWST analysis use 16°F and 37°F. Both of these factors provide conservatism. Furthermore, with 1 inch and 2 inches of insulation, the minimum initial RWT temperatures necessary to maintain RWT temperature above 39°F over the cold snap are 41°F and 40°F, respectively. Historic PTN temperatures were not available at the time of this study. However, PSL sampling data of the RWT temperature during winter conditions has shown temperatures as low as 60.5°F. Miami area temperatures are historically above Jenson Beach temperatures by a couple of degrees.

Reference (12) documents the use of GOTHIC, Version 8.3, for the analysis contained in Attachment H for tracking purposes only.

6.2 System P&ID Screening (Step 2)

The screening methodology described in Section 4.2 was completed. Heating, Ventilation, and Air Conditioning (HVAC) and Fire Protection (FP) drawings are called out separately due to the discipline-specific approach to their evaluation. Attachment A provides the results of the screening process. All P&IDs listed as "Yes" or "Maybe" in the "Priority" column were evaluated in greater detail since they contained one or more components that were or could be subjected to the outside temperature of the postulated extreme weather event.

6.3 Evaluation of P&ID Segments (Step 3)

6.3.1 Fire Protection

The entire fire protection system is normally in a standby mode. The jockey pump may start periodically to restore pressure due to minor leaks, but this does not generate any flow in the main system. A significant portion of the fire protection systems are above ground and exposed to ambient conditions. The fire system is not required for power production or part any Technical Specification LCO. As such, the FP system does have a TS LCO action statement that requires plant shutdown. However, the FP system is part of the plant license and is required to manage risk.

Fire Protection systems were evaluated by a fire protection engineer following joint conversations with PTN and corporate fire protection system stakeholders. The white paper included as Attachment I was prepared to document the agreed upon strategy.

A system-wide mitigation strategy involving the use of minimum flow through dead legs in branch lines off the main fire protection system header to prevent freezing was investigated for PSL. Due to the number of manual actions that would be necessary to execute opening all the drain valves, a second evaluation was done to determine the required trickle flow to protect the FP header supplying two hose stations on each elevation of the TB, 1 hose station in the Auxiliary Building, and the Emergency Diesel Generator Buildings for each Unit. Since the PTN FP system has relatively the same number of systems, the results were expected to be the same as PSL. Therefore, the entire PTN FP system was not evaluated for required trickle flow. Attachment J determines the required trickle flow for the Fire main to the power block and at least two hose stations for each unit TB floor elevation.

FPL decided to protect the FP main system's ability to provide manual suppression capability and utilize compensatory actions such as fire watches and control of ignition sources if automatic suppression systems become inoperable. Implementation of the white paper strategy for fire protection systems is included in Attachment L and Attachment N (Turbine Building portions only).

6.3.2 HVAC Systems

HVAC systems were evaluated by a single HVAC engineer following discussions with the FPL site HVAC engineer. Attachment K summarizes the general approach to mitigating freezing concerns with the variety of commodity types found in the plant HVAC systems. The evaluation

of HVAC components in accordance with this general approach is included in the overall component evaluation of Attachment K and as revised in Attachment N.

6.3.3 Existing Building Temperature Control

Site building housing critical components were evaluated to determine if ambient conditions within the building would remain above freezing or TS limits as applicable. The review considered historic data, existing cold weather procedure actions and ventilation system operation.

- Auxiliary Building (AB)

  The AB has significant thermal mass in the interior and exterior concrete walls. In addition, there are internal heat loads due to pipe and electrical equipment heat loads. The building envelope is relatively tight due to concerns with contamination/gas and monitoring. The existing cold weather procedure directs all the AB supply fans stopped and one exhaust fan left running if AB temperature falls below 67°F to control temperature. However, the AB HVAC operating procedure 0-OP-060 (Reference 15) does allow all AB exhaust fans to be secured provided compensatory measures for radiation monitoring are implemented. The BAST room TS limit is 62°F since it has higher boric acid concentration than the RWST. One AB exhaust fan provides a flow of 40,000 cfm. With one of the AB exhaust fans running, additional supplemental heaters should still maintain temperatures. Raising 40,000 cfm of air from 28°F (37-19/2 = 24) air to 62°F would require approximately 430 kW of heat which could be done with portable heaters but not practical. The air flow out of the BAST and Charging rooms would be less than entire exhaust fan flow is 2,100 CFM and 1,700 CFM respectively (Reference 16). Attachment F provides the necessary heat for a concrete enclosure 20 ft tall to maintain the room at 50°F with the lower PSL ambient temperatures. The analysis assumes a small opening of 4 inches square for in leakage and 1 inch for exhaust. Assuming a room floor area of 2,500 ft2 which is larger than either the BAST or Charging rooms, 8 BTU/sec or 8.4 KW would be required to maintain the room at 50°F. The required room BAST requires a temperature or 62°F and the AB exhaust fan will impose some forced flow out of the room higher than the natural circulation air flow in the model. The energy required to heat the BAST and Charging room air flows assuming the lowest ambient for PTN (19 F) and a room temperature of 62 would be 28.6 and 23.1 KW respectively. The air entering the rooms will not be at ambient temperatures since some building heat will warm the air before it gets to the BAST or Charging rooms. The Charging pump room also has heat input from the pump motors and letdown process piping. . The existing procedure installs a 30 KW heater in the BAST room and 15 KW heaters in each Charging pump room. Based on the Attachment F analysis, the portable heaters appear to have the required capacity. Given the ability to stop all AB fans, the use of portable heaters should be adequate.

- Emergency Diesel Generator Building

  The EDG building has large ventilation openings at ground level in the exterior of the building without any dampers. The lube oil lines for the EDG must remain above 100°F. The lube oil system has permanently installed heaters and lube oil pumps circulate oil, but excessive ambient losses may exceed the capacity of the heaters. Jacket water on exterior of the room must be maintained above freezing which will occur through lube oil heat. Anti-corrosion additives to the jacket water lowers the freezing point such that freezing is not a

concern. Inside the room jacket water has internal heaters. The existing cold weather procedure installs a 15 KW heater in each room.

- Other Buildings
    - SFP Building- The SFP Building will remain above freezing through heat loss from the pool.
    - Control Building- The HVAC system has heating capability. Electrical equipment will also provide a source of significant heat to the building.

6.3.4 All Other Plant Systems

The component evaluation methodology described in Section 4.3 was completed. The results are compiled in the System Evaluation contained in Attachment L and includes the following mitigation strategies:

- Do Nothing
    - Freezing will not occur

      Many segments of critical systems were deemed not to be susceptible to freezing due to process flow and temperature or process medium. No action is required for these segments.

    - Allow Freezing

      Doing nothing to prevent freezing means that the consequences (loss of function, loss of pressure boundary, or general component damage) is considered acceptable from the limited perspective of not causing a loss of power generation or violation technical specifications or violation of other conditions of license. The cost of this decision, in terms of money/effort not spent on prevention/mitigation must be weighed against the cumulative cost to repair/replace damaged components due to common mode failures at multiple locations. No attempt has been made as a part of this study to quantify this cost/benefit since the decision to protect or not was based solely on the direct threat to power generation or the indirect threat through violation of technical specifications or conditions of license.

    - Rely on Process Line Heat Source or Heat Capacity of Stagnant line

      If the process line is warm enough and dead leg branch legs are close enough, the heat conduction and convection from the flowing process line to the branch line may be sufficient to keep the branch line from freezing. No attempt was made during phase 1 of this study to establish actual lengths of branch lines to determine the feasibility of this approach. Where branch line protection was deemed important to maintain a critical pressure boundary, control, or protection function, heat tracing and/or insulation was recommended with the intention that a future line-by-line assessment of heat tracing implementation would use Attachment E and consider whether proximity to the process line precludes the need for heat tracing.

      For larger diameter stagnant systems such as cross connect or bypass lines, sufficient thermal mass is available such that total freezing does not occur over the 96 hrs period.

Attachment C provides the pipe sizes and % freeze that will occur for PTN. If the segment in question met the freeze criteria, no protection was required.

- Isolate and Drain Dead Leg Piping

  In certain instances, it is recommended that selected dead legs be isolated and drained of water to eliminate freezing as an issue altogether. This is reserved for segments that have no impact on maintaining 100% power and/or maintaining the operability of safety-related systems. Selective removal of local instruments that do not provide an alarm, control, or protection function is also recommended to avoid damage from freezing. The cumulative effort to complete these activities on a large scale, however, may prove to be an excessive burden on plant staff during the winter season.

- Manipulate System Flows

  For these recommendations, it is recognized that system operating temperatures and flow rates are sufficiently high to avoid freezing in operating lines. Idle/standby headers, however, are subject to freezing unless the operating headers are routinely swapped to initiate flow through the normally idle header. The frequency of header swapping should fall within the time to freeze analysis included in Attachment C. The demand on plant operations staff would have to be assessed relative to the cost savings of not mitigating by other means such as heat tracing the idle headers which, for consistency and flexibility of operations, would entail heat tracing all headers.

- Provide Wind Block

  The wind component of the postulated weather event has a significant effect on the heat loss of dead leg piping. Erecting temporary barriers to shield critical components from the wind will significantly reduce the likelihood of freezing. However, as shown in Table 2, this strategy is most effective in protecting smaller pipes and tubes with the greatest effect noted in uninsulated pipes and tubes as shown in Table 6 (excerpt of Table 4). Note that this result is for an uninsulated ½" tube connected to a 200°F process line.

  Table 4– Effect of Wind Block on an Uninsulated Branch Line

	Branch Length (distance from process line) Without Freezing		
Scenario	**Upward Configuration**	**Horizontal Configuration**	**Downward Configuration**
Uninsulated with wind	15′	3.5′	0′
Uninsulated with No wind	>> 15′	8′	1′

- Provide Temporary Enclosure

  Providing a temporary enclosure (without the addition of space heaters) is reserved for those components/systems that provide some element of process heat. Use of a temporary enclosure provides two immediate benefits. First, it will provide a wind block that will significantly improve the freeze resistance of smallbore pipes and tubes within the enclosure. Second, it will serve as a containment barrier that will trap process heat generated within the system and use that heat to keep the general area above freezing. Whether or not to include additional space heating will depend upon the amount of process heat that is available in the operating system contained.

- Provide Temporary Enclosure with Added Heat

  For cases where there is no process heat being provided within the containment barrier or the process heat is insufficient to keep other dead leg components above freezing, the addition of heat via temporary space heaters is an effective way to protect a large grouping of components.

- Add Insulation

  Adding layers of insulation can be effective in protecting piping from freezing. The effectiveness, however, is limited to larger bore piping as shown in Tables 1 and 2 unless the small-bore line is connected to a warm process line as shown in Attachment E. However, the small-bore lengths could not be obtained from P&ID and piping drawings do not exist for the small-bore lines. Therefore, heat trace was identified as the default protection until phase 2 walkdowns.

- Add Heat Tracing and Insulation

  Adding heat tracing is the most effective method of ensuring the proper freeze protection of piping, most importantly for the most vulnerable small-bore instrumentation lines supporting critical control and/or protect functions related to plant operation. Heat tracing and insulating can be an expensive modification and should be performed for lines that cannot be protected by other means already discussed. However, the small-bore lengths could not be obtained from P&ID and piping drawings do not exist for the small-bore lines. Therefore, heat trace was identified as the default protection until phase 2 walkdowns.

6.4 Walkdown of Systems for Enclosure (Step 4)

PTN system walkdowns were completed May 24 thru 28, 2021. As expected, the walkdowns confirmed that the use of temporary enclosures created from tarps could be an effective mitigation strategy by either trapping process heat or containing supplemental heat. This would be a cost-effective method for protecting large numbers of critical segments. A system-by-system summary of the walkdown results is included in Attachment M. A review of Attachment M was performed by FPL of mitigation recommendations which is captured in Attachment M. FPL project team decided the totality of the tarping and portable heaters was not achievable with expected warning time for a cold event (48 hrs) and the available station resources. The decision was made not to add anymore tarping than already exist in the cold weather procedure. Following the walkdowns, the component evaluation results of Attachment L were updated to include the final recommendations for temporary enclosure as a means of protection.

6.5 Walkdown of Components for Heat Tracing (Phase 2 Step 1)

After the decision was made that enclosing the TB with tarps was not feasible or effective and additional areas outside the TB were also not feasible, it was decided to perform a walkdown of the systems within the TB to see if heat tracing could be eliminated based on system temperature, line size, length, and orientation. Once necessary field data was acquired, it could be compared to the graphs in Attachment E for exclusion. Those lines/components identified in Attachment L requiring heat tracing that were located within the TB, were extracted from Attachment L and Attachment N was created. Attachment L used a single component entry for vents, drains, and instruments since they were small bore and would not be able to be excluded

without field data. Consequently, takeoffs were done for each vent, drain, and instrument from the P&ID and additional rows were added to the spreadsheet for each component to allow recording of field data. The following fields were added to capture the necessary TB component field data in Attachment N:

- **Component**- Identifies the specific vent, drain, instrument line within a system segment. Typically, the end device is chosen as a unique identifier for the line. For piping, the pipe ID or class was chosen.

- **Pipe / Tube Dia (NPS)-** Diameter of line if identified on P&ID. If not, field estimate was done.

- **Length (ft)-** The total length of the line was estimated using field measurements. The purpose of this length was to provide a total length of piping for comparison to graphs in Attachment E to eliminate heat tracing (HT). In addition, it provides heat trace vendor total length of pipe for bidding purposes. Tolerances used were <4ft, +/-0.5 ft >4 ft, +/- 1 ft

- **Orientation-** Identifies where the branch line (Vents / Drains / Instruments Only) comes off the main pipe run and the orientation of its route.

    - TV = Top Vertical, the branch line penetrates the top of the main pipe run (typically a vent) and the route goes up vertically.

    - BV = Bottom Vertical, the branch line penetrates the bottom of the main pipe run (typically a drain) and its route is vertically down.

    - H = Horizontal, the branch line penetrates the main pipe run on the side (90 degrees from top) and the route continues horizontally.

- **Already Insul**- (Y/N)- Does existing pipe have insulation. No effort was made to determine insulation thickness. Thickness can be assumed based in insulation specification. An "I" added to any of the above orientation codes would indicate that the branch line is already insulated (e.g., TV-I represents an insulated top vertical orientation).

- **Protect-** Recommendation for protection based on initial walkdown data. At the time of the walkdown not all Attachment E branch line analysis was done.

    - Insulate (I)

    - Heat Trace (HT)

    - Mitigate (M)

    - Not Applicable (N/A ...e.g., no action req'd)-

- **Notes-** any location specific information that may allow HT to be avoided such as local heat sources.

6.6 Evaluation of TB Branch Line Field Data (Phase 2 Step 2)

After the field data was entered into Attachment N for systems within the TB, an evaluation was conducted to determine if Attachment E could be utilized to eliminate HT. Attachment E evaluated several diameters, temperatures, and singular orientations rather than combinations of orientations. The field data was modified in a conservative direction to select a diameter, temperature, and a singular orientation that exists in the Attachment E analysis. In cases where a conservative match could not be found, HT was identified as the default protection strategy. The following spreadsheet field definitions were used in performing the evaluation of the field data:

- **Process Temp (F)** – this field identifies the temperature of the process line at the root of the subject branch line. It is this temperature that would be the primary influence on the feasibility of branch line self-protection. Temperatures were determined from operating temperature data contained in pipe specifications, heat balances, or operating logs, where available, for heated process lines. For lines that do not contain process heat, conservatively low values were chosen to reflect ambient conditions.

- **Notes** – provides clarification for selected process temperature where warranted. Notes are provided at the end of Attachment N where they apply.

- **Adjusted Orientation** – This field shows the actual orientation used in the branch line self-protection assessment to ensure the application of the self-protection analysis falls within the bounds of that analysis. Essentially, this field reduces many complex orientations to the fewer simple orientations represented in the analysis. Because the self-protection effect was best for top vertical (TV or TV-I) orientations, less effective for horizontal (H or H-I) orientations, and generally ineffective for bottom (BV or BV-I) orientations it was important to bound the complex orientations based on the most conservative element in it. For example, a top vertical orientation that immediately turns horizontal would be evaluated under the criterion of the horizontal orientation. Likewise, if it subsequently turns downward, the downward vertical orientation effect would be assumed. The only alternative to this approach would be a unique analysis for every unique orientation which was beyond the intended scope of this effort.

- **Diameter Used** – For those instances where there was not an exact match for the actual diameter in the field and the analyzed diameters, the next lowest analyzed diameter was selected as a conservative representation of the self-protection of the subject line. This is conservative in that there is a strong correlation between pipe diameter and self-protection…larger diameters being able to self-protect for greater lengths than smaller diameters.

- **Rounded Temperature (F)** – to facilitate a straightforward lookup function for the analysis results for protected length of branch line, all process temperatures were rounded down to the tens place (e.g., 396°F rounded down to 390°F) and any temperature that exceeded 400°F was rounded down to 400°F.

- **Max Allowed Length (feet)** – This is the lookup value obtained from the worksheet "Unprotected Length Lookup Table" based on the matching of lookup string of subject and lookup string of analysis results. A return of "Not Analyzed" means that the subject line is not represented in the population of analysis cases.

- **Branch Line Protected** – This is the result of a simple comparison of the self-protected length of branch line to the actual length of the branch line derived from the walkdown. If the Max Unprotected Length is greater than the actual length, the branch line can be considered self-protected. Likewise, if the actual length is greater than the Max Unprotected Length, the branch line can be considered not self-protected.

- **Analysis Result:** Heat Trace (HT), vs. Insulate (I) vs. Mitigate (M) vs. Already Insulated (AI) vs. No Protection Required. This is a simple check of the prior cell (described above) in that, if the branch line is self-protected (Yes in prior cell) then "No Protection Required" is reported out. If the branch line is not self-protected then this cell defaults to the prior recommended action which would include Heat Tracing (HT), Insulating (I), or initiating other Mitigating (M) strategies.

The results are captured in Attachment N. The results showed significant quantity of heat tracing required.

6.7 FPL Review of Phase 2 Heat Tracing Scope

FPL assembled a team of Engineers and Operations personnel to review the results. The team decided to utilize a risk approach to some lines identified in Phase 2 for heat tracing. The team developed the following three methods to eliminate some heat trace:

1. Small-Bore Dead leg Branch Lines Open to Flowing System

   Based on observed conditions in the field, the analysis results in Attachment E appear to be overly conservative. Conduction heat transfer most likely extend farther down the pipe. For a branch line to burst, freezing needs to occur away from the end of the pipe such that an ice plug traps a water volume between the plug and the closed end of the pipe. Freezing would start on the end of the pipe since it is farthest from the process line and would be the coldest. Some sort of obstruction would have to block wind from the end of the pipe and only impinge somewhere in the middle. Short branch lines would generally see the same wind speed and coverage since there is very little length for an obstruction to block the wind in a portion of the pipe. In addition, most short branch lines are vents and drains that need to be accessible and would not have close obstructions. Based on Engineering judgment, short branch connection 2ft or less with the process pipe operating temperature of 100°F or higher, would be considered low risk for bursting and would be eliminated from heat trace scope. In some cases, walkdowns were identified to verify piping temperatures and local ambient temperatures to confirm engineering judgement for lines slightly greater than 2ft or with process temperatures less than 100°F.

2. Elevated Local Ambient Conditions

   Many areas of the TB are sheltered from the wind and hot process piping, or equipment heat losses keep the local area temperatures above ambient. Based on Operator observations, some areas would be expected to remain above ambient were identified and used as basis to eliminate some heat trace. Actions were identified in some cases to perform a walkdown to verify local ambient conditions.

3. System Leakage would be Acceptable

Systems that operate at low temperature and pressure would not produce significant leakage if freezing were to cause a small-bore line to rupture. Freezing ruptures typically produce cracks rather than guillotine breaks since over pressure is relieved as soon as leakage occurs. Systems or portions of systems that are not required by Technical Specifications, have flow margin or makeup capability, and leakage would not cause flooding, were evaluated for allowable freeze damage by the FPL review team. Where the system conditions were met for allowable freeze damage and access for temporary repairs were considered feasible, heat trace protection was eliminated.

The FPL review was not done for all segments requiring heat trace. Only systems with greater than 260 ft of heat trace were evaluated. The results of the FPL evaluation are captured in Attachment N in the following fields:

- **Final Protection Change** – This is the result of FPL's team evaluation for the final protection strategy. Either change in strategy or confirmatory actions or keep heat trace. This was not done for all components requiring heat tracing but initially only for long lines.

- **Follow-up Action** - A yes indicates that some follow up action is required to confirm the change in strategy. The required action is identified in the Final Protection Change field.

If no entry is made under the Final Protection Change, then the protection identified in column "Analysis Results" applies.

7 DISCUSSION OF RESULTS

7.1 Phase 1

A thorough screening of PTN systems was completed to identify components that are critical to maintaining power production and that are exposed to outside weather conditions. Such components are at risk of freezing during the postulated extreme weather event and, therefore, at risk of causing a loss of power or a violation of technical specifications if the freezing causes the loss of functionality of a critical component or system. The extent of freezing is a function of component size and nearby process line temperature as shown in Attachments C, D, and E.

Mitigation of this threat was addressed in phase 1 based on pipe diameter only and potential mitigation strategies with results captured in Attachment L. The actual length of branch lines was required to further eliminate the need for protection which is address in phase 2.

7.2 Phase 2

The goal for the FPL winterization project was to have all heat trace installed by 12/1/21. Phase 2 walkdown for all components identified in attachment L would require a significant number of resources and time to perform the walkdown. Given the project schedule, it was imperative to begin design and installation efforts as soon as possible. Therefore, it was decided to start with systems within the TB that required protection (HT or Insulation). The systems within the TB were identified by selecting associated P&IDs and only those system segments from Attachment L that required protection were captured in Attachment N. Individual component data was then entered in Attachment N and walkdowns were done to capture the required filed data. Zachry evaluated the field data to determine if HT or insulation could be eliminated based

on Attachment D or E analysis. In some cases, a higher amount of freezing was justified based on the component function. The final ZNE protection Requirements were captured in Analysis Results column of Attachment N. FPL performed further evaluation based on the risk methodology described in Section 6.7 and the results are captured in the Final Results column.

8 RECOMMENDATIONS

FPL should prepare for the next winter season by following the recommendations outlined in Attachment N for the TB scope. Additional walkdowns and evaluations are required to identify the scope of protection outside the TB. The following sections provide details on the remaining effort.

8.1 Phase 1 Remaining Task

8.1.1 The final strategy for the above ground FP piping has not been incorporated into Attachment L and needs to be performed.

8.1.2 Determine final Protection strategy for the RWT

8.1.3 Determine number of additional heaters desired for supplemental heating in the RAB and add to cold weather procedure

8.2 Phase 2 remaining Task

8.2.1 Perform Phase 2 P&ID take offs for individual vents, drains, and instruments for systems outside the TB and add to Attachment N.

8.2.2 Perform field walkdowns to capture lengths and orientation for vents, drains, and instruments outside the TB and add to Attachment N.

8.2.3 Perform protection evaluation for all components outside the TB based on field data captured.

9 REFERENCES

1. U.S. Nuclear Regulatory Commission (NRC) Office of Inspection and Enforcement (IE) Bulletin No. 79-24: Frozen Lines, published in 1979

2. Institute of Nuclear Power Operations (INPO), "Operating Experience Digest (OED) 2007-16 Cold Weather Preparations," September 2007

3. INPO Rapid Operating Experience (OE) "Severe Weather Program – Extreme Cold," March 2021

4. Information Notice No. 98-02: Nuclear Power Plant Cold Weather Problems and Protective Measures

5. NRC Inspection Manual, Inspection Procedure 71111, Reactor Safety-Initiating Events, Mitigating Systems, Barrier Integrity, Issue Date 10/28/2011

6. U.S. Nuclear Regulatory Commission Regulatory Guide, Office of Nuclear Regulatory Research, Regulatory Guide 1.151, Revision 1, Instrument Sensing Lines

7. North American Electric Reliability Corporation (NERC) "Reliability Guideline Generating Unit Winter Weather Readiness – Current Industry Practices"

8. OP-AA-102-1002, Nuclear Fleet Administrative Procedure, Seasonal Readiness, Revision 35

9. 0-NOP-103.2, Turkey Point Plant, Off Normal Operating Procedure, COLD/HOT WEATHER CONDITIONS, Revision 11 -

10. FPL Study "Turkey Point Extreme Temperature Reassessment", dated March 2021

11. Zachry Nuclear Engineering Evaluation 20-E04, ANO ECP Alternate Supply Evaluation, Revision 1, 01/28/21

12. Zachry Nuclear Engineering Evaluation 21-E02, Revision 0, "Use of GOTHIC, Version 8.3, for FPL PSL and PTN Winterization Studies"

13. Miscellaneous Piping and Instrumentation (P&ID) diagrams, see Attachment A for complete listing.

14. Specification MN-3.10 Rev 9, Piping Class Summary Turkey Point Units 3 & 4.

15. 0-NOP-060, Auxiliary Building HVAC, Rev 12

16. 5610-M-3060 Sheet 1, Auxiliary Building Ventilation, rev 27

10 ATTACHMENTS

Attachment	Pages
A. PTN Piping and Instrumentation Diagram List	21
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C. Freezing as a Function of Diameter	5
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ZACHRY

Attachment A

PTN Piping and Instrumentation Diagram List

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 0	5610-M-3012	P & I D SERVICE WATER SYSTEM TURBINE PLANT AREA	1	44	Yes		Y
Unit 0	5610-M-3012	P & I D SERVICE WATER SYSTEM AUXILIARY BUILDING AREA	2	27	Yes		Y
Unit 0	5610-M-3012	P & I D SERVICE WATER SYSTEM SOUTH SITE AREA	3	14	No	Domestic service water to south site area is not subject to TS requirements nor required for power operation. No protection strategies recommended.	Y
Unit 0	5610-M-3012	P & I D SERVICE WATER SYSTEM POTABLE WATER SUPPLY FOR WASTE DISPOSAL SYSTEM	4	6	No	Domestic service water to Radwaste Bldg is not essential for power generation.	Y
Unit 0	5610-M-3013	P & I D INSTRUMENT AIR SYSTEM SERVICE AIR DISTRIBUTION	1	26	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 0	5610-M-3013	P & I D INSTRUMENT AIR SYSTEM CROSSTIE	2				Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM UNITS 1 THRU 4 TANKS & CITY WATER SUPPLY	1	19	Yes		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM UNITS 1 THRU 4 SERVICE WATER PUMPS	2	34	Yes		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM UNITS 1 THRU 4 FIRE PUMPS	3	20	Yes		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM UNITS 1 THRU 4 FIRE MAIN HEADER LOOPS	4	17	Yes		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM UNITS 3 & 4 TURBINE PLANT AREA LOOP	5	30	Yes		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM SOUTH SITE AREA	6	16	Yes		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM DELUGE WATER SUPPRESSION AUX BLDG AND EDG UNIT 3	7	17	Yes		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM DELUGE WATER SUPPRESSION EDG UNIT 4	8	9	Maybe		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM HALON SUPPRESSION SYSTEM	9	5	No	Halon System, no water.	Y
Unit 0	5610-M-3016	FIRE PROTECTION SYSTEM DELUGE WATER SUPPRESSION C-BUS, XFMR, & L.O. UNIT 3	10	13	Yes	XFMR Deluge, outside	Y
Unit 0	5610-M-3016	FIRE PROTECTION SYSTEM DELUGE WATER SUPPRESION C-BUS, XFMR, & L.O. UNIT 4	11	18	Yes		Y
Unit 0	5610-M-3016	P & I D FIRE PROTECTION SYSTEM BACKUP FIRE	12				Y
Unit 0	5610-M-3019	INTAKE COOLING WATER SYSTEM SUPPLEMENTAL COOLING	1		Yes	ICW Supplemental cooling. Outside and run from Unit 5 to Unit 3/4 ICW Basket Strainers. The piping on this drawing does not require protection or mitigationn on its own, but to protect the SR ICW Supplmental connections to the main ICW piping, a mitigation strategy is called out for 5613-M-3019 Sh. 2 (5614-M-3019 Sh. 2) to flow this piping on a periodic basis.	Y
Unit 0	5610-M-3020	P & I D PRIMARY WATER MAKEUP SYSTEM SUPPLY FOR WASTE DISPOSAL SYSTEM	1	3	No	All equipment on drawing exists within the Aux building, Radwaste building, or connecting pipe tunnel. No outside exposure.	Y
Unit 0	5610-M-3021	P & I D WATER TREATMENT PLANT SYSTEM FILTRATION	1	19	Yes	Outside piping	Y
Unit 0	5610-M-3021	P & I D WATER TREATMENT PLANT SYSTEM DEMINERALIZER	2	23	Yes	Outside piping	Y
Unit 0	5610-M-3021	P & I D WATER TREATMENT PLANT SYSTEM WASTE NEUTRALIZATION	4	13	Yes	Outside Piping	Y
Unit 0	5610-M-3021	P & ID WATER TREATMENT PLANT SAMPLING SYSTEM	5	3	Yes	Outside piping	Y
Unit 0	5610-M-3025	P & I D CONTROL BUILDING VENTILATION CONTROL ROOM	1		No		Y
Unit 0	5610-M-3025	P & I D CONTROL BUILDING VENTILATION COMPUTER	2		Yes	Portions of safety related computer room chilled water system on Aux Bldg roof require protection	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 0	5610-M-3026	P & I D RADWASTE BUILDING VENTILATION HVAC SYSTEM	1	4	No	Eqpt located indoors, not required for power generation, or not susceptible to freezing	Y
Unit 0	5610-M-3046	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM BORIC ACID SYSTEM	1	30	No	Boric Acid tanks, BA batching tank, BA transfer pumps, and associated piping and instruments located within Auxiliary Building (Elevation 18'). No outside exposure.	Y
Unit 0	5610-M-3046	P & I D CHEMICAL & VOLUME CONTROL SYSTEM BORON RECYCLE SYSTEM	2	23	No	Piping, components, tanks, and instruments completely within the Aux Building (most on elevation 10.5'). No outside exposure.	Y
Unit 0	5610-M-3046	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM BORON RECYCLE SYSTEM	3	13	No	Most of drawing is abandoned in place. Other (active) piping and components would be located within the Aux Building. No outside exposure.	Y
Unit 0	5610-M-3046	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM BORON RECYCLE SYSTEM	4	19	No	Piping, components, tanks, and instruments completely within the Aux Building. No outside exposure.	Y
Unit 0	5610-M-3060	P & I D AUXILIARY BUILDING VENTILATION	1		No	Eqpt located indoors, not susceptible to freezing, or not required for power operation	Y
Unit 0	5610-M-3060	P & I D AUXILIARY BUILDING VENTILATION ELECTRICAL	3		No		Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID WASTE HOLDUP & TRANSFER	1	25	No	Piping, components, tanks, and instruments completely within the Aux Building (most on elevation 10.5'). No outside exposure.	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID LAUNDRY WASTE	2	13	No	Piping, components, tanks, and instruments completely within the Aux Building (most on elevation 10.5'). No outside exposure.	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID DRAIN HEADERS& SUMPS	3	19	No	Misc floor drain and equipment drain piping not susceptible to freezing; within Aux Building, Fuel Building, etc. RHR Pump and HX room sump pumps are located in Auxiliary Buildling (El. 10.5')	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID POLISHING DEMINERALIZER	4	10	No	Components abandoned in place and/or within Auxiliary building (El. 18'). No outside exposure.	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID WASTE EVAPORATOR FEED	5	17	No	Waste Holdup Tank, Waste Evap Transfer pumps, piping and components are housed within the Waste solidification building, adjacent to Aux Building and connected via underground pipe tunnel. No outside exposure.	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID WASTE EVAPORATOR PACKAGE	6	8	No	Waste Evaporator Package (x2) abandoned in place. Any piping and components exist within the waste solidification building.	Y
Unit 0	5610-M-3061	P & ID WASTE DISPOSAL SYSTEM LIQUID SAMPLING/ MONITORING/CHEMICAL ADDITION	7	9	No	Most equipment abandoned in place. Any remaining equip exists in the Aux Buildling or Radwaste building. No outside exposure.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 0	5610-M-3061	P & ID WASTE DISPOSAL SYSTEM LIQUID WASTE MONITOR TANKS	8	11	No	All equipment on drawing exists within the Radwaste building. No outside exposure.	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM SOLID SPENT RESIN STORAGE	9	13	No	Piping and components either in Aux Building, pipe tunnel (underground), or Radwaste Building.	Y
Unit 0	5610-M-3061	P & ID WASTE DISPOSAL SYSTEM SOLID HOLDUP & MIXING	10	4	No	Most equipment abandoned in place. Remaining piping already heat traced.	Y
Unit 0	5610-M-3061	P & ID WASTE DISPOSAL SYSTEM SOLID CONTAINER FILL	11	4	No	Equipment abandoned in place (entire drawing).	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM GAS WASTE COMPRESSORS	12	16	No	Equipment contained within Auxiliary Building. No outside exposure. Waste gas compressor packages located on El. 10.5'	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM GAS WASTE DECAY TANKS	13	9	No	Gas Decay tanks and components located in Aux Building Elevation 18'. No outside exposure.	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM GAS WASTE ANALYZERS	14	12	No	Gas Analyzer Package located in Aux Buildling Elevation 18'. No outside exposure.	Y
Unit 0	5610-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID MAINT BLDG FLOOR DRAIN SYSTEM	15	1	No	Misc sumps: Decon Shower, Radwaste container filling area, Radwaste building truck bay sump. No outside exposure.	Y
Unit 0	5610-M-3065	P & I D NITROGEN & HYDROGEN SYSTEMS NITROGEN SUPPLY	1	32	Yes		Y
Unit 0	5610-M-3065	P & I D NITROGEN & HYDROGEN SYSTEMS NITROGEN CAP SYSTEM	2	17	Yes		Y
Unit 0	5610-M-3065	P & I D NITROGEN & HYDROGEN SYSTEMS HYDROGEN & CO2SUPPLY	3	18	Yes		Y
Unit 0	5610-M-3069	EQUIPMENT AREA DRAIN SYSTEM –RETENTION PIT & OIL	1		No		Y
Unit 0	5610-M-3074	P & I D FEEDWATER SYSTEM STANDBY STEAM GENERATOR FEEDWATER PUMPS	1	8	Yes		Y
Unit 0	5610-M-3074	P & I D FEEDWATER SYSTEM DEMINERALIZED STORAGE & DEAERATION	2	40	Yes		Y
Unit 0	5610-M-3074	P & I D FEEDWATER SYSTEM NITROGEN SUPPLY TO DWST & COND STORAGE TANKS	3	12	No	Nitrogen system not susceptable to freezing	Y
Unit 0	5610-M-3075	P & I D AUXILIARY FEEDWATER SYSTEM TURBINE DRIVE FOR AFW PUMPS	1	29	Yes	Drawing is all normally isolated steam piping (only used when AFW initiated). Only a few drains recommended for mitigation via draining or protection. Rest should not be susceptible to damage during cold weather	Y
Unit 0	5610-M-3075	P & I D AUXILIARY FEEDWATER SYSTEM AUXILIARY FEEDWATER PUMPS	2	24	Yes	Drawing is the normally filled AFW piping from the CST, in standby waiting for an event, will require individual protection or global protection	Y
Unit 0	5610-M-3076	P & I D TURBINE PLANT CHEMICAL ADDITION SYSTEM	1	26			Y
Unit 0	5610-M-3094	P & I D CONTAINMENT POST ACCIDENT EVALUATION SYSTEM	1	12	No	All piping and equipment inside Auxiliary Bldg. No outside exposure and no protection assumed.	Y
Unit 0	5610-M-3094	P & I D CONTAINMENT POST ACCIDENT EVALUATION SYSTEM	2	12	No	All piping and equipment inside Auxiliary Bldg. No outside exposure and no protection assumed.	Y
Unit 0	5610-M-3094	P & I D CALIBRATION AND REAGENT GAS SUPPLY FOR P.A.H.M. SYSTEM	3	3	No	All piping and equipment inside Auxiliary Bldg. No outside exposure and no protection assumed.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 0	5610-M-3095	P&ID TECHNICAL SUPPORT CENTER HVAC			No	Eqpt located indoors or not susceptible to freezing	Y
Unit 0	5610-M-3101	P & I D BREATHING AIR SYSTEM COMPRESSOR	1	11	Yes	Most of drawing is abandoned in place. Outside exposure to the Service Water pipe.	Y
Unit 0	5610-M-3101	P & I D BREATHING AIR SYSTEM SELF-CONTAINED BREATHING APPARATUS FILL STATION	2	1	No	Not affected by any other systems No impact to the surrounding	Y
Unit 0	5610-M-381	P&ID H2 ANALYZER CALIBRATION GAS SUPPLY			No	This drawing only has piping for analyzing Oxygen and Hydrogen/Nitrogen Mixed Gas Cylinders. The gases on this draswing are not susceptible to freezing and they are also not connected to any plant systems that could cause a trip or TS Action.	Y
Unit 0	5610-M-420-303	P & I D COLD CHEMISTRY LABORATORY SAMPLE PANEL	1		No	Sampling Panel located in Cold Chemistry Lab, enclosed building, on the SW corner of the TB. Install space heater(s) in the room as needed to prevent freezing.	Y
Unit 0	5610-M-420-303	P & I D COLD CHEMISTRY LABORATORY SAMPLE PANEL	2		No	Sampling Panel located in Cold Chemistry Lab, enclosed building, on the SW corner of the TB. Install space heater(s) in the room as needed to prevent freezing.	Y
Unit 0	5610-M-420-303	P & I D COLD CHEMISTRY LABORATORY SAMPLE PANEL	3		No	Sampling Panel located in Cold Chemistry Lab, enclosed building, on the SW corner of the TB. Install space heater(s) in the room as needed to prevent freezing. No protection required for the chillers and associated piping outside.	Y
Unit 3	5613-M-013-1	INSTRUMENT AIR COMPRESSOR 3CM	1		Yes	Consider global strategy to protect either electric driven or diesel driven instrument air compressor skids from at least one unit. A single electric motor or diesel driven compressor from either units is fully capable of providing 100% of the IA needs for both units. Therefore, global strategy does not need to be implemented for all four IA compressors.	Y
Unit 3	5613-M-013-1	INSTRUMENT AIR COMPRESSOR 3CM	3		Yes	See Sh. 1	Y
Unit 3	5613-M-013-2	INSTRUMENT AIR COMPRESSOR 3CD	1		Yes	Consider global strategy to protect either electric driven or diesel driven instrument air compressor skids from at least one unit. A single electric motor or diesel driven compressor from either units is fully capable of providing 100% of the IA needs for both units. Therefore, global strategy does not need to be implemented for all four IA compressors.	Y
Unit 3	5613-M-013-2	INSTRUMENT AIR COMPRESSOR 3CD	4		Yes	See Sh. 1	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-013-2	INSTRUMENT AIR COMPRESSOR 3CD FUEL SYSTEM P&ID	6		Yes	See Sh. 1	Y
Unit 3	5613-M-013-2	INSTRUMENT AIR COMPRESSOR 3CD	7		Yes	See Sh. 1	Y
Unit 3	5613-M-3008	P & I D TURBINE PLANT COOLING WATER SYSTEM	1	30	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3008	P & I D TURBINE PLANT COOLING WATER SYSTEM	2	22	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3008	P & I D TURBINE PLANT COOLING WATER SYSTEM	3	16	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3008	P & I D TURBINE PLANT COOLING WATER SYSTEM	4	16	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3010	P & I D CIRCULATING WATER SYSTEM	1	33	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3010	P & I D CIRCULATING WATER SYSTEM CONDENSER WATER BOX PRIMING	2	10	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3010	P & I D CIRCULATING WATER SYSTEM LUBE WATER TO CIRCULATING WATER PUMPS	3	25	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3011	P & I D SCREEN WASH SYSTEM	1	21	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM AIR COMPRESSORS	1	38	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM TURBINE BUILDING	2	29	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM TURBINE BUILDING	3	14	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM TURBINE BUILDING	4	17	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM TURBINE BUILDING	5	21	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM INSIDE CONTAINMENT	7	15	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM AUXILIARY BUILDING	8	22	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM AUXILIARY BUILDING	9	16	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & ID INSTRUMENT AIR SYSTEM AUXILIARY BUILDING	10	16	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & ID INSTRUMENT AIR SYSTEM AUXILIARY BUILDING	11	8	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3013	P & I D INSTRUMENT AIR SYSTEM INTAKE AREA AND WATER TREATMENT PLANT	12	12	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 3	5613-M-3014	P & I D CONDENSER SYSTEM	1	48	Yes		Y
Unit 3	5613-M-3014	P & I D CONDENSER SYSTEM	2	31	Yes		Y
Unit 3	5613-M-3014	P & I D CONDENSER SYSTEM	3	24	Yes		Y
Unit 3	5613-M-3015	P & I D AMERTAP SYSTEM NORTH MAIN CONDENSER TUBE CLEANING	1	21	No	Zachry recommends "blowing down" the AMERTAP system for the "Cold" weather conditions.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-3015	P & ID AMERTAP SYSTEM SOUTH MAIN CONDENSER TUBE CLEANING	2	12	No	Zachry recommends "blowing down" the AMERTAP system for the "Cold" weather conditions.	Y
Unit 3	5613-M-3018	P & I D CONDENSATE STORAGE SYSTEM	1	28	Yes		Y
Unit 3	5613-M-3019	P & I D INTAKE COOLING WATER SYSTEM	1	42	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3019	P & I D INTAKE COOLING WATER SYSTEM	2	32	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 3	5613-M-3020	P & I D PRIMARY WATER MAKEUP SYSTEM	1	19	Yes	Piping and Tank Outside	Y
Unit 3	5613-M-3020	P & I D PRIMARY MAKEUP WATER SYSTEM	2	36	Yes	Piping outside, in CCW Room	Y
Unit 3	5613-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM DG 3A AIR STARTING SYSTEM	1	19	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 3	5613-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM DG 3B AIR STARTING SYSTEM	2	18	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 3	5613-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM DG 3A FUEL OIL	3	25	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 3	5613-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM DG 3B FUEL OIL	4	19	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM DG 3A LO & COOLING WATER	5	13	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 3	5613-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM DG 3B LO & COOLING WATER	6	13	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 3	5613-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	1	27	Yes	Piping located in U3 CCW Pump Room (open grating) and aux bldg roof. Possibly can globally protect U3 CCW Pump Room. Other piping in Aux Bldg and no protection assumed to be needed.	Y
Unit 3	5613-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	2	23	Maybe	Piping located in U3 CCW Pump Room (open grating) and HHSI Pump Room (louvered doors open to U3 CCW Pump Rooms and ambient conditions) Possibly can globally protect both rooms. Other piping in Aux Bldg and no protection assumed to be needed.	Y
Unit 3	5613-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	3	18	No	All portions of this drawing are fully located in the Aux Bldg, and no protection assumed	Y
Unit 3	5613-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	4	23	No	All portions of this drawing are fully located in the Aux Bldg & Containment and no protection assumed	Y
Unit 3	5613-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	5	27	No	All portions of this drawing are fully located in the Aux Bldg & Containment and no protection assumed	Y
Unit 3	5613-M-3030	COMPONENT COOLING WATER SYSTEM	6		Yes	Portions located outside on AB Roof. Other portions inside Aux Bldg and no protection assumed	Y
Unit 3	5613-M-3032	P & I D SAMPLE SYSTEM - SECONDARY STEAM GENERATOR BLOWDOWN	1	10	No	Piping in Containment or Sample Stations.	Y
Unit 3	5613-M-3032	P & ID SAMPLE SYSTEM - SECONDARY MAIN STEAM	2	5	Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 3	5613-M-3032	P & I D SAMPLE SYSTEM - SECONDARY CONDENSER HOTWELL SAMPLING	3	7	Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 3	5613-M-3032	P & I D SAMPLE SYSTEM - SECONDARY FEEDWATER SAMPLING	5	3	Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-3032	P & I D SAMPLE SYSTEM-SECONDARY MOISTURE SEPARATORREHEATER SAMPLING	6	1	Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 3	5613-M-3032	P & I D SAMPLE SYSTEM - SECONDARY HEATER DRAIN SAMPLING	7		Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 3	5613-M-3033	P & I D SPENT FUEL POOL COOLING SYSTEM	1	26	Yes	Some piping outside. Other portions inside Aux Bldg and no protection assumed	Y
Unit 3	5613-M-3033	SPENT FUEL POOL COOLING SYSTEM	2		Yes	Some Piping Outside. Other portions inside Aux Bldg and no protection assumed	Y
Unit 3	5613-M-3034	P & I D SPENT FUEL POOL AND NEW FUEL STORAGE AREA	1		No	Eqpt located indoors or not required for power operation.	Y
Unit 3	5613-M-3036	P & I D SAMPLE SYSTEM - NSSS	1	22	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 3	5613-M-3041	P & I D REACTOR COOLANT SYSTEM	1	32	No	Fully Inside Containment, no protection required	Y
Unit 3	5613-M-3041	P & I D REACTOR COOLANT SYSTEM	2	44	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 3	5613-M-3041	P & I D REACTOR COOLANT SYSTEM REACTOR COOLANT PUMPS	3	36	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 3	5613-M-3041	P & I D REACTOR COOLANT SYSTEM PORV CONTROL	4	7	No	All piping in Containment and no protection assumed	Y
Unit 3	5613-M-3046	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM GAS STRIPPER PACKAGE	1	14	No	Most piping on this drawing is abandoned, and all is located in the Gas Stripper Room in the Auxiliary Building	Y
Unit 3	5613-M-3046	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM BORIC ACID EVAP PACKAGE A	2	4	No	Most piping on this drawing is abandoned. Two pipes are not abandoned and it's not clear from NAMS where the pipes are located (valve IDs not in NAMS); however one connection is a gas pipe to the Waste Disposal System on 5610-M-3061 Sh. 12 this is NNS and the other goes to the sample system located in the Sample Room in the Auxiliary Building. Therefore, it is believed these pipes are in the Auxiliary Building. Even if they were subject to freezing, there would be no adverse effect on the site.	Y
Unit 3	5613-M-3047	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM CHARGING AND LETDOWN	1	23	Yes	All piping, except as marked, is located in Containment or in the Auxiliary Building (P&V Room, Charging Pump Room, Monitor Tank Room, Reactor Coolant Filter Room). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building. Marked piping is located on the Auxiliary Building Roof, per NAMS.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-3047	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM CHARGING AND LETDOWN	2	58	Maybe	All piping, except as marked, is located in Containment or in the Auxiliary Building (P&V Room, Charging Pump Room, NSSS Sample Room, Boric Acid Tank Room, N-S Hallway). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building. Marked piping is located on the Auxiliary Building Roof, per NAMS; however, it's assumed to be located in the enclosure for the VCT on the AB Roof, where global strategies could also be deployed.	Y
Unit 3	5613-M-3047	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM SEAL WATER INJECTION TO RCP	3	29	No	Fully located inside Containment or the Auxiliary Building (P&V Room & Charging Pump Room). Assumed individual protection not required for piping/components inside the AB. Global strategy(such as space heaters) can be deployed as necessary.	Y
Unit 3	5613-M-3050	P & I D RESIDUAL HEAT REMOVAL SYSTEM	1	40	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 3	5613-M-3053	P & I D CONTAINMENT PURGE SYSTEM AND PENETRATION COOLING SYSTEM	1	25	No	All equipment is either air lines, purge equipment not required for operation, or located in Containment or Aux Bldg	Y
Unit 3	5613-M-3056	P & I D CONTAINMENT EMERGENCY FILTER SYSTEM	1	9	No	All equipment on this P&ID was completely abdandoned in place.	Y
Unit 3	5613-M-3057	P & I D CONTAINMENT NORMAL AND EMERGENCY COOLER SYSTEMS	1	12	No	Fully Inside Containment, no protection required	Y
Unit 3	5613-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID RCDT AND PUMPS	1	26	No	Piping and components enclosed in Rx Bldg or RAB	Y
Unit 3	5613-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID CONTAINMENT DRAINS	2	9	No	Piping and components enclosed in Rx Bldg	Y
Unit 3	5613-M-3062	P & I D SAFETY INJECTION SYSTEM	1	45	Yes	RWST & piping out in yard, pipe in HHSI Pump Room and pipe in CCW Pump Room	Y
Unit 3	5613-M-3062	P & I D SAFETY INJECTION SYSTEM	2	24	Maybe	Pipe in HHSI Pump Room and pipe in CCW Pump Room (possibly can be globally protected)	Y
Unit 3	5613-M-3064	P & I D SAFETY INJECTION ACCUMULATOR SYSTEM INSIDECONTAINMENT	1	27	No	Fully Inside Containment, no protection required	Y
Unit 3	5613-M-3068	P & I D CONTAINMENT SPRAY SYSTEM	1	23	Yes	Portion of piping on Aux Bldg Roof. Other portions inside Aux Bldg and no protection assumed	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-3070	P & I D TURBINE BUILDING VENTILATION LOAD CENTER & SWGR ROOMS CHILLED WATER SYSTEM - TRAIN A	1	7	Maybe	System piping in Turbine Bldg operating level and Reinfored concrete Class I Load Center & SWGR Rooms. Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken to open doors and fans to provide cooling in the event of loss of A/C system, therefore not required for power generation.	Y
Unit 3	5613-M-3070	P & I D TURBINE BUILDING VENTILATION LOAD CENTER & SWGR ROOMS CHILLED WATER SYSTEM - TRAIN B	2	4	Maybe	System piping in Turbine Bldg operating level and Reinfored concrete Class I Load Center & SWGR Rooms. Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken to open doors and fans to provide cooling in the event of loss of A/C system, therefore not required for power generation.	Y
Unit 3	5613-M-3072	P & I D MAIN STEAM SYSTEM	1	46	Yes		Y
Unit 3	5613-M-3072	P & I D MAIN STEAM SYSTEM	2	16	Yes		Y
Unit 3	5613-M-3072	P & I D MAIN STEAM SYSTEM MSIV CONTROL	3	11	Yes		Y
Unit 3	5613-M-3073	P & I D CONDENSATE SYSTEM	1	32	Yes		Y
Unit 3	5613-M-3073	P & I D CONDENSATE SYSTEM	2	41	Yes		Y
Unit 3	5613-M-3073	P & I D CONDENSATE SYSTEM	3	23	Yes		Y
Unit 3	5613-M-3074	P & I D FEEDWATER SYSTEM	1	37	Yes		Y
Unit 3	5613-M-3074	P & I D FEEDWATER SYSTEM	2	43	Yes		Y
Unit 3	5613-M-3074	P & I D FEEDWATER SYSTEM	3	36	Yes		Y
Unit 3	5613-M-3074	P & I D FEEDWATER SYSTEM STEAM GENERATOR BLOWDOWN RECOVERY	4	32	Yes		Y
Unit 3	5613-M-3074	P & I D FEEDWATER SYSTEM LEFM DETAIL & FEEDWATER	5		Yes	LEFM sensing lines require protection. No protection required for FW Reg Valve Positioner, since all air and electrical.	Y
Unit 3	5613-M-3075	P & I D AUXILIARY FEEDWATER SYSTEM STEAM TO AUXILIARY FEEDWATER PUMP TURBINES	1	18	Yes	Located in TB, some piping potentially needs protection (steam and water systems)	Y
Unit 3	5613-M-3075	P & I D AUXILIARY FEEDWATER SYSTEM AUXILIARY FEEDWATER TO STEAM GENERATORS	2	17	Yes	Located in TB, some piping potentially needs protection (steam and water systems)	Y
Unit 3	5613-M-3075	P & I D AUXILIARY FEEDWATER SYSTEM NITROGEN SUPPLY TO AFW CONTROL VALVES	3	5	No	Nitrogen not susceptible to freezing	Y
Unit 3	5613-M-3077	P & I D CONDENSATE POLISHING SYSTEM DEMINERALIZER	1	27	No	Drawing is VOID. All equipment on the drawing is no longer in NAMS. Connections points on other drawings are no longer shown on those drawings (for instance, no ref to this drawing on 5613-M-3073, Sh. 2)	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-3077	P & I D CONDENSATE POLISHING SYSTEM DEMINERALIZER	2	24	No	Drawing is VOID. All equipment on the drawing is no longer in NAMS except the Sump Pump and the Hand Switch (no protection required for these of associated piping. Connections points on other drawings are no longer shown on those drawings (for instance, no ref to this drawing on 5610-M-3074, Sh. 2)	Y
Unit 3	5613-M-3077	P & I D CONDENSATE POLISHING SYSTEM SPENT RESIN HANDLING SYSTEM	3	15	No	Drawing is VOID. All equipment on the drawing is no longer in NAMS. Connections points on other drawings are no longer shown on those drawings (for instance, no ref to this drawing on 5610-M-3061, Sh. 8)	Y
Unit 3	5613-M-3077	P & I D CONDENSATE POLISHING SYSTEM EFFLUENT SAMPLING	4	7	No	Drawing is VOID, all piping and components are hashed or abandoned.	Y
Unit 3	5613-M-3078	P & I D STEAM GENERATOR WET LAYUP SYSTEM	1	7	Maybe	The SG Wet Layup System is used during RFO conditions only. Equipment is isolated during normal operation via closed valves and spectacle flanges. Segments connected to other systems up to isolation points are evaluated, but everything inside the isolation points for the SGWL System are not evaluated.	Y
Unit 3	5613-M-3080	P & I D CONDENSATE RECOVERY SYSTEM	1	18	Maybe	This drawing has some active components. In general, active equip is located on Ground floor of TB (partially enclosed). General mitigating actions for the area may be sufficient. Consequences of equipment failure from freezing are minimal to none.	Y
Unit 3	5613-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	1	22	Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 3	5613-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	2	10	Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 3	5613-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	3	30	Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 3	5613-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	4	40	Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 3	5613-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	5	8	Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 3	5613-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	6	18	Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	7		Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 3	5613-M-3082	P & I D SECONDARY WET LAYUP SYSTEM LOOP 1	1	6	No	This drawing is applicable to RFO conditions only. Equipment is captured on other drawings showing normal operating configuration.	Y
Unit 3	5613-M-3082	P & I D SECONDARY WET LAYUP SYSTEM LOOP 2	2	11	No	This drawing is applicable to RFO conditions only. Equipment is captured on other drawings showing normal operating configuration.	Y
Unit 3	5613-M-3084	P & I D AUXILIARY STEAM SYSTEM	1	32	Maybe	Most components need no protection; vents /drain/ steam trap configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 3	5613-M-3085	P & I D EXTRACTION STEAM SYSTEM	1	35	Maybe	Most components need no protection; vents /drain/ steam trap configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 3	5613-M-3086	P & ID ELECTRO-HYDRAULIC CONTROL (EHC) FLUID	1		No	Hydraulic fluid (oil) of EHC unlikely to freeze under extreme cold weather conditions. Recommend further evaulation of the specific hydraulic oil used and its operational temperature range.	Y
Unit 3	5613-M-3087	P & I D TURBINE LUBE OIL SYSTEM LUBE & CONTROL OIL RESERVOIR	1	24	Maybe	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F. However, system parameters are required to be checked while in Cold Weather Procedure.	Y
Unit 3	5613-M-3087	P & I D TURBINE LUBE OIL SYSTEM LUBE & CONTROL OILCONDITIONER	2	12	Maybe	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F. However, system parameters are required to be checked while in Cold Weather Procedure.	Y
Unit 3	5613-M-3087	P & I D TURBINE LUBE OIL SYSTEM GENERATOR SEAL OIL	3	16	Maybe	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F. However, system parameters are required to be checked while in Cold Weather Procedure.	Y
Unit 3	5613-M-3089	P & I D TURBINE SYSTEMS - STEAM	1	50	Yes	Most components need no protection; vents /drain/ steam trap configurations are unknown and require walkdown to determine if mitigation is required.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 3	5613-M-3089	P & I D TURBINE SYSTEMS - STEAM	2	31	Yes	Most components need no protection; vents /drain/ steam trap configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 3	5613-M-3090	P & I D GENERATOR SYSTEM HYDROGEN & C02 SUPPLY	1	33	Maybe	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F.	Y
Unit 3	5613-M-3094	P & I D CONTAINMENT POST ACCIDENT EVALUATION SYSTEM	1	36	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 3	5613-M-3101	P & I D BREATHING AIR SYSTEM DISTRIBUTION	1	9	No	All piping inside Containment; no protection assumed	Y
Unit 3	5613-M-3-117	MAIN GENERATOR H2 PURITY PANEL 3C19 Layout	1		Maybe	H2 Purity Panel Exposed. Has a control function and potentially iumpacted by cold weather. Consider implementing global strategy (such as tenting and/or space heaters) to protect the panel to maintain ambient temperature of 32F	Y
Unit 3	5613-M-3-117	MAIN GENERATOR H2 PURITY PANEL 3C19 P&ID	2		Maybe	See Sh. 1	Y
Unit 4	5614-M-013-1	INSTRUMENT AIR COMPRESSOR 4CM	1		Yes	Consider global strategy to protect either electric driven or diesel driven instrument air compressor skids from at least one unit. A single electric motor or diesel driven compressor from either units is fully capable of providing 100% of the IA needs for both units. Therefore, global strategy does not need to be implemented for all four IA compressors.	Y
Unit 4	5614-M-013-1	INSTRUMENT AIR COMPRESSOR 4CM	3		Yes	See Sh. 1	Y
Unit 4	5614-M-013-2	INSTRUMENT AIR COMPRESSOR 4CD	1		Yes	Consider global strategy to protect either electric driven or diesel driven instrument air compressor skids from at least one unit. A single electric motor or diesel driven compressor from either units is fully capable of providing 100% of the IA needs for both units. Therefore, global strategy does not need to be implemented for all four IA compressors.	Y
Unit 4	5614-M-013-2	INSTRUMENT AIR COMPRESSOR 4CD	4		Yes	See Sh. 1	Y
Unit 4	5614-M-013-2	INSTRUMENT AIR COMPRESSOR 4CD FUEL SYSTEM P&ID	6		Yes	See Sh. 1	Y
Unit 4	5614-M-013-2	INSTRUMENT AIR COMPRESSOR 4CD	7		Yes	See Sh. 1	Y
Unit 4	5614-M-3008	P & I D TURBINE PLANT COOLING WATER SYSTEM	1	31	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 4	5614-M-3008	P & I D TURBINE PLANT COOLING WATER SYSTEM	2	32	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 4	5614-M-3008	P & I D TURBINE PLANT COOLING WATER SYSTEM	3	14	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y

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Unit 4	5614-M-3008	P & I D TURBINE PLANT COOLING WATER SYSTEM	4	16	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 4	5614-M-3010	P & I D CIRCULATING WATER SYSTEM	1	29	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 4	5614-M-3010	P & I D CIRCULATING WATER SYSTEM CONDENSER WATER BOX PRIMING	2	10	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 4	5614-M-3010	P & I D CIRCULATING WATER SYSTEM LUBE WATER TO CIRCULATING WATER PUMPS	3	21	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 4	5614-M-3011	P & I D SCREEN WASH SYSTEM	1	18	Yes	Outdoor stagnent legs exposed to frreezing temperatures with ~50F process flow.	Y
Unit 4	5614-M-3013	P & I D INSTRUMENT AIR SYSTEM AIR COMPRESSORS	1	42	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 4	5614-M-3013	P & I D INSTRUMENT AIR SYSTEM TURBINE BUILDING	2	37	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 4	5614-M-3013	P & I D INSTRUMENT AIR SYSTEM TURBINE BUILDING	3	31	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 4	5614-M-3013	P & I D INSTRUMENT AIR SYSTEM TURBINE BUILDING	4	18	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 4	5614-M-3013	P & I D INSTRUMENT AIR SYSTEM TURBINE BUILDING	5	10	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 4	5614-M-3013	P & I D INSTRUMENT AIR SYSTEM INSIDE CONTAINMENT	7	14	Maybe	Need to periodically drain tanks and low point drains.	Y
Unit 4	5614-M-3014	P & I D CONDENSER SYSTEM	1	44	Yes		Y
Unit 4	5614-M-3014	P & I D CONDENSER SYSTEM	2	30	Yes		Y
Unit 4	5614-M-3014	P & I D CONDENSER SYSTEM	3	27	Yes		Y
Unit 4	5614-M-3015	P & I D AMERTAP SYSTEM NORTH MAIN CONDENSER TUBE CLEANING	1	21	No	Zachry recommends "blowing down" the AMERTAP system for the "Cold" weather conditions.	Y
Unit 4	5614-M-3015	P & I D AMERTAP SYSTEM SOUTH MAIN CONDENSER TUBE CLEANING	2	11	No	Zachry recommends "blowing down" the AMERTAP system for the "Cold" weather conditions.	Y
Unit 4	5614-M-3018	P & I D CONDENSATE STORAGE SYSTEM	1	29	Yes		Y
Unit 4	5614-M-3019	P & I D INTAKE COOLING WATER SYSTEM	1	40	Yes	Cold Water Dead Legs	Y
Unit 4	5614-M-3019	P & I D INTAKE COOLING WATER SYSTEM	2	29	Yes	Cold Water Dead Legs	Y
Unit 4	5614-M-3020	P & I D PRIMARY WATER MAKEUP SYSTEM	1	19	Yes	Piping and Tank Outside	Y
Unit 4	5614-M-3020	P & I D PRIMARY MAKEUP WATER SYSTEM	2	30	Yes	Piping outside, in CCW Room	Y
Unit 4	5614-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM EDG 4A AIR STARTING SYSTEM	1	13	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y

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Unit 4	5614-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM EDG 4B AIR STARTING SYSTEM	2	13	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 4	5614-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM EDG 4A FULE SYSTEM	3	8	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 4	5614-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM EDG 4B FUEL SYSTEM	4	8	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 4	5614-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM DG 4A LO & COOLING WATER	5	9	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 4	5614-M-3022	P & I D EMERGENCY DIESEL ENGINE AND OIL SYSTEM DG 4B LO & COOLING WATER	6	9	No	Located in Emergency Diesel Generator Building. See SLC Procedure Cold Weather Preparations 0-ONOP-103.2. Actions required to turn on portable electric heaters and verify EDG lube oil is 90 degrees or above. Ref PTN Extreme Temp. Reassessment March 2021, FSAR 9.15.4, DBD 5610-023-DB-002 LO Temp above 85F for EDG operability.	Y
Unit 4	5614-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	1	34	Yes	Piping located in U4 CCW Pump Room (open grating & big gate door) and aux bldg roof. Possibly can globally protect U4 CCW Pump Room. Other piping in Aux Bldg and no protection assumed to be needed.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 4	5614-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	2	26	Maybe	Piping located in U4 CCW Pump Room (open grating). Possibly can globally protect both rooms. Other piping in Aux Bldg and no protection assumed to be needed.	Y
Unit 4	5614-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	3	22	No	All portions of this drawing are fully located in the Aux Bldg & Containment and no protection assumed	Y
Unit 4	5614-M-3030	P & I D COMPONENT COOLING WATER SYSTEM	4	33	No	All portions of this drawing are fully located in the Aux Bldg & Containment and no protection assumed	Y
Unit 4	5614-M-3030	COMPONENT COOLING WATER SYSTEM	5		Yes	Portions located outside on AB Roof. Other portions inside Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3032	P & I D SAMPLE SYSTEM - SECONDARY STEAM GENERATOR BLOWDOWN	1	10	No	Piping in Containment or Sample Stations.	Y
Unit 4	5614-M-3032	P & ID SAMPLE SYSTEM - SECONDARY MAIN STEAM	2	4	Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 4	5614-M-3032	P & ID SAMPLE SYSTEM - SECONDARY CONDENSER HOTWELLSAMPLING	3	8	Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 4	5614-M-3032	P & I D SAMPLE SYSTEM - SECONDARY CONDENSATE	4		No	Drawing Marked "History" in NAMS and actual drawing is blank.	Y
Unit 4	5614-M-3032	P & I D SAMPLE SYSTEM - SECONDARY FEEDWATER SAMPLING	5	3	Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 4	5614-M-3032	P & I D SAMPLE SYSTEM - SECONDARY MOISTURE SEPARATOR REHEATER SAMPLING	6	1	Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 4	5614-M-3032	P & I D SAMPLE SYSTEM - SECONDARY HEATER DRAIN SAMPLING	7		Maybe	Piping and heat exchangers located in Turbine Building requires tenting and localized heating.	Y
Unit 4	5614-M-3033	P & I D SPENT FUEL POOL COOLING SYSTEM	1	31	Yes	Some piping outside. Other portions inside Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3033	SPENT FUEL POOL COOLING SYSTEM	2	1	Yes	Some piping outside. Other portions inside Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3034	P & I D SPENT FUEL POOL AND NEW FUEL STORAGE AREA	1		No	Eqpt located indoors or not required for power operation.	Y
Unit 4	5614-M-3036	P & I D SAMPLE SYSTEM - NSSS	1	21	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3041	P & I D REACTOR COOLANT SYSTEM	1	25	No	Fully Inside Containment, no protection required	Y
Unit 4	5614-M-3041	P & I D REACTOR COOLANT SYSTEM	2	42	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3041	P & I D REACTOR COOLANT SYSTEM REACTOR COOLANT PUMPS	3	28	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3041	P & I D REACTOR COOLANT SYSTEM PORV CONTROL	4	7	No	All piping in Containment and no protection assumed	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 4	5614-M-3046	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM GAS STRIPPER PACKAGE	1	13	No	Most piping on this drawing is abandoned, and all is located in the Gas Stripper Room in the Auxiliary Building	Y
Unit 4	5614-M-3046	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM BORIC ACID EVAP PACKAGE B	2	1	No	Most piping on this drawing is abandoned. Two pipes are not abandoned; one pipe is in AB 4' elev. and it's not clear from NAMS where the other pipe is located (valve ID not in NAMS). This line goes to the sample system located in the Sample Room in the Auxiliary Building. Therefore, it is believed this pipe is in the Auxiliary Building. Even if it was subject to freezing, there would be no adverse effect on the site.	Y
Unit 4	5614-M-3047	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM CHARGING AND LETDOWN	1	23	Yes	All piping, except as marked, is located in Containment or in the Auxiliary Building (P&V Room, Charging Pump Room, Monitor Tank Room, Reactor Coolant Filter Room). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building). Marked piping is located on the Auxiliary Building Roof, per NAMS.	Y
Unit 4	5614-M-3047	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM CHARGING AND LETDOWN	2	67	Maybe	All piping, except as marked, is located in Containment or in the Auxiliary Building (P&V Room, Charging Pump Room, NSSS Sample Room, Boric Acid Tank Room). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building). Marked piping is located on the Auxiliary Building Roof, per NAMS; however, it's assumed to be located in the enclosure for the VCT on the AB Roof, where global strategies could also be deployed.	Y
Unit 4	5614-M-3047	P & I D CHEMICAL AND VOLUME CONTROL SYSTEM SEAL WATER INJECTION TO RCP	3	28	No	Fully located inside Containment or the Auxiliary Building (P&V Room & Charging Pump Room). Assumed individual protection not required for piping/components inside the AB. Global strategy(such as space heaters) can be deployed as necessary.	Y
Unit 4	5614-M-3050	P & I D RESIDUAL HEAT REMOVAL SYSTEM	1	40	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3053	P & I D CONTAINMENT PURGE SYSTEM AND PENETRATION COOLING SYSTEM	1	23	No	All equipment is either air lines, purge equipment not required for operation, or located in Containment or Aux Bldg	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 4	5614-M-3056	P & I D CONTAINMENT EMERGENCY FILTER SYSTEM	1	9	No	All equipment on this P&ID was completely abdandoned in place.	Y
Unit 4	5614-M-3057	P & I D CONTAINMENT NORMAL AND EMERGENCY COOLER SYSTEMS	1	16	No	Fully Inside Containment, no protection required	Y
Unit 4	5614-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID RCDT AND PUMPS	1	23	No	Piping and components enclosed in Rx Bldg or RAB	Y
Unit 4	5614-M-3061	P & I D WASTE DISPOSAL SYSTEM LIQUID CONTAINMENT DRAINS	2	10	No	Piping and components enclosed in Rx Bldg	Y
Unit 4	5614-M-3062	P & I D SAFETY INJECTION SYSTEM	1	40	Yes	RWST & piping out in yard, pipe in HHSI Pump Room and pipe in U4 CCW Pump Room	Y
Unit 4	5614-M-3062	P & I D SAFETY INJECTION SYSTEM	2	25	Maybe	Pipe in HHSI Pump Room and pipe in U4 CCW Pump Room (possibly can be globally protected)	Y
Unit 4	5614-M-3064	P & I D SAFETY INJECTION ACCUMULATOR SYSTEM INSIDECONTAINMENT	1	35	No	Fully Inside Containment, no protection required	Y
Unit 4	5614-M-3068	P & I D CONTAINMENT SPRAY SYSTEM	1	28	Yes	Portion of piping on Aux Bldg Roof. Other portions inside Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3070	P & I D TURBINE BUILDING VENTILATION LOAD CENTER & SWGR ROOMS CHILLED WATER SYSTEM - TRAIN A	1	5	Maybe	System piping in Turbine Bldg operating level and Reinfored concrete Class I Load Center & SWGR Rooms. Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken to open doors and fans to provide cooling in the event of loss of A/C system, therefore not required for power generation.	Y
Unit 4	5614-M-3070	P & I D TURBINE BUILDING VENTILATION LOAD CENTER & SWGR ROOMS CHILLED WATER SYSTEM - TRAIN B	2	5	Maybe	System piping in Turbine Bldg operating level and Reinfored concrete Class I Load Center & SWGR Rooms. Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken to open doors and fans to provide cooling in the event of loss of A/C system, therefore not required for power generation.	Y
Unit 4	5614-M-3072	P & I D MAIN STEAM SYSTEM	1	41	Yes		Y
Unit 4	5614-M-3072	P & I D MAIN STEAM SYSTEM	2	20	Yes		Y
Unit 4	5614-M-3072	P & I D MAIN STEAM SYSTEM MSIV CONTROL	3	11	Yes		Y
Unit 4	5614-M-3073	P & I D CONDENSATE SYSTEM	1	28	Yes		Y
Unit 4	5614-M-3073	P & I D CONDENSATE SYSTEM	2	34	Yes		Y
Unit 4	5614-M-3073	P & I D CONDENSATE SYSTEM	3	26	Yes		Y
Unit 4	5614-M-3074	P & I D FEEDWATER SYSTEM	1	28	Yes		Y
Unit 4	5614-M-3074	P & I D FEEDWATER SYSTEM	2	43	Yes		Y
Unit 4	5614-M-3074	P & I D FEEDWATER SYSTEM	3	35	Yes		Y
Unit 4	5614-M-3074	P & I D FEEDWATER SYSTEM STEAM GENERATOR BLOWDOWN RECOVERY	4	32	Yes		Y
Unit 4	5614-M-3074	P & I D FEEDWATER SYSTEM LEFM DETAIL & FEEDWATER	5		Yes	LEFM sensing lines require protection. No protection required for FW Reg Valve Positioner, since all air and electrical.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 4	5614-M-3075	P & I D AUXILIARY FEEDWATER SYSTEM STEAM TO AUXILIARY FEEDWATER PUMP TURBINES	1	16	Yes		Y
Unit 4	5614-M-3075	P & I D AUXILIARY FEEDWATER SYSTEM AUXILIARY FEEDWATER TO STEAM GENERATORS	2	18	Yes		Y
Unit 4	5614-M-3075	P & I D AUXILIARY FEEDWATER SYSTEM NITROGEN SUPPLY TO AFW CONTROL VALVES	3	3	Yes		Y
Unit 4	5614-M-3077	P & I D CONDENSATE POLISHING SYSTEM DEMINERALIZER	1	23	No	Drawing is VOID	Y
Unit 4	5614-M-3077	P & I D CONDENSATE POLISHING SYSTEM DEMINERALIZER	2	15	No	Drawing is VOID	Y
Unit 4	5614-M-3077	P & I D CONDENSATE POLISHING SYSTEM SPENT RESIN HANDLING SYSTEM	3	13	No	Drawing is VOID	Y
Unit 4	5614-M-3077	P & I D CONDENSATE POLISHING SYSTEM EFFLUENT SAMPLING	4	8	No	Drawing is VOID	Y
Unit 4	5614-M-3078	P & I D STEAM GENERATOR WET LAYUP SYSTEM	1	7	Maybe	The SG Wet Layup System is used during RFO conditions only. Equipment is isolated during normal operation via closed valves and spectacle flanges. Segments connected to other systems up to isolation points are evaluated, but everything inside the isolation points for the SGWL System are not evaluated.	Y
Unit 4	5614-M-3080	P & I D CONDENSATE RECOVERY SYSTEM	1	15	Yes		Y
Unit 4	5614-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	1	26	Maybe	Most components need no protection; Many control valves and vent /drain configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 4	5614-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	2	9	Maybe	Most components need no protection; Many control valves and vent /drain configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 4	5614-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	3	28	Maybe	Most components need no protection; Many control valves and vent /drain configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 4	5614-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	4	36	Maybe	Most components need no protection; Many control valves and vent /drain configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 4	5614-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	5	9	Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 4	5614-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	6	16	Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 4	5614-M-3081	P & I D FEEDWATER HEATER DRAINS & VENTS SYSTEM	7		Maybe	Mostly hot-pipe systems, but various vents/drains/instruments in the TB will require walkdown.	Y
Unit 4	5614-M-3082	P & I D SECONDARY WET LAYUP SYSTEM LOOP 1	1	10	No	This drawing is applicable to RFO conditions only. Equipment is captured on other drawings showing normal operating configuration.	Y

Unit	Document No	Document Title	Doc Sheet No	Rev	Priority	Priority Notes	Dwg Complete
Unit 4	5614-M-3082	P & I D SECONDARY WET LAYUP SYSTEM LOOP 2	2	7	No	This drawing is applicable to RFO conditions only. Equipment is captured on other drawings showing normal operating configuration.	Y
Unit 4	5614-M-3084	P & I D AUXILIARY STEAM SYSTEM	1	28	Maybe		Y
Unit 4	5614-M-3085	P & I D EXTRACTION STEAM SYSTEM	1	35	Maybe		Y
Unit 4	5614-M-3087	P & I D TURBINE LUBE OIL SYSTEM LUBE & CONTROL OIL RESERVOIR	1	22	Maybe	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F. However, system parameters are required to be checked while in Cold Weather Procedure.	Y
Unit 4	5614-M-3087	P & I D TURBINE LUBE OIL SYSTEM LUBE & CONTROL OIL CONDITIONER	2	10	Maybe	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F. However, system parameters are required to be checked while in Cold Weather Procedure.	Y
Unit 4	5614-M-3087	P & I D TURBINE LUBE OIL SYSTEM GENERATOR SEAL OIL	3	15	Maybe	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F. However, system parameters are required to be checked while in Cold Weather Procedure.	Y
Unit 4	5614-M-3089	P & I D TURBINE SYSTEMS - STEAM	1	44	Yes	Most components need no protection; vents /drain/ steam trap configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 4	5614-M-3089	P & I D TURBINE SYSTEMS - STEAM	2	35	Yes	Most components need no protection; vents /drain/ steam trap configurations are unknown and require walkdown to determine if mitigation is required.	Y
Unit 4	5614-M-3090	P & I D GENERATOR SYSTEM HYDROGEN & CO2 SUPPLY	1	29	Maybe	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F.	Y
Unit 4	5614-M-3094	P & I D CONTAINMENT POST ACCIDENT EVALUATION SYSTEM	1	26	No	All piping in Containment or the Aux Bldg and no protection assumed	Y
Unit 4	5614-M-3101	P & I D BREATHING AIR SYSTEM DISTRIBUTION	1	10	No	All piping inside Containment; no protection assumed. Also, this is an air system, so not susceptible to freezing	Y
Unit 4	5614-M-3108	P & I D UNIT 4 EDG BLDG VENTILATION AIRFLOW	1		Yes	EDG radiators are immediately adjacent to the open louvers and susceptible to freezing	Y

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Attachment B

PTN System Designations List

PTN Systems List

TPCW / 008	Turbine Plant Cooling Water
CWS / 010	Circulating Water
011	Screen Wash
SWS / 012	Service Water
IAS / 013	Instrument Air
CNDSR / 014	Condenser
015	Amertap/Tube Cleaning
FP / 016	Fire Protection
CS / 018	Condensate Storage
ICW / 019	Intake Cooling Water
PMUS / 020	Primary Water Makeup
WTP / 021	Water Treatment Plant
EGD / 022	Emergency Diesel Generator & Oil
025	Control Bldg Ventilation
026	Radwaste Bldg Ventilation/HVAC
CCW / 030	Component Cooling Water
SSS / 032	Sample System - Secondary
SFPC / 033	Spent Fuel Pool Cooling
034	Spent Fuel Pool & New Fuel Storage Area Ventilation
036	Sample System - NSSS
RCS / 041	Reactor Coolant
CVCS / 046	Chemical & Volume Control (Boric Acid/Boron/Gas Stripper)
CVCS / 047	Chemical & Volume Control (Charging/Letdown/Seal Water)
RHR / 050	Residual Heat Removal
053	Containment Purge & Penetration Cooling
056	Containment Emergency Filter
057	Containment Normal & Emergency Cooler
060	Aux Bldg Ventilation
WDS / 061	Waste Disposal
SIS / 062	Safety Injection
SIS / 064	Safety Injection
065	N2 & H2
CS / 068	Containment Spray
070	Turbine Building Ventilation
MSS / 072	Main Steam
COND / 073	Condensate
FWS / 074	Feedwater
AFWS / 075	Aux Feedwater
076	Turbine Plant Chemical Addition
CPDL / 077	Condensate Polishing
SGWLU / 078	Steam Generator Wet Layup
080	Condensate Recover
081	Feedwater Heater Drains & Vents
SWLU / 082	Secondary Wet Layup
084	Auxiliary Steam
085	Extraction Steam

087	Turbine Lube Oil
089	Turbine Systems - Steam
090	H2 & CO2 Supply
094	Containment Post Accident Eval
BAS / 101	Breathing Air
108	U4 EDG Bldg Vent

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Attachment C

Freezing as a Function of Pipe Diameter

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Freezing as a Function of Pipe Diameter

This attachment determines the time required for water in an isolated pipe segment to cool to 32 °F and subsequently freeze. The analysis is performed in an Excel workbook allowing users to forecast water temperature or ice conversion fraction as a function of time given the following inputs:

- Location-specific minimum and maximum daily temperatures for sinusoidal diurnal variation PTN: 19 °F to 37 °F
- Wind speed (10 mph)
- Initial liquid temperature (35 °F)
- Pipe size and insulation thickness (Various)

Solutions are generated for most standard pipe sizes from ½" to 48", with insulation thicknesses of 0, 1, 2, 3, or 4 inches, in general. Piping is assumed to be isolated from any potential heat sources, such as solar heating, branch connections to warmer process lines, or proximity to warm equipment. Therefore, losses to (or gains from) ambient are the only mechanisms of heat transfer. Heat rates through the pipe or insulation surface are calculated by interpolating data points drawn from the 3EPlus software, available from the North American Insulation Manufacturers Association (NAIMA).

The workbook includes separate worksheets for each pipe size / insulation thickness combination. On each sheet, the four-day cold weather event is broken down into 15-minute time intervals for calculating water/ice conditions as the transient progresses. For each time step, the worksheet calculates the rate of heat transfer through the pipe wall and insulation, given the current liquid and outdoor temperatures (at the start of the time step). Heat removed during the time step is deducted from the liquid enthalpy to determine the starting water temperature for the next time step.

Once liquid temperature reaches 32 °F, further heat removal through the pipe wall and insulation is deducted from the latent heat of fusion (144 BTU/lbm) rather than from the liquid's sensible heat. An ice volume fraction is calculated as the fraction of latent heat that has been lost to the environment.

The analysis does not consider any effects that pressure or salinity may have on the freezing point of water, so 32 °F is taken as the freezing point in all cases. It also ignores the thermal resistance of ice as it builds up inside the pipe wall. No thermal stratification effects within a pipe are considered.

For Turkey Point, the upper limit on the daily temperature cycle exceeds 32 °F. During these periods, ambient conditions may tend to raise liquid temperature within a pipe or thaw a portion of ice that may have formed overnight. The time step calculations in the worksheets account for this possibility.

Pipe material is assumed to be carbon steel, with insulation properties similar to calcium silicate (cal-sil).

Output data from the workbook has been summarized in Tables 1 for Turkey Point for both wind and no-wind conditions. These tables show the time required to reach 32 °F, and subsequently to reach 2%, 10%, 25, and 50% ice volume fractions. Results are further summarized in Table 2 to show the amount of insulation required for freeze protection as a function of pipe size and maximum allowable ice fraction. Where no amount of insulation will prevent freezing, heat tracing is identified as the recommended mitigation strategy.

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Table 1 -- Time to Freeze for Isolated Pipe Segments – TURKEY POINT												
Pipe	Ins.	Constant 10 mph Wind						No Wind				
Size	Thk.	0%	2%	10%	25%	50%		0%	2%	10%	25%	50%
(NPS)	(in)	(hr)	(hr)	(hr)	(hr)	(hr)		(hr)	(hr)	(hr)	(hr)	(hr)
0.5	1	4.5	5.5	7	8.5	10.75		5	6	7.5	9.5	12
0.75	1	5	5.75	7.75	9.75	12.5		5.5	6.5	8.5	11	15.25
0.75	2	5.25	6.25	8.5	11.25	16.5		5.5	6.75	9	12.25	34.75
1	1	5.5	6.5	8.75	12	34		5.75	7	9.75	13.75	37.25
1	2	6	7.25	10	14.5	38.5		6.25	7.5	10.5	16.25	58
1	3	5.5	6.5	9	12.25	34.5		5.75	7	9.5	13	36
1.5	1	6.25	7.5	11	33.5	60		6.75	8.25	12.5	37.25	84
1.5	2	7	8.75	13.75	41	-		7.5	9.25	15.25	59.5	-
1.5	3	7.5	9.25	15.75	60.25	-		7.75	9.5	18.25	62.5	-
1.5	4	7.75	9.75	33.5	63.5	-		8	10	34.25	82	-
2	0	4.25	5	6	7.25	8.5		5.25	6.25	8.25	10.75	14.5
2	1	6.75	8.25	12.5	37.25	83.75		7.5	9.25	15.25	59.5	-
2	2	7.5	9.5	17	61.75	-		8	10	34.75	83	-
2	3	8	10.25	35.25	84	-		8.25	10.75	36.75	88.25	-
2	4	8.5	11	37.25	-	-		8.5	11	37.25	-	-
2.5	1	7.5	9.25	16	60.75	-		8.25	10.5	36	85.5	-
2.5	2	8.75	11.5	39	-	-		9.25	12.25	58.5	-	-
2.5	3	9.25	12.5	59.25	-	-		9.75	13.25	61.75	-	-
2.5	4	9.75	13.5	62.5	-	-		10.25	14.25	81.25	-	-
3	0	4.5	5.5	7	8.5	10.5		5.75	7	9.75	13.5	37
3	1	8	10	34.5	82.75	-		8.75	11.5	39.75	-	-
3	2	9.25	12.25	58.5	-	-		9.75	13.5	62.5	-	-
3	3	10	14	64.25	-	-		10.5	15.5	84	-	-
3	4	11	16.5	-	-	-		11.25	33.25	89.5	-	-
4	0	4.75	5.75	7.5	9.5	12		6.25	7.5	10.75	17.75	58.75
4	1	8.75	11.75	40	-	-		10	14	63.75	-	-
4	2	10.5	15.25	83.5	-	-		11.5	33.75	-	-	-
4	3	11.75	34.5	-	-	-		12.75	36.25	-	-	-
4	4	12.75	36.75	-	-	-		13.5	38.5	-	-	-
6	0	5.25	6.5	8.75	11.5	17.75		7	8.5	13.25	38.5	86.5
6	1	10.5	15.25	83.5	-	-		12.25	35.75	-	-	-
6	2	13.75	38.75	-	-	-		16	59	-	-	-
6	3	18	60.25	-	-	-		34	63.5	-	-	-
6	4	34.75	81.5	-	-	-		35.75	84.5	-	-	-
8	0	5.75	7	9.75	13.75	37.25		7.5	9.5	16	60.5	-
8	1	12.25	35.75	-	-	-		15.25	58	-	-	-
8	2	33	61.25	-	-	-		35.25	83	-	-	-
8	3	35.75	84.25	-	-	-		38.25	-	-	-	-
8	4	38.5	-	-	-	-		57.75	-	-	-	-
10	0	6.25	7.5	10.75	17.25	58.75		8	10.25	34.75	83	-
10	1	13.75	39	-	-	-		33.5	62.5	-	-	-
10	2	36	84.75	-	-	-		39.5	-	-	-	-
10	3	57.25	-	-	-	-		59.75	-	-	-	-

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Table 1 -- Time to Freeze for Isolated Pipe Segments – TURKEY POINT												
Pipe	Ins.	Constant 10 mph Wind						No Wind				
Size	Thk.	0%	2%	10%	25%	50%		0%	2%	10%	25%	50%
(NPS)	(in)	(hr)	(hr)	(hr)	(hr)	(hr)		(hr)	(hr)	(hr)	(hr)	(hr)
10	4	60.75	-	-	-	-		64.25	-	-	-	-
12	0	6.5	8	11.75	35.5	64.25		8.5	11	37.25	-	-
12	1	33	60.75	-	-	-		36.5	86	-	-	-
12	2	39.25	-	-	-	-		59.25	-	-	-	-
12	3	61	-	-	-	-		81.5	-	-	-	-
12	4	82.75	-	-	-	-		86.25	-	-	-	-
14	0	6.75	8.25	12.5	37	83.75		8.75	11.5	39	-	-
14	1	33	61	-	-	-		37	87.75	-	-	-
14	2	41.75	-	-	-	-		60.75	-	-	-	-
14	3	63.25	-	-	-	-		83.75	-	-	-	-
14	4	85.25	-	-	-	-		-	-	-	-	-
16	0	7	8.75	13.75	40.5	-		9.25	12.25	58.25	-	-
16	1	34.5	81.25	-	-	-		40	-	-	-	-
16	2	59.5	-	-	-	-		81.25	-	-	-	-
16	3	83.75	-	-	-	-		-	-	-	-	-
16	4	-	-	-	-	-		-	-	-	-	-
18	0	7.25	9.25	15	59.5	-		9.75	13	60.75	-	-
18	1	36	84.75	-	-	-		58.5	-	-	-	-
18	2	62.5	-	-	-	-		84.75	-	-	-	-
18	3	87.25	-	-	-	-		-	-	-	-	-
18	4	-	-	-	-	-		-	-	-	-	-
20	0	7.5	9.5	17.5	62.25	-		10	14	63.75	-	-
20	1	37.75	-	-	-	-		60.75	-	-	-	-
20	2	82	-	-	-	-		-	-	-	-	-
20	3	-	-	-	-	-		-	-	-	-	-
20	4	-	-	-	-	-		-	-	-	-	-
24	0	8	10.25	35.25	84.25	-		10.75	15.75	84.75	-	-
24	1	57.25	-	-	-	-		81.5	-	-	-	-
24	2	87.75	-	-	-	-		-	-	-	-	-
24	3	-	-	-	-	-		-	-	-	-	-
24	4	-	-	-	-	-		-	-	-	-	-
30	0	8.75	11.5	40	-	-		12	35	-	-	-
30	1	62.5	-	-	-	-		-	-	-	-	-
30	2	-	-	-	-	-		-	-	-	-	-
30	3	-	-	-	-	-		-	-	-	-	-
36	0	9.5	13	60.5	-	-		13.25	37.5	-	-	-
36	1	83.75	-	-	-	-		-	-	-	-	-
36	2	-	-	-	-	-		-	-	-	-	-
36	3	-	-	-	-	-		-	-	-	-	-
48	0	10.75	16.25	85.75	-	-		16.25	59.25	-	-	-
48	1	-	-	-	-	-		-	-	-	-	-
48	2	-	-	-	-	-		-	-	-	-	-

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Table 2 – Insulation Requirements for Freeze Mitigation

To protect against 25% freezing:

	Daily Low Temp °F	Daily High Temp °F	Heat Trace Required for:	4" Insulation Required for:	3" Insulation Required for:	2" Insulation Required for:	1" Insulation Required for:
Turkey Point 3 & 4	19	37	1-1/2" & Smaller	2"	-	2 1/2" - 3"	4" thru 24"

To protect against 2% freezing:

	Daily Low Temp °F	Daily High Temp °F	Heat Trace Required for:	4" Insulation Required for:	3" Insulation Required for:	2" Insulation Required for:	1" Insulation Required for:
Turkey Point 3 & 4	19	37	6" & Smaller	8"	10"	12"-18"	20"+

To protect against all freezing:

	Daily Low Temp °F	Daily High Temp °F	Heat Trace Required for:	4" Insulation Required for:	3" Insulation Required for:	2" Insulation Required for:	1" Insulation Required for:
Turkey Point 3 & 4	19	37	14" & Smaller	16"-18"	20"-24"	30"-36"	48"

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Attachment D

Minimum Flow to Avoid Freezing

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Minimum Flow to Avoid Freezing

This attachment addresses the minimum flow requirement to prevent water from freezing in pipes of various diameters.

Approach:

The approach used is documented in the pages that follow which have been extracted from Attachment N to Zachry Nuclear Engineering Evaluation 20-E04, ANO ECP Alternate Supply Evaluation, Revision 1, 01/28/21 (see Methodology section at end).

Key Inputs:

- Fluid: Fresh Water and Salt Water
- Inlet temperature: 35°F, 40°F, 45°F, 50°F,
- Air temperature: 16°F for PSL and 19°F for PTN
- Pipe diameter: various
- Wind speed: 10 miles per hour
- Pipe schedule: various
- Pipe length: 3 feet as basis for comparison. Note that the fire protection flow study uses actual/bounding lengths to address minimum flow for freeze protection.
- Pipe insulation: Cases were completed both with and without insulation for comparison

Outputs:

Tables 1 through 4 provide results for both fresh and salt water for the conditions of no insulation and ½" or 1" of insulation.

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Table 1 - Minimum Flow to Avoid Freezing - Fresh Water with No Insulation

Nominal Pipe Size	O.D.	Schedule	I.D.	Nom. Header Temp.	Insulated (1/2-inch)	Minimum Flow to Prevent Freezing (Fresh Water)			
						PSL (16°F)		PTN (19°F)	
(inch)	(inch)	-	(inch)	(°F)	(Y / N)	(gpm)	(gph)	(gpm)	(gph)
1/2	0.84	80	0.546	35	N	0.654	39.211	0.568	34.056
1	1.315	80	0.957		N	1.395	83.705	1.213	72.810
1 1/2	1.9	40	1.61		N	2.776	166.590	2.417	145.038
2	2.375	40	2.067		N	3.961	237.645	3.449	206.963
3	3.5	40	3.068		N	7.077	424.634	6.166	369.947
4	4.5	40	4.026		N	10.487	629.223	9.138	548.299
5	5.563	40	5.047		N	14.576	874.584	12.703	762.209
6	6.625	40	6.065		N	19.080	1144.775	16.630	997.779
1/2	0.84	80	0.546	40	N	0.243	14.588	0.071	4.283
1	1.315	80	0.957		N	0.723	43.380	0.629	37.762
1 1/2	1.9	40	1.61		N	1.444	86.664	1.258	75.490
2	2.375	40	2.067		N	2.063	123.787	1.797	107.848
3	3.5	40	3.068		N	3.692	221.527	3.218	193.056
4	4.5	40	4.026		N	5.476	328.534	4.773	286.353
5	5.563	40	5.047		N	7.615	456.907	6.638	398.283
6	6.625	40	6.065		N	9.972	598.301	8.693	521.571
1/2	0.84	80	0.546	45	N	0.034	2.042	0.024	1.411
1	1.315	80	0.957		N	0.090	5.385	0.046	2.762
1 1/2	1.9	40	1.61		N	1.046	62.769	0.127	7.627
2	2.375	40	2.067		N	1.495	89.701	1.303	78.163
3	3.5	40	3.068		N	2.677	160.621	2.333	139.995
4	4.5	40	4.026		N	3.971	238.286	3.462	207.711
5	5.563	40	5.047		N	5.524	331.467	4.816	288.961
6	6.625	40	6.065		N	7.235	434.109	6.308	378.463
1/2	0.84	80	0.546	50	N	0.020	1.186	0.015	0.909
1	1.315	80	0.957		N	0.035	2.125	0.025	1.477
1 1/2	1.9	40	1.61		N	0.075	4.471	0.042	2.502
2	2.375	40	2.067		N	0.178	10.661	0.065	3.920
3	3.5	40	3.068		N	2.159	129.521	0.491	29.442
4	4.5	40	4.026		N	3.203	192.184	2.792	167.534
5	5.563	40	5.047		N	4.456	267.372	3.885	233.096
6	6.625	40	6.065		N	5.837	350.198	5.089	305.320

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Table 2 - Minimum Flow to Avoid Freezing - Salt Water with No Insulation

Nominal Pipe Size	O.D.	Schedule	I.D.	Nom. Header Temp.	Insulated (1/2-inch)	Minimum Flow to Prevent Freezing (Salt Water)			
						PSL (16°F)		PTN (19°F)	
(inch)	(inch)	-	(inch)	(°F)	(Y / N)	(gpm)	(gph)	(gpm)	(gph)
1/2	0.84	80	0.546	35	N	0.640	0.516	0.556	0.402
1	1.315	80	0.957		N	1.364	0.804	1.186	0.606
1 1/2	1.9	40	1.61		N	2.711	1.272	2.360	0.906
2	2.375	40	2.067		N	3.866	1.812	3.367	1.224
3	3.5	40	3.068		N	6.905	4.62	6.016	2.4
4	4.5	40	4.026		N	10.230	613.8163	8.914	534.8393
5	5.563	40	5.047		N	14.217	853.043	12.390	743.396
6	6.625	40	6.065		N	18.608	1116.466	16.218	973.059
1/2	0.84	80	0.546	40	N	0.254	0.18	0.075	0.149
1	1.315	80	0.957		N	0.706	42.386	0.615	36.891
1 1/2	1.9	40	1.61		N	1.410	84.615	1.228	73.698
2	2.375	40	2.067		N	2.014	120.831	1.754	105.267
3	3.5	40	3.068		N	3.603	216.176	3.140	188.383
4	4.5	40	4.026		N	5.342	0.892	4.656	0.683
5	5.563	40	5.047		N	7.429	1.195	6.476	0.885
6	6.625	40	6.065		N	9.728	1.578	8.480	1.122
1/2	0.84	80	0.546	45	N	0.036	0.118	0.024	0.1
1	1.315	80	0.957		N	0.094	5.635	0.048	2.890
1 1/2	1.9	40	1.61		N	1.022	61.290	0.133	7.982
2	2.375	40	2.067		N	1.459	87.569	1.272	76.301
3	3.5	40	3.068		N	2.613	156.768	2.277	136.629
4	4.5	40	4.026		N	3.876	0.501	3.378	0.408
5	5.563	40	5.047		N	5.391	0.63	4.699	0.504
6	6.625	40	6.065		N	7.060	0.774	6.154	0.612
1/2	0.84	80	0.546	50	N	0.020	0.092	0.015	0.079
1	1.315	80	0.957		N	0.037	2.224	0.025	1.492
1 1/2	1.9	40	1.61		N	0.078	4.680	0.044	2.619
2	2.375	40	2.067		N	0.186	11.158	0.068	4.103
3	3.5	40	3.068		N	2.107	0.289	0.514	0.243
4	4.5	40	4.026		N	3.126	0.366	2.725	0.306
5	5.563	40	5.047		N	4.349	0.45	3.791	0.372
6	6.625	40	6.065		N	5.696	0.54	4.966	0.444

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Table 3 - Minimum Flow to Avoid Freezing - Fresh Water with Insulation

Nominal Pipe Size	O.D.	Schedule	I.D.	Nom. Header Temp.	Insulated (1/2-inch)	Minimum Flow to Prevent Freezing (Fresh Water)			
						PSL (16°F)		PTN (19°F)	
(inch)	(inch)	-	(inch)	(°F)	(Y / N)	(gpm)	(gph)	(gpm)	(gph)
1/2	0.84	80	0.546	35	Y	0.0086	0.515	0.0067	0.402
1	1.315	80	0.957		Y	0.0134	0.804	0.0101	0.606
1 1/2	1.9	40	1.61		Y	0.0212	1.272	0.0151	0.906
2	2.375	40	2.067		Y	0.0302	1.812	0.0204	1.224
3	3.5	40	3.068		Y	0.0770	4.620	0.0400	2.400
4	4.5	40	4.026		Y*	***0.0295***	***1.770***	***0.0200***	***1.200***
5	5.563	40	5.047		Y*	***0.0452***	***2.712***	***0.0278***	***1.668***
6	6.625	40	6.065		Y*	***0.0738***	***4.428***	***0.0390***	***2.340***
1/2	0.84	80	0.546	40	Y	0.0030	0.180	0.0025	0.150
1	1.315	80	0.957		Y	0.0043	0.258	0.0035	0.210
1 1/2	1.9	40	1.61		Y	0.0059	0.354	0.0048	0.288
2	2.375	40	2.067		Y	0.0073	0.438	0.0059	0.354
3	3.5	40	3.068		Y	0.0110	0.660	0.0086	0.516
4	4.5	40	4.026		Y	0.0149	0.894	0.0114	0.684
5	5.563	40	5.047		Y	0.0199	1.194	0.0148	0.888
6	6.625	40	6.065		Y	0.0263	1.578	0.0187	1.122
1/2	0.84	80	0.546	45	Y	0.0020	0.120	0.0017	0.102
1	1.315	80	0.957		Y	0.0027	0.162	0.0023	0.138
1 1/2	1.9	40	1.61		Y	0.0037	0.222	0.0031	0.186
2	2.375	40	2.067		Y	0.0045	0.270	0.0038	0.228
3	3.5	40	3.068		Y	0.0065	0.390	0.0053	0.318
4	4.5	40	4.026		Y	0.0084	0.504	0.0068	0.408
5	5.563	40	5.047		Y	0.0105	0.630	0.0084	0.504
6	6.625	40	6.065		Y	0.0129	0.774	0.0102	0.612
1/2	0.84	80	0.546	50	Y	0.0015	0.090	0.0013	0.078
1	1.315	80	0.957		Y	0.0021	0.126	0.0018	0.108
1 1/2	1.9	40	1.61		Y	0.0028	0.168	0.0024	0.144
2	2.375	40	2.067		Y	0.0034	0.204	0.0029	0.174
3	3.5	40	3.068		Y	0.0048	0.288	0.0041	0.246
4	4.5	40	4.026		Y	0.0061	0.366	0.0051	0.306
5	5.563	40	5.047		Y	0.0075	0.450	0.0062	0.372
6	6.625	40	6.065		Y	0.009	0.540	0.0074	0.444

* 1" insulation required

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Table 4 - Minimum Flow to Avoid Freezing - Salt Water with Insulation

Nominal Pipe Size	O.D.	Schedule	I.D.	Nom. Header Temp.	Insulated (1/2-inch)	Minimum Flow to Prevent Freezing (Salt Water)			
						PSL (16°F)		PTN (19°F)	
(inch)	(inch)	-	(inch)	(°F)	(Y / N)	(gpm)	(gph)	(gpm)	(gph)
1/2	0.84	80	0.546	35	Y	0.0027	0.162	0.0021	0.126
1	1.315	80	0.957		Y	0.0038	0.228	0.0030	0.180
1 1/2	1.9	40	1.61		Y	0.0053	0.318	0.0040	0.240
2	2.375	40	2.067		Y	0.0065	0.390	0.0049	0.294
3	3.5	40	3.068		Y	0.0096	0.576	0.0071	0.424
4	4.5	40	4.026		Y	0.0127	0.762	0.0092	0.552
5	5.563	40	5.047		Y	0.0166	0.996	0.0116	0.696
6	6.625	40	6.065		Y	0.0212	1.272	0.0142	0.852
1/2	0.84	80	0.546	40	Y	0.0017	0.102	0.0014	0.084
1	1.315	80	0.957		Y	0.0024	0.144	0.0019	0.114
1 1/2	1.9	40	1.61		Y	0.0033	0.198	0.0026	0.156
2	2.375	40	2.067		Y	0.0039	0.234	0.0031	0.186
3	3.5	40	3.068		Y	0.0056	0.336	0.0044	0.264
4	4.5	40	4.026		Y	0.0071	0.426	0.0055	0.330
5	5.563	40	5.047		Y	0.0088	0.528	0.0068	0.408
6	6.625	40	6.065		Y	0.0107	0.642	0.008	0.480
1/2	0.84	80	0.546	45	Y	0.0014	0.084	0.0011	0.066
1	1.315	80	0.957		Y	0.0019	0.114	0.0015	0.090
1 1/2	1.9	40	1.61		Y	0.0025	0.15	0.002	0.120
2	2.375	40	2.067		Y	0.003	0.18	0.0024	0.144
3	3.5	40	3.068		Y	0.0042	0.252	0.0034	0.204
4	4.5	40	4.026		Y	0.0052	0.312	0.0042	0.252
5	5.563	40	5.047		Y	0.0064	0.384	0.0051	0.306
6	6.625	40	6.065		Y	0.0076	0.456	0.006	0.360
1/2	0.84	80	0.546	50	Y	0.0011	0.066	0.0009	0.054
1	1.315	80	0.957		Y	0.0019	0.114	0.0015	0.090
1 1/2	1.9	40	1.61		Y	0.0025	0.15	0.002	0.120
2	2.375	40	2.067		Y	0.003	0.18	0.0024	0.144
3	3.5	40	3.068		Y	0.0042	0.252	0.0034	0.204
4	4.5	40	4.026		Y	0.0052	0.312	0.0042	0.252
5	5.563	40	5.047		Y	0.0064	0.384	0.0051	0.306
6	6.625	40	6.065		Y	0.0076	0.456	0.006	0.360

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Methodology:

NATIONAL RESEARCH COUNCIL OF CANADA

DIVISION OF BUILDING RESEARCH

No. 418

TECHNICAL NOTE

NOT FOR PUBLICATION — FOR INTERNAL USE

PREPARED BY D. G. Stephenson CHECKED BY A. G. W. APPROVED BY N. B. H.

DATE June 1964

PREPARED FOR Inquiry Reply

SUBJECT PREVENTING EXPOSED WATER PIPES FROM FREEZING

A water pipe that is exposed to an environment at temperatures lower than the freezing point of water will not necessarily freeze even without insulation if there is a continuous flow through it, but when there is no flow it will freeze regardless of insulation. The required minimum flow rate depends on the temperature of the water entering the exposed section of pipe and the resistance to heat transfer from the water to the environment. This note presents an equation relating these parameters. It can be used to solve for any one of the three variables when the other two are known. Information is also presented which facilitates the calculation of the thermal resistance between water in the pipe and the environment, for conditions that could cause freezing.

Basic Equation for Heat Loss

The rate of heat transfer from fluid flowing through a pipe is:

$$Q = \frac{L \cdot \Theta_{mean}}{R_{Total}}$$

where R_{Total} is the resistance to heat flow per unit length of pipe,

L is the length of the exposed section of pipe,

Θ is the difference between the fluid temperature and the ambient air temperature.

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Let T_{in} = temperature of fluid entering pipe,
T_{out} = temperature of fluid leaving pipe,
$T_{ambient}$ = temperature of the environment.

Then

$$\theta_{in} = T_{in} - T_{ambient}$$

$$\theta_{out} = T_{out} - T_{ambient}$$

$$\theta_{mean} = \frac{\theta_{in} - \theta_{out}}{\ell n\,(\theta_{in}/\theta_{out})} = \frac{T_{in} - T_{out}}{\ell n\,(\theta_{in}/\theta_{out})}$$

The heat loss can also be related to the fluid flow rate and the temperature drop between inlet and outlet.

$$Q = W C (T_{in} - T_{out})$$

where W is mass flow rate through the pipe,
C is the specific heat of the fluid (= 1.0 for water).

Combining the two independent expressions for Q gives:

$$\ell n\,(\theta_{in}/\theta_{out}) = \frac{L}{WCR_{Total}}$$

$$\text{or } \theta_{in} = \theta_{out}\, e^{L/WCR_{Total}}$$

Thermal Resistances

The total resistance to heat flow between fluid flowing through a pipe and the outside environment is the sum of the following four components:

(a) R_{inside}, which depends on the rate of flow and the inside diameter of the pipe. Figure 1 gives the relationship for cold water flowing through a long pipe.

(b) $$R_{pipe} = \frac{\ell n\,(O.D./I.D.)_{pipe}}{2\pi K_{pipe}}$$

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where O.D. and I.D. are the outside and inside diameters of the pipe respectively and K_{pipe} is the thermal conductivity of the pipe material.

Material	K ($\frac{Btu}{ft\ hr\ °F}$)
Copper	220
Aluminum	120
Steel	28
Plastic	0.1

(c) $$R_{insulation} = \frac{\ln (O.D./I.D.)_{insulation}}{2\pi K_{insulation}}$$

For most pipe insulations the conductivity has a value of about 0.025 Btu/hr ft °F.

(d) $$R_{outside} = \frac{1}{H_c + H_R}$$

where H_c and H_R are the conductances per lineal foot of pipe due to convection and radiation respectively. H_c depends on the outside diameter of the cylinder and the velocity of the air blowing across it. The relationship is shown graphically in Figure 2. H_R depends on the diameter of the cylinder and the emissivity of the outer surface. For surfaces with a high value of emissivity, H_R is approximately equal to twice the outside diameter expressed in feet. This is usually small compared to H_c and a lower emissivity surface makes it smaller still.

Minimum Water Temperature

If a pipe is to remain completely free of ice, its inside surface temperature must not fall below 32°F, which means that the water temperature must be above 32°F. The minimum value of T_{out} is given by:

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$$T_{out} = 32 + \left(\frac{R_{inside}}{R_{pipe} + R_{insulation} + R_{outside}}\right)\left(32 - T_{ambient}\right)$$

or $$\Theta_{out} = \left(\frac{R_{Total}}{R_{pipe} + R_{insulation} + R_{outside}}\right)\left(32 - T_{ambient}\right)$$

Example Problem

Find the required inlet water temperature to prevent freezing in a 500-ft length of 6-in. schedule 40 steel pipe covered by a 1-in. layer of insulation. The minimum water flow rate will be 3 gallons/min. (1800 lb/hr) and the ambient conditions are -10°F with a 30-mile-per-hour wind.

Data: 6-in. schedule 40 steel pipe

I. D. pipe = 6.065 in.
O. D. pipe = 6.625 in.
O. D. insulation = 8.625 in.

Solution:

A. Calculation of Thermal Resistances

$$\frac{W}{\pi \times I.D.} = \frac{1800}{\pi \times 6.065/12} = 1134$$

From Figure 1, $R_{inside} = 0.25$

$R_{pipe} = \ln(6.625/6.065) / (2\pi \times 28) = 0.0005$ i.e., negligible

$R_{insulation} = \ln(8.625/6.625) / (2\pi \times 0.025) = 1.68$

$$R_{outside} = \frac{1}{H_c + H_R}$$

$$\text{Wind Speed} \times O.D._{insulation} = 30 \times \frac{8.625}{12} = 21.6$$

∴ From Figure 2, $H_c = 19.8$

$$H_R = \frac{2 \times 8.625}{12} = 1.4$$

$$R_{outside} = \frac{1}{19.8 + 1.4} = 0.05$$

$R_{Total} = 0.25 + 1.68 + 0.05 = 1.98$

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B. Calculation of Water Outlet Temperature

$$\Theta_{out} = \left(\frac{R_{Total}}{R_{pipe} + R_{insulation} + R_{outside}}\right)\left(32 - T_{ambient}\right)$$

$$= \frac{1.98}{1.73} \times 42 = 48 \text{ degrees}$$

$$T_{out} = T_{ambient} + \Theta_{out} = -10 + 48 = \underline{38°F}$$

C. Calculation of Water Inlet Temperature

$$\Theta_{in} = \Theta_{out}\, e^{L/WCR_{Total}}$$

$$L/WCR_{Total} = \frac{500}{1800 \times 1 \times 1.98} = 0.140$$

$$\Theta_{in} = 48\, e^{0.140} = 55 \text{ degrees}$$

$$T_{in} = T_{ambient} + \Theta_{in} = -10 + 55 = \underline{45°F}$$

The problem might have been to determine the minimum allowable flow rate for a given inlet temperature, say $T_{in} = 48°F$.

Solution:

A. as in first example assuming that flow will be laminar and $R_{inside} = .25$ regardless of flow rate

B. as in first example

C. Calculation of Minimum Flow Rate

$$L/WCR_{Total} = \ln(\Theta_{in}/\Theta_{out})$$

$$\Theta_{in} = T_{in} - T_{ambient} = 48 + 10 = 58$$

$$\ln(\Theta_{in}/\Theta_{out}) = \ln(58/48) = 0.190$$

$$W = \frac{L}{CR_{Total}\ln(\Theta_{in}/\Theta_{out})} = \frac{500}{1 \times 1.98 \times 0.190} = \underline{1330} \text{ lb/hr.}$$

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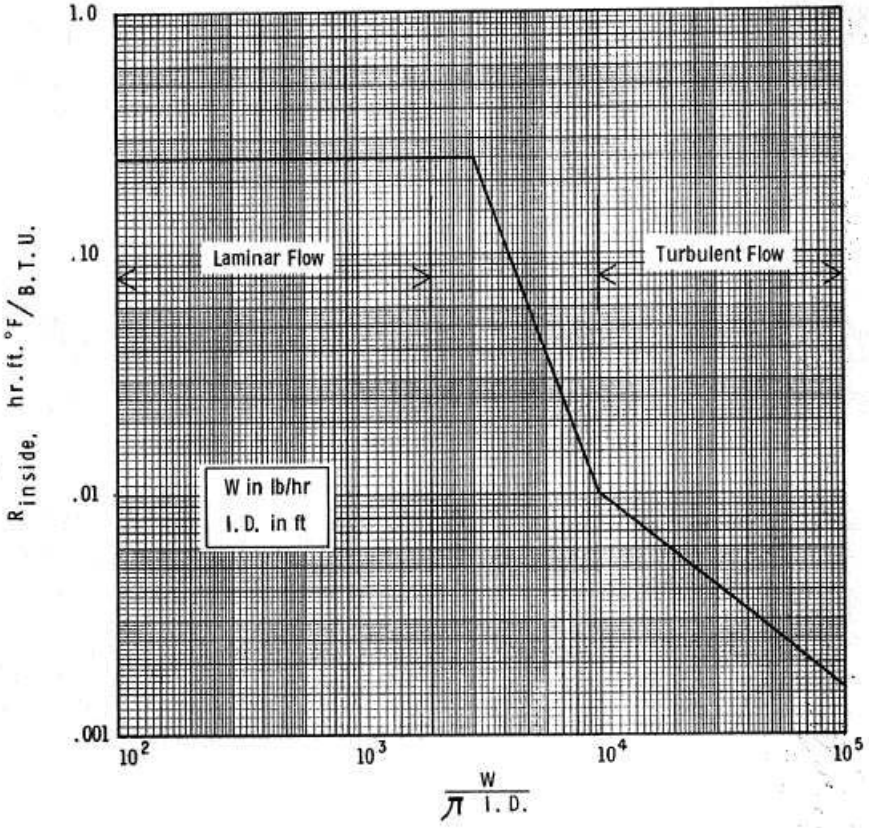

FIGURE 1

THERMAL RESISTANCE BETWEEN PIPE AND WATER FLOWING THROUGH IT

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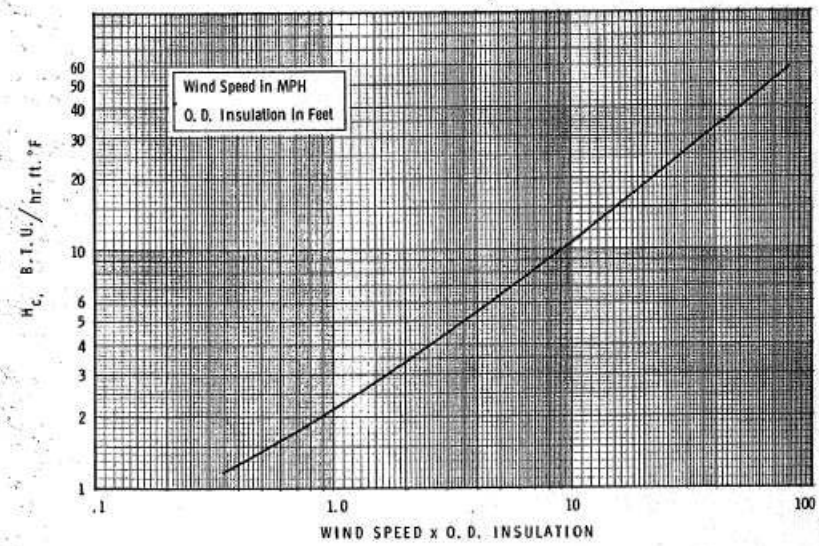

FIGURE 2
CONVECTIVE HEAT TRANSFER FROM CYLINDER TO AIR IN CROSSFLOW

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BENCHMARK CASE

Inputs

Flow Rate (gpm)	3.596
Inlet Temperature (F)	48
Density (lbm/ft^3)	62.4
Flow rate (lbm/hr)	1,799.79
Length (ft)	500
ID Pipe (in)	6.065
OD_{Pipe} (in)	6.625
$OD_{Insulation}$ (in)	8.625
Ambient Temp (F)	-10
Wind Speed (mph)	30
Pipe Conductivity (K(BTU/ft*hr*F)	28
Insulation Conductivity (K(BTU/ft*hr*F)	0.025
Specific Heat of Water	1

Solution:

A. Calculation of Thermal Resistances

W/(π*ID)	1,133.50
R_{inside}	0.25
R_{pipe}	0.000501996
$R_{insulation}$	1.679495849
Wind Speed * $OD_{Insulation}$	21.5625
H_c	19.92629455
H_R	1.4375
$R_{outside}$	0.046808164
R_{total}	1.976806009

B. Calculation of Water Outlet Temperature

θout	48.08059037
T_{out} (F)	38.08059037

Note: This step determines the required bulk water temperature to prevent water from freezing within the inside boundary layer.

C. Calculation of Water Inlet Temperature Given

θin	55.34
T_{in} (F)	45.34

C. Calculation of Required Water Flow Rate Given Temp

θin	58
$\ln(\theta_{in}/\theta_{out})$	0.187564441
Flow Rate (lbm/hr)	1,348.51
Density (lbm/ft^3)	62.4
Flow Rate (gpm)	2.69

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Figure 1 Data

W/(π*ID)	R
100	0.25
1,200	0.25
10,000	0.01
100,000	0.0016

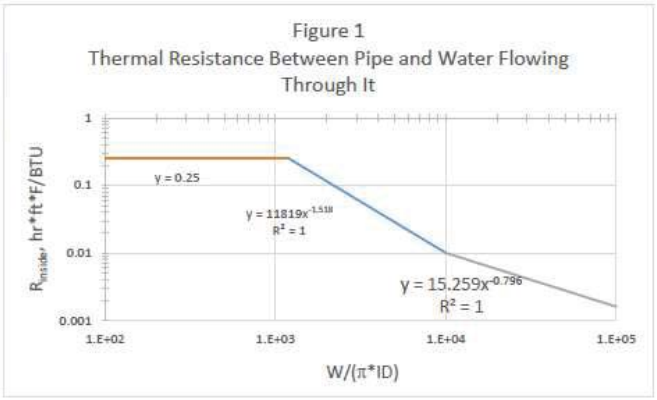
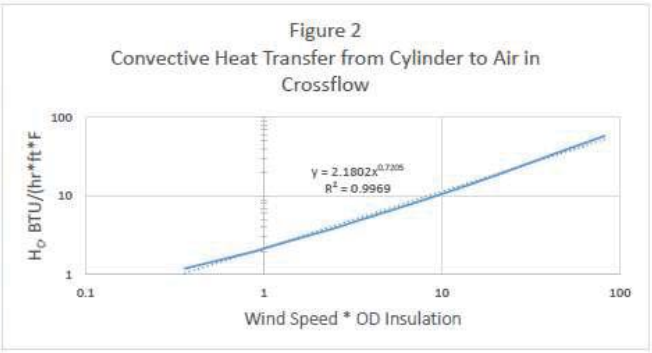


Figure 2 Data

Wind Speed	H_c
0.36	1.2
0.54	1.5
0.9	2
1.1	2.3
2	3.4
2.4	3.8
3.5	5
8	9
13	13
21	19
25	22
35	29
50	39
82	58



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ANO ECP Temporary HDPE Piping Example	
Inputs	
Flow Rate (gpm)	57
Inlet Temperature (F)	40
Density (lbm/ft^3)	62.4
Flow rate (lbm/hr)	28,528.38
Length (ft)	2500
ID Pipe (in)	26.26
OD_{Pipe} (in)	30
$OD_{insulation}$ (in)	30
Ambient Temp (F)	19
Wind Speed (mph)	30
Pipe Conductivity (K(BTU/ft*hr*F)	0.1
Insulation Conductivity (K(BTU/ft*hr*F)	0.025
Specific Heat of Water	1

Solution:

A. Calculation of Thermal Resistances

W/(π*ID)	4,149.67
R_{inside}	0.03805711
R_{pipe}	0.211915623
$R_{insulation}$	0
Wind Speed * $OD_{insulation}$	75
H_C	48.91904561
H_R	5
$R_{outside}$	0.018546322
R_{total}	0.268519055

B. Calculation of Water Outlet Temperature

θout	15.14674242
T_{out} (F)	34.14674242

Note: This step determines the required bulk water temperature to prevent water from freezing within the inside boundary layer.

C. Calculation of Water Inlet Temperature Given Flow

θin	20.99
T_{in} (F)	39.99

C. Calculation of Required Water Flow Rate Given Temp

θin	21
$\ln(\theta_{in}/\theta_{out})$	0.326736951
Flow Rate (lbm/hr)	28,494.87
Density (lbm/ft^3)	62.4
Flow Rate (gpm)	56.93

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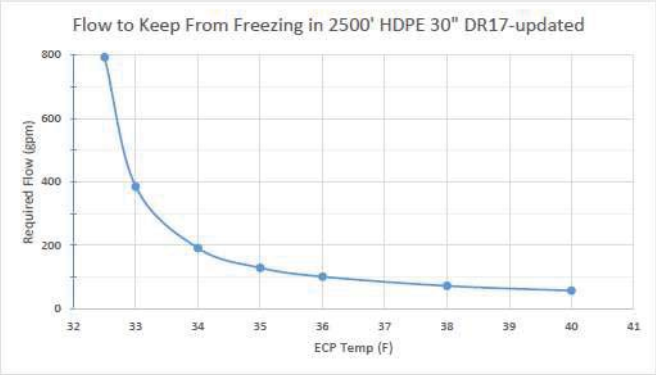
Flow to Keep From Freezing in 2500' HDPE 30" DR17

ECP Temp (F)	Req'd Flow (gpm)
40	57
38	72
36	101
35	129
34	191
33	385
32.5	793



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Attachment E

Branch Line Freeze Protection

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Branch Line Freeze Protection

Analysis summary:

The heat transfer model of a dead-leg pipe segment is simulated in GOTHIC using a 3D subdivided control volume, fixed at one end to a constant-temperature flowing process fluid. The dead leg volume dimensions correspond to the length and inside diameter of the pipe segment under consideration, with a cylindrical blockage establishing the correct internal free volume and surface area distributions. The dead leg pipe segments are nodalized in 12 equal axial nodes. In the transverse direction, three nodes divide the volume. This arrangement permits buoyancy-driven fluid exchange between the dead leg and the process fluid through a 3D connector.

The process fluid pipe is subdivided in the axial and transverse direction with sufficient granularity to accommodate the 3D connector to the dead leg. Other 3D connectors link the process fluid with upstream and downstream lumped volumes that provide the source and sink for the process fluid via connected boundary conditions.

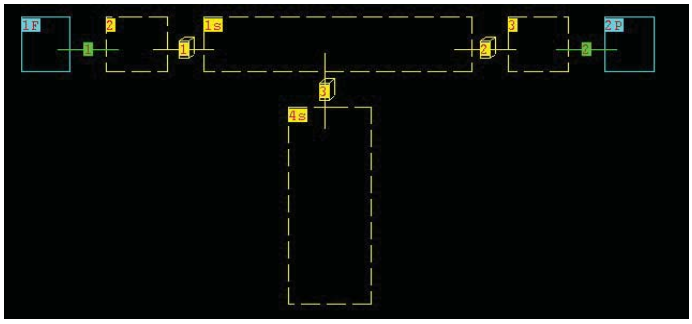

Figure 4 – GOTHIC Control Volume Arrangement

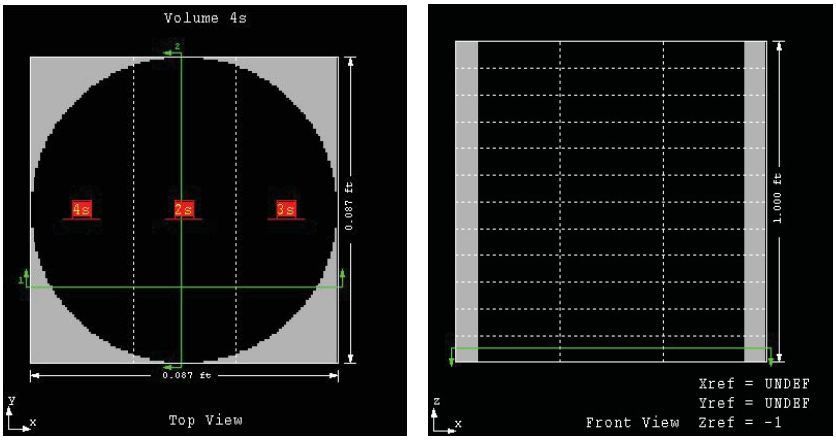

Figure 5 – Dead Leg Subdivided Volume

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Thermal conductors representing the pipe wall span the length of the dead-leg pipe, one in each of the three transverse node planes. Surface A contacts the fluid, and surface B contacts the outside atmosphere. 2D assemblies defined for each conductor account for heat transmission through the pipe wall from the warm process pipe toward the end of the dead leg.

GOTHIC's "direct" surface option governs heat transfer from the dead leg liquid to the inner pipe wall. This option is appropriate for general use when boiling is not expected.

For the outside pipe or insulation surface in a 10-mph wind, a thermal boundary condition controls the heat transfer rate, where the time-varying ambient temperature corresponds to the plant-specific sinusoidal cold-weather temperature profile for St. Lucie. A diameter-specific heat transfer coefficient reflects the constant 10 mph wind conditions. The correlation applied to calculate the heat transfer coefficient is described below.

For the outside pipe or insulation surface with no wind effects, GOTHIC's default heat transfer coefficient for natural convection over a horizontal pipe is used. In this case, heat transfer occurs to a separate temperature-controlled volume with zero air flow, rather than a thermal boundary condition.

On the process side of the 2D conductor assemblies, a specified-temperature thermal boundary condition forces the inboard edge of the assembly to match the process fluid temperature. At the outboard end, the selected surface option matches that applied to the pipe/insulation outer surface.

Assumptions:

- While the postulated cold weather event lasts 4 days, only the first diurnal cycles is evaluated. Since the temperature change occurs very slowly, the system always remains in a quasi-steady state, so overnight transients are essentially identical.
- Freezing is considered as being "prevented" if the minimum liquid temperature in all dead leg cells remains above 33 °F, and GOTHIC does not predict ice formation on any heat conducting surface (indicated by an ice volume fraction, α_i, greater than 0.01).
- Pipe dimensions correspond to Schedule 40 for the indicated NPS. Material properties correspond to carbon steel.
- The process fluid piping is assigned an arbitrary diameter of 8 inches, with an arbitrarily low flow rate at a fixed temperature. Process flow through the small subdivisions at the intersection of the dead leg contributes to the time step limitations for the GOTHIC scenarios. A lower process flow permits faster case run times, so a slow flow rate is selected. Undocumented sensitivity cases show that increasing process fluid flow rate does not significantly impact the overnight temperature profiles in the dead legs.
- Initial temperature in the dead leg is 40 °F. (This has little impact on the analysis, since quasi-steady state conditions are established very early, which track with the sinusoidal outdoor temperature.)
- Process pipe wall temperature matches the fixed fluid temperature.
- Heat transfer conditions at the outer surface are reasonably modeled using textbook heat transfer correlations for a cylinder in crossflow. Calculated HTCs are diameter-specific.
- Calcium silicate (cal-sil) insulation properties from Ref. [2] are assumed.

GOTHIC cases are run to evaluate combinations of the following scenario inputs:

- ½" to 4" NPS branch lines, oriented downward, horizontally, and upward
- 50 °F to 400 °F process fluid, typically in increments of 10, 25, or 50 °F

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For each temperature / pipe diameter combination considered, dead leg pipe length is gradually incremented upward from 0.5 ft until freezing conditions are encountered to identify the maximum allowable no-freeze pipe length.

Calculation of Heat Transfer Coefficient for Air Crossflow over the Pipe

Governing Equation

From Ref. [1] (Incropera), Sec. 7.4.1, the heat transfer coefficient at the surface of a cylinder in convective crossflow may be estimated using the following correlation:

$$Nu_D \equiv \frac{hD}{k} = 0.3 + \frac{0.62 Re_D^{1/2} Pr^{1/3}}{\left[1+(0.4/Pr)^{2/3}\right]^{1/4}} \left[1 + \left(\frac{Re_D}{282{,}000}\right)^{5/8}\right]^{4/5} \quad \text{Eqn. 1}$$

Where:

Nu_D = Nusselt number (dimensionless)

h = heat transfer coefficient, BTU/ft²-sec-°F

D = cylinder outer diameter, ft

k = thermal conductivity of convective fluid (air, BTU/sec-ft-°F)

Pr = Prandtl number (dimensionless)

Re_D = Reynolds number (dimensionless)

Values for Pr, Re_D, and k are determined as follows:

Prandtl Number

The Prandtl number relates mass and energy diffusion rates at the fluid-surface boundary layer. For air, in cold weather conditions, a value of 0.717 is interpolated from Table A.4 of Ref. [1], corresponding to 260 K (25 °F).

Reynolds Number

For a cylinder in crossflow, the Reynolds number is a function of fluid velocity, cylinder diameter, and kinematic viscosity, as shown in Section 7.4.1 of Ref. [1]:

$$Re_D = \frac{VD}{\nu} \quad \text{Eqn. 2}$$

Where:

V = air velocity, specified as 10 mph (14.7 ft/sec) for FPL winter conditions

v = kinematic viscosity, ft²/sec

Kinematic viscosity is a function of temperature. Interpolating from Table A.4 of Ref. [1] gives the following value for air at 260 K (25 °F), representative of the ambient temperatures being evaluated:

$\nu = 1.14 \times 10^{-5}$ m²/sec = 1.33×10^{-4} ft²/sec

Thermal Conductivity of Air

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Interpolating from Table A.4 of Ref. [1] gives the following thermal conductivity for air at 260 K (25 °F), representative of the outdoor temperature range being evaluated:

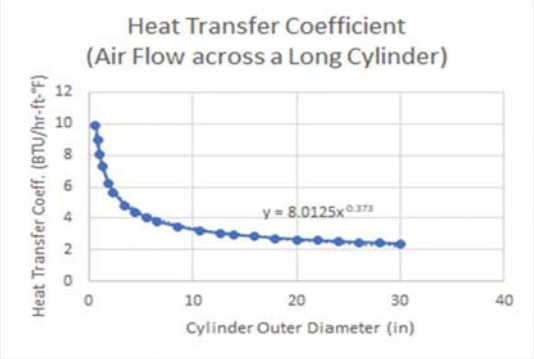
k = 0.0231 W/m-K = 0.0133 BTU/hr-ft-°F

Application to PSL/PTN Conditions

Using the Eqn. 1, heat transfer coefficients are calculated below for a variety of pipe sizes, given the 10 mph wind speed input considered for FPL.

NPS	Outer Diameter (in)	Outer Diameter (ft)	Reynolds Number (Eqn. 2)	Nusselt Number (Eqn 1)	Heat Transfer Coefficient (Eqn. 1) (BTU/hr-ft-°F)
3/8	0.675	0.056	6226	41.6	9.87
1/2	0.84	0.070	7748	46.8	8.93
3/4	1.05	0.088	9686	52.9	8.07
1	1.315	0.110	12130	60.0	7.3
1-1/2	1.9	0.158	17526	73.8	6.22
2	2.375	0.198	21908	84.0	5.66
3	3.5	0.292	32285	105.6	4.83
4	4.5	0.375	41509	123.0	4.38
5	5.563	0.464	51315	140.3	4.04
6	6.625	0.552	61111	156.7	3.79
8	8.625	0.719	79559	185.9	3.45
10	10.75	0.896	99161	215.0	3.2
12	12.75	1.063	117610	241.4	3.03

Presented graphically, the heat transfer coefficients conform very well to a power function curve fit, which is used to develop the coefficients assigned to the individual GOTHIC cases:



Power Curve Approximation:

b	log10(a)	a
-0.373	0.904	8.013

$$h = a \cdot d^b$$

Figure 6 – Power curve approximation for heat transfer coefficient with 10 mph wind

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Calcium Silicate Insulation Properties

Material properties for calcium silicate are taken from [2]. For specific heat, [2] provides a range of 0.8 - 1.2 kj/kg-K. To minimize the effectiveness of the cal-sil as a heat sink, the lower end of this band is selected. Conductivity is extrapolated back to -18C (0F) to cover cold weather conditions.

Temp °C	Density kg/m³	Cond. W/m-K	Sp. Heat kJ/kg-K
-18	260	0.07	0.8
200	260	0.08	0.8
400	260	0.09	0.8
600	260	0.12	0.8
800	260	0.15	0.8

Converting to English units:

Temp °F	Density lbm/ft³	Cond. BTU/hr-ft-F	Sp. Heat BTU/lbm-F
0	16.2	0.04	0.19
392	16.2	0.046	0.19
752	16.2	0.052	0.19
1112	16.2	0.069	0.19
1472	16.2	0.087	0.19

Only the first row of data is utilized in the models, since the overall temperature range is small for the cold weather cases.

References

1. Incropera, Frank P., et. al., "Fundamentals of Heat and Mass Transfer, Sixth Edition", John Wiley & Sons, Inc., 2007.
2. Microcal 1100 Datasheet for Lightweight Calcium Silicate Boards, Data Sheet 33.7: https://www.silca-online.de/fileadmin/2.pdf/04.produktdatenblaetter-ht-en/PDB-MICROCAL_EN.pdf

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Results – Uninsulated Branch Lines

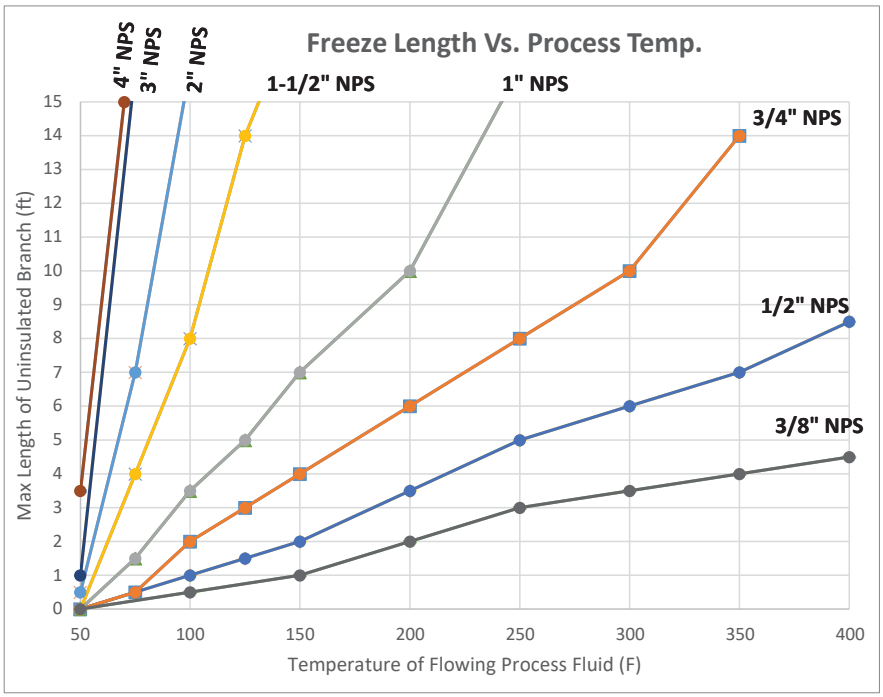

Figure 7 – Max allowable lengths of uninsulated horizontal branch lines

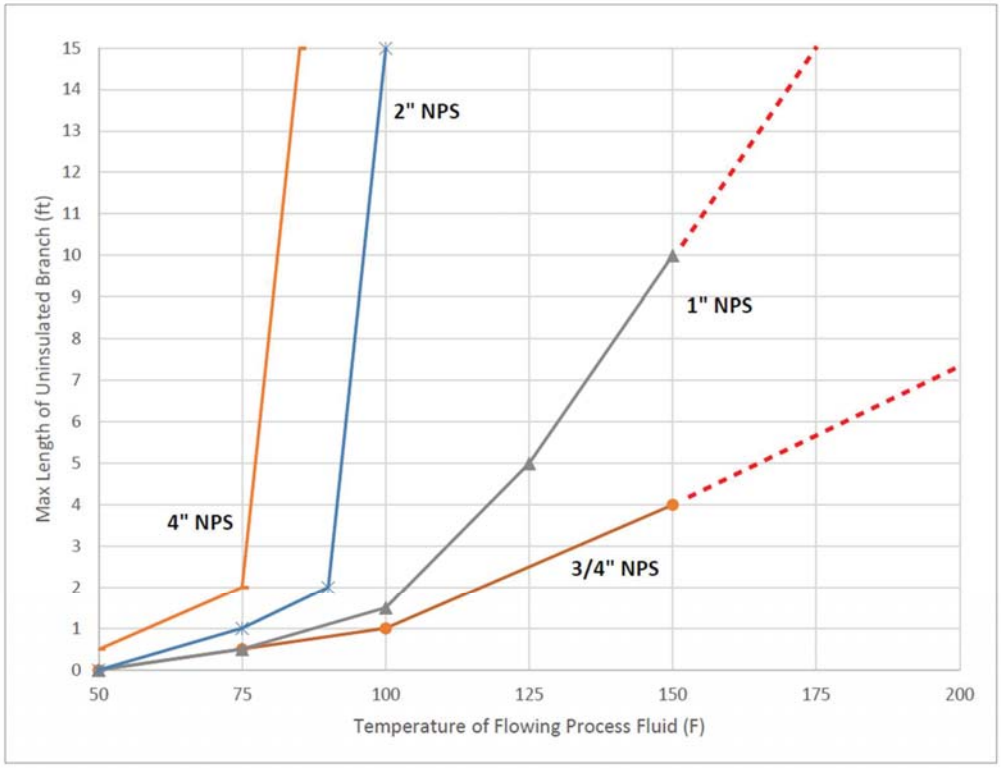

Figure 8 – Max allowable lengths of <u>uninsulated upward</u> oriented branch lines

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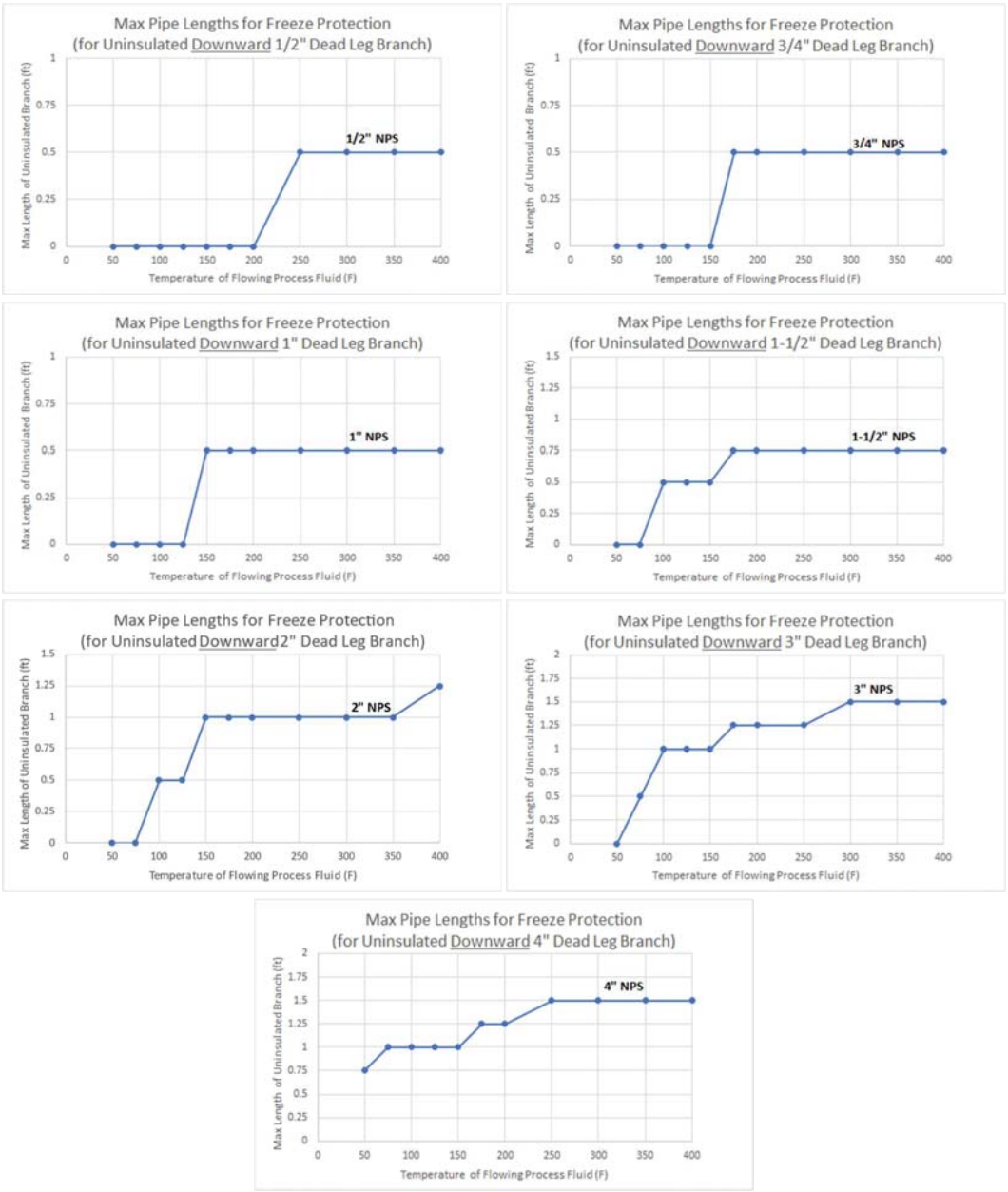

Figure 9 – Max allowable lengths of <u>uninsulated downward</u> oriented branch lines

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Results – Branch Lines with 1" Insulation

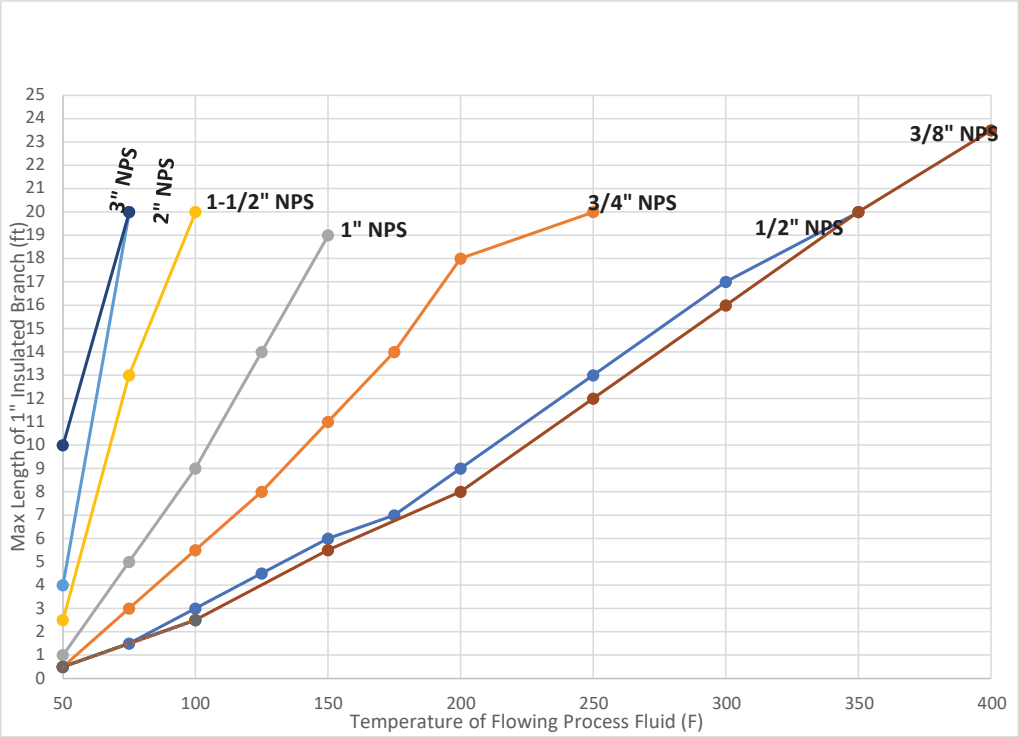

Figure 10 – Max allowable lengths of 1" insulated horizontal branch lines

(Use Horizontal)

Figure 11 – Max allowable lengths of 1" insulated upward oriented branch lines

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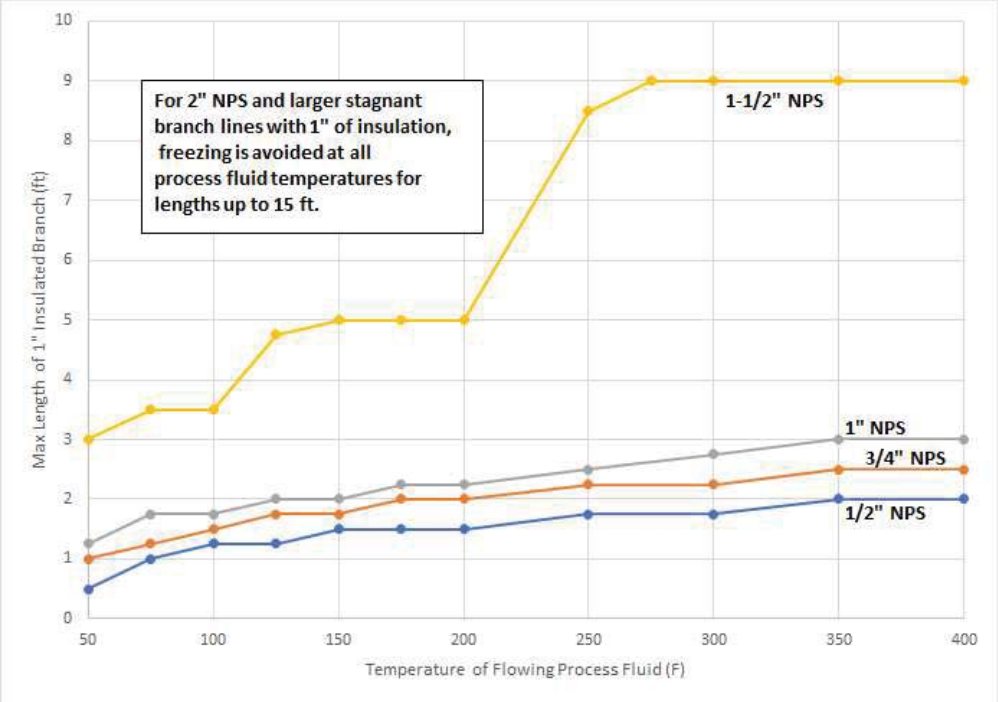

Figure 12 – Max allowable lengths of 1" insulated downward oriented branch lines

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Results -- Sensitivity Cases for ½" Branch Lines with and without Wind Effects

Additional GOTHIC cases were performed to demonstrate the effect of wind speed on the propensity for dead legs to freeze under the postulated cold weather temperature conditions. For cases with no wind, GOTHIC's default heat transfer coefficient correlations for natural circulation air flow around a horizontal pipe are used. Figures 13 through 15 show that wind speed is a significant contributor to the maximum allowable length when branch lines are uninsulated. However, the wind effect is significantly reduced when the branch line is insulated, as shown in Figures 16 through 18.

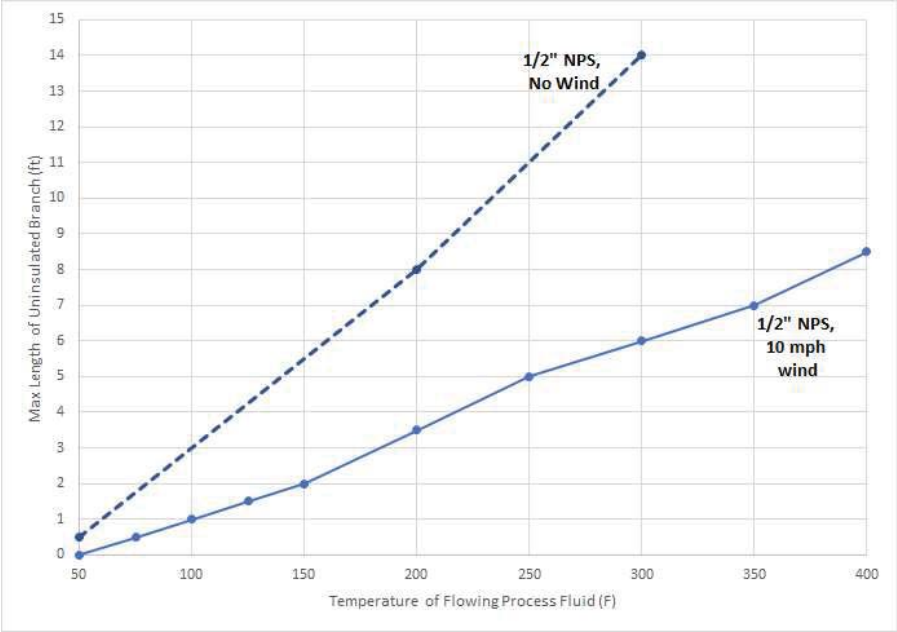

Figure 13 – Max allowable lengths of <u>uninsulated ½" horizontal</u> dead leg branch lines, with and without wind effects

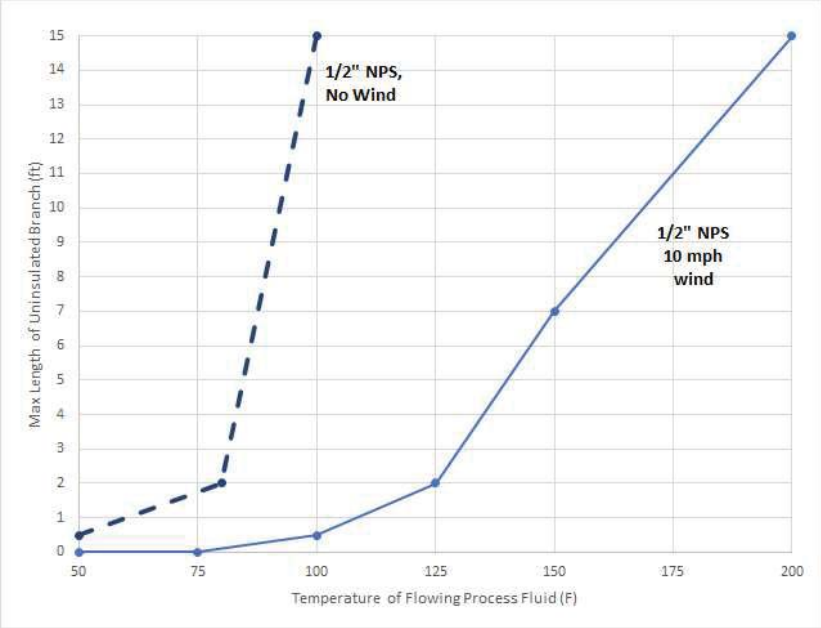

Figure 14 – Max allowable lengths of <u>uninsulated ½" upward</u> dead leg branch lines, with and without wind effects

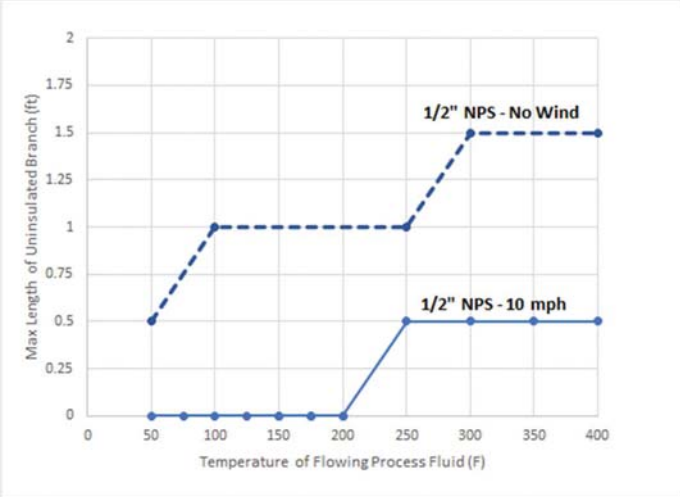

Figure 15 – Max allowable lengths of <u>uninsulated ½" downward</u> dead leg branch lines, with and without wind effects

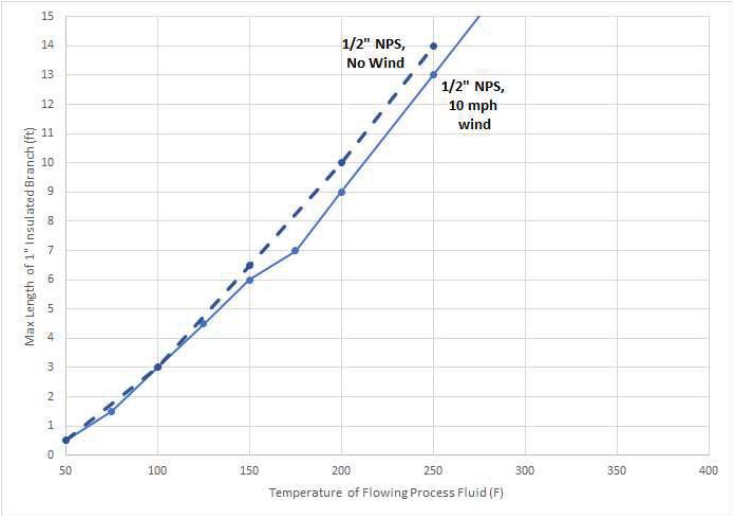

Figure 16 – Max allowable lengths of ½" horizontal dead leg branch lines with 1" insulation, with and without wind effects

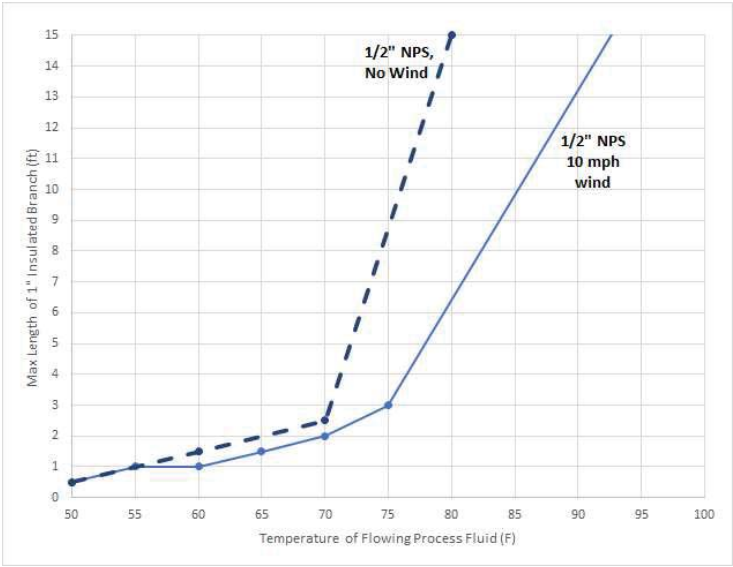

Figure 17 – Max allowable lengths of ½" upward dead leg branch lines with 1" insulation, with and without wind effects

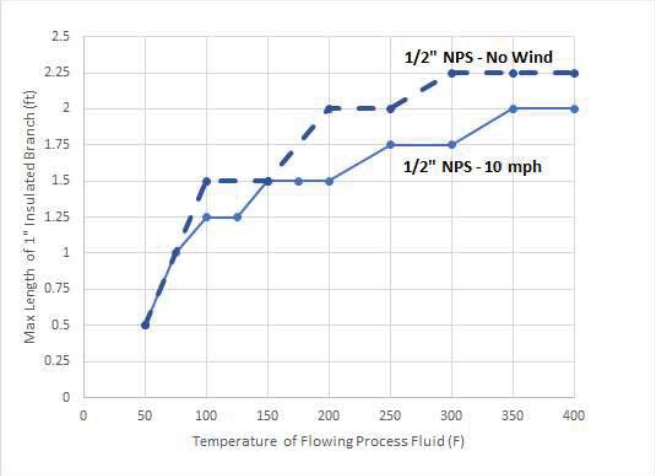

Figure 18 – Max allowable lengths of ½" downward dead leg branch lines with 1" insulation, with and without wind effects

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Vertical Upward Analysis Values

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	0.375	40	0.00	H
Upward	TV	0.375	50	0.00	H
Upward	TV	0.375	60	0.10	H
Upward	TV	0.375	70	0.20	H
Upward	TV	0.375	80	0.30	H
Upward	TV	0.375	90	0.40	H
Upward	TV	0.375	100	0.50	H
Upward	TV	0.375	110	0.60	H
Upward	TV	0.375	120	0.70	H
Upward	TV	0.375	130	0.80	H
Upward	TV	0.375	140	0.90	H
Upward	TV	0.375	150	1.00	H
Upward	TV	0.375	160	1.20	H
Upward	TV	0.375	170	1.40	H
Upward	TV	0.375	180	1.60	H
Upward	TV	0.375	190	1.80	H
Upward	TV	0.375	200	2.00	H
Upward	TV	0.375	210	2.20	H
Upward	TV	0.375	220	2.40	H
Upward	TV	0.375	230	2.60	H
Upward	TV	0.375	240	2.80	H
Upward	TV	0.375	250	3.00	H
Upward	TV	0.375	260	3.10	H
Upward	TV	0.375	270	3.20	H
Upward	TV	0.375	280	3.30	H
Upward	TV	0.375	290	3.40	H
Upward	TV	0.375	300	3.50	H
Upward	TV	0.375	310	3.60	H
Upward	TV	0.375	320	3.70	H
Upward	TV	0.375	330	3.80	H
Upward	TV	0.375	340	3.90	H
Upward	TV	0.375	350	4.00	H
Upward	TV	0.375	360	4.10	H
Upward	TV	0.375	370	4.20	H
Upward	TV	0.375	380	4.30	H
Upward	TV	0.375	390	4.40	H
Upward	TV	0.375	400	4.5	H

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Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	0.50	40	0.00	H
Upward	TV	0.50	50	0.00	H
Upward	TV	0.50	60	0.20	H
Upward	TV	0.50	70	0.40	H
Upward	TV	0.50	75	0.50	H
Upward	TV	0.50	80	0.60	H
Upward	TV	0.50	90	0.80	H
Upward	TV	0.50	100	1.00	H
Upward	TV	0.50	110	1.20	H
Upward	TV	0.50	120	1.40	H
Upward	TV	0.50	125	1.50	H
Upward	TV	0.50	130	1.60	H
Upward	TV	0.50	140	1.80	H
Upward	TV	0.50	150	2.00	H
Upward	TV	0.50	160	2.30	H
Upward	TV	0.50	170	2.60	H
Upward	TV	0.50	180	2.90	H
Upward	TV	0.50	190	3.20	H
Upward	TV	0.50	200	3.50	H
Upward	TV	0.500	210	3.80	H
Upward	TV	0.500	220	4.10	H
Upward	TV	0.500	230	4.40	H
Upward	TV	0.500	240	4.70	H
Upward	TV	0.500	250	5.00	H
Upward	TV	0.500	260	5.20	H
Upward	TV	0.500	270	5.40	H
Upward	TV	0.500	280	5.60	H
Upward	TV	0.500	290	5.80	H
Upward	TV	0.500	300	6.00	H
Upward	TV	0.500	310	6.20	H
Upward	TV	0.500	320	6.40	H
Upward	TV	0.500	330	6.60	H
Upward	TV	0.500	340	6.80	H
Upward	TV	0.500	350	7.00	H
Upward	TV	0.500	360	7.30	H
Upward	TV	0.500	370	7.60	H
Upward	TV	0.500	380	7.90	H
Upward	TV	0.500	390	8.20	H

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Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	0.500	400	8.500	H
Upward	TV	0.75	40	0.00	I
Upward	TV	0.75	50	0.00	A
Upward	TV	0.75	60	0.20	I
Upward	TV	0.75	70	0.40	I
Upward	TV	0.75	75	0.50	A
Upward	TV	0.75	80	0.60	I
Upward	TV	0.75	90	0.80	I
Upward	TV	0.75	100	1.00	A
Upward	TV	0.75	110	2.60	I
Upward	TV	0.75	120	4.20	I
Upward	TV	0.75	125	2.50	A
Upward	TV	0.75	130	7.40	L
Upward	TV	0.75	140	12.20	L
Upward	TV	0.75	150	4.00	L
Upward	TV	0.750	160	4.60	L
Upward	TV	0.750	170	5.20	L
Upward	TV	0.750	180	5.80	L
Upward	TV	0.750	190	6.40	L
Upward	TV	0.750	200	7.00	L
Upward	TV	0.750	210	7.60	L
Upward	TV	0.750	220	8.20	L
Upward	TV	0.750	230	8.80	L
Upward	TV	0.750	240	9.40	L
Upward	TV	0.750	250	10.00	L
Upward	TV	0.750	260	10.60	L
Upward	TV	0.750	270	11.20	L
Upward	TV	0.750	280	11.80	L
Upward	TV	0.750	290	12.40	L
Upward	TV	0.750	300	13.00	L
Upward	TV	0.750	310	13.60	L
Upward	TV	0.750	320	14.20	L
Upward	TV	0.750	330	14.80	L
Upward	TV	0.750	340	15.40	L
Upward	TV	0.750	350	16.00	L
Upward	TV	0.750	360	16.60	L
Upward	TV	0.750	370	17.20	L
Upward	TV	0.750	380	17.80	L

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	0.750	390	18.40	L
Upward	TV	0.750	400	19.00	L
Upward	TV	1.00	40	0.00	I
Upward	TV	1.00	50	0.00	A
Upward	TV	1.00	60	0.20	I
Upward	TV	1.00	70	0.40	I
Upward	TV	1.00	75	0.50	A
Upward	TV	1.00	80	0.70	I
Upward	TV	1.00	90	1.10	I
Upward	TV	1.00	100	1.50	A
Upward	TV	1.00	110	3.00	I
Upward	TV	1.00	115	4.50	I
Upward	TV	1.00	120	11.75	I
Upward	TV	1.00	125	5.00	A
Upward	TV	1.000	130	19.00	I
Upward	TV	1.000	140	19.00	I
Upward	TV	1.000	150	10.00	A
Upward	TV	1.000	160	12.00	L
Upward	TV	1.000	170	14.00	L
Upward	TV	1.000	180	16.00	L
Upward	TV	1.000	190	18.00	L
Upward	TV	1.000	200	20.00	L
Upward	TV	1.000	210	20.00	L
Upward	TV	1.000	220	20.00	L
Upward	TV	1.000	230	20.00	L
Upward	TV	1.000	240	20.00	L
Upward	TV	1.000	250	20.00	L
Upward	TV	1.000	260	20.00	L
Upward	TV	1.000	270	20.00	L
Upward	TV	1.000	280	20.00	L
Upward	TV	1.000	290	20.00	L
Upward	TV	1.000	300	20.00	L
Upward	TV	1.000	310	20.00	L
Upward	TV	1.000	320	20.00	L
Upward	TV	1.000	330	20.00	L
Upward	TV	1.000	340	20.00	L
Upward	TV	1.000	350	20.00	L
Upward	TV	1.000	360	20.00	L

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	1.000	370	20.00	L
Upward	TV	1.000	380	20.00	L
Upward	TV	1.000	390	20.00	L
Upward	TV	1.000	400	20.00	L
Upward	TV	1.50	40	0.00	H
Upward	TV	1.50	50	0.00	A
Upward	TV	1.50	60	1.60	H
Upward	TV	1.50	70	3.20	H
Upward	TV	1.50	75	4.00	A
Upward	TV	1.50	80	4.80	H
Upward	TV	1.50	90	6.40	H
Upward	TV	1.50	100	8.00	A
Upward	TV	1.50	110	10.40	H
Upward	TV	1.500	120	12.80	H
Upward	TV	1.500	130	14.80	H
Upward	TV	1.500	140	16.40	H
Upward	TV	1.500	150	18.00	A
Upward	TV	1.500	160	18.00	H
Upward	TV	1.500	170	18.00	H
Upward	TV	1.500	180	18.00	H
Upward	TV	1.500	190	18.00	H
Upward	TV	1.500	200	18.00	H
Upward	TV	1.500	210	18.00	H
Upward	TV	1.500	220	18.00	H
Upward	TV	1.500	230	18.00	H
Upward	TV	1.500	240	18.00	H
Upward	TV	1.500	250	18.00	H
Upward	TV	1.500	260	18.00	H
Upward	TV	1.500	270	18.00	H
Upward	TV	1.500	280	18.00	H
Upward	TV	1.500	290	18.00	H
Upward	TV	1.500	300	18.00	H
Upward	TV	1.500	310	18.00	H
Upward	TV	1.500	320	18.00	H
Upward	TV	1.500	330	18.00	H
Upward	TV	1.500	340	18.00	H
Upward	TV	1.500	350	18.00	H
Upward	TV	1.500	360	18.00	H

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	1.500	370	18.00	H
Upward	TV	1.500	380	18.00	H
Upward	TV	1.500	390	18.00	H
Upward	TV	1.500	400	18.00	H
Upward	TV	2.00	40	0.00	I
Upward	TV	2.00	50	0.00	A
Upward	TV	2.00	60	0.40	I
Upward	TV	2.00	70	0.80	I
Upward	TV	2.00	75	1.00	A
Upward	TV	2.00	80	1.50	I
Upward	TV	2.00	90	2.00	A
Upward	TV	2.00	100	15.00	A
Upward	TV	2.000	110	20.00	L
Upward	TV	2.000	120	20.00	L
Upward	TV	2.000	130	20.00	L
Upward	TV	2.000	140	20.00	L
Upward	TV	2.000	150	20.00	L
Upward	TV	2.000	160	20.00	L
Upward	TV	2.000	170	20.00	L
Upward	TV	2.000	180	20.00	L
Upward	TV	2.000	190	20.00	L
Upward	TV	2.000	200	20.00	L
Upward	TV	2.000	210	20.00	L
Upward	TV	2.000	220	20.00	L
Upward	TV	2.000	230	20.00	L
Upward	TV	2.000	240	20.00	L
Upward	TV	2.000	250	20.00	L
Upward	TV	2.000	260	20.00	L
Upward	TV	2.000	270	20.00	L
Upward	TV	2.000	280	20.00	L
Upward	TV	2.000	290	20.00	L
Upward	TV	2.000	300	20.00	L
Upward	TV	2.000	310	20.00	L
Upward	TV	2.000	320	20.00	L
Upward	TV	2.000	330	20.00	L
Upward	TV	2.000	340	20.00	L
Upward	TV	2.000	350	20.00	L
Upward	TV	2.000	360	20.00	L

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	2.000	370	20.00	L
Upward	TV	2.000	380	20.00	L
Upward	TV	2.000	390	20.00	L
Upward	TV	2.000	400	20.00	L
Upward	TV	3.00	40	0.10	H
Upward	TV	3.00	50	1.00	H
Upward	TV	3.00	60	7.00	H
Upward	TV	3.00	70	13.00	H
Upward	TV	3.00	75	16.00	H
Upward	TV	3.00	80	16.00	H
Upward	TV	3.00	85	16.00	H
Upward	TV	3.00	90	16.00	H
Upward	TV	3.00	100	16.00	H
Upward	TV	3.000	110	20.00	TV-2
Upward	TV	3.000	120	20.00	TV-2
Upward	TV	3.000	130	20.00	TV-2
Upward	TV	3.000	140	20.00	TV-2
Upward	TV	3.000	150	20.00	TV-2
Upward	TV	3.000	160	20.00	TV-2
Upward	TV	3.000	170	20.00	TV-2
Upward	TV	3.000	180	20.00	TV-2
Upward	TV	3.000	190	20.00	TV-2
Upward	TV	3.000	200	20.00	TV-2
Upward	TV	3.000	210	20.00	TV-2
Upward	TV	3.000	220	20.00	TV-2
Upward	TV	3.000	230	20.00	TV-2
Upward	TV	3.000	240	20.00	TV-2
Upward	TV	3.000	250	20.00	TV-2
Upward	TV	3.000	260	20.00	TV-2
Upward	TV	3.000	270	20.00	TV-2
Upward	TV	3.000	280	20.00	TV-2
Upward	TV	3.000	290	20.00	TV-2
Upward	TV	3.000	300	20.00	TV-2
Upward	TV	3.000	310	20.00	TV-2
Upward	TV	3.000	320	20.00	TV-2
Upward	TV	3.000	330	20.00	TV-2
Upward	TV	3.000	340	20.00	TV-2
Upward	TV	3.000	350	20.00	TV-2

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	3.000	360	20.00	TV-2
Upward	TV	3.000	370	20.00	TV-2
Upward	TV	3.000	380	20.00	TV-2
Upward	TV	3.000	390	20.00	TV-2
Upward	TV	3.000	400	20.00	TV-2
Upward	TV	4.00	40	0.00	I
Upward	TV	4.00	50	0.50	A
Upward	TV	4.00	60	1.10	I
Upward	TV	4.00	70	1.70	I
Upward	TV	4.00	75	2.00	I
Upward	TV	4.00	80	8.50	I
Upward	TV	4.00	85	15.00	A
Upward	TV	4.000	90	20.00	L
Upward	TV	4.000	100	20.00	L
Upward	TV	4.000	110	20.00	L
Upward	TV	4.000	120	20.00	L
Upward	TV	4.000	130	20.00	L
Upward	TV	4.000	140	20.00	L
Upward	TV	4.000	150	20.00	L
Upward	TV	4.000	160	20.00	L
Upward	TV	4.000	170	20.00	L
Upward	TV	4.000	180	20.00	L
Upward	TV	4.000	190	20.00	L
Upward	TV	4.000	200	20.00	L
Upward	TV	4.000	210	20.00	L
Upward	TV	4.000	220	20.00	L
Upward	TV	4.000	230	20.00	L
Upward	TV	4.000	240	20.00	L
Upward	TV	4.000	250	20.00	L
Upward	TV	4.000	260	20.00	L
Upward	TV	4.000	270	20.00	L
Upward	TV	4.000	280	20.00	L
Upward	TV	4.000	290	20.00	L
Upward	TV	4.000	300	20.00	L
Upward	TV	4.000	310	20.00	L
Upward	TV	4.000	320	20.00	L
Upward	TV	4.000	330	20.00	L
Upward	TV	4.000	340	20.00	L

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward	TV	4.000	350	20.00	L
Upward	TV	4.000	360	20.00	L
Upward	TV	4.000	370	20.00	L
Upward	TV	4.000	380	20.00	L
Upward	TV	4.000	390	20.00	L
Upward	TV	4.000	400	20.00	L
Upward-Ins	TV-I	0.375	40	Not Analyzed	NA
Upward-Ins	TV-I	0.375	50	0.50	H-I
Upward-Ins	TV-I	0.375	55	0.50	H-I
Upward-Ins	TV-I	0.375	60	0.90	H-I
Upward-Ins	TV-I	0.375	65	0.90	H-I
Upward-Ins	TV-I	0.375	70	1.30	H-I
Upward-Ins	TV-I	0.375	75	1.30	H-I
Upward-Ins	TV-I	0.375	80	1.70	H-I
Upward-Ins	TV-I	0.375	90	2.10	H-I
Upward-Ins	TV-I	0.375	100	2.50	H-I
Upward-Ins	TV-I	0.375	110	3.10	H-I
Upward-Ins	TV-I	0.375	120	3.70	H-I
Upward-Ins	TV-I	0.375	130	4.30	H-I
Upward-Ins	TV-I	0.375	140	4.90	H-I
Upward-Ins	TV-I	0.375	150	5.50	H-I
Upward-Ins	TV-I	0.375	160	6.00	H-I
Upward-Ins	TV-I	0.375	170	6.50	H-I
Upward-Ins	TV-I	0.375	180	7.00	H-I
Upward-Ins	TV-I	0.375	190	7.50	H-I
Upward-Ins	TV-I	0.375	200	8.00	H-I
Upward-Ins	TV-I	0.375	210	8.80	H-I
Upward-Ins	TV-I	0.375	220	9.60	H-I
Upward-Ins	TV-I	0.375	230	10.40	H-I
Upward-Ins	TV-I	0.375	240	11.20	H-I
Upward-Ins	TV-I	0.375	250	12.00	H-I
Upward-Ins	TV-I	0.375	260	12.80	H-I
Upward-Ins	TV-I	0.375	270	13.60	H-I
Upward-Ins	TV-I	0.375	280	14.40	H-I
Upward-Ins	TV-I	0.375	290	15.20	H-I
Upward-Ins	TV-I	0.375	300	16.00	H-I
Upward-Ins	TV-I	0.375	310	16.80	H-I
Upward-Ins	TV-I	0.375	320	17.60	H-I

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward-Ins	TV-I	0.375	330	18.40	H-I
Upward-Ins	TV-I	0.375	340	19.20	H-I
Upward-Ins	TV-I	0.375	350	20.00	H-I
Upward-Ins	TV-I	0.375	360	20.70	H-I
Upward-Ins	TV-I	0.375	370	21.40	H-I
Upward-Ins	TV-I	0.375	380	22.10	H-I
Upward-Ins	TV-I	0.375	390	22.80	H-I
Upward-Ins	TV-I	0.375	400	23.50	H-I
Upward-Ins	TV-I	0.50	40	0.00	H-I
Upward-Ins	TV-I	0.50	50	0.50	H-I
Upward-Ins	TV-I	0.50	55	0.50	H-I
Upward-Ins	TV-I	0.50	60	0.90	H-I
Upward-Ins	TV-I	0.50	65	0.90	H-I
Upward-Ins	TV-I	0.50	70	1.50	H-I
Upward-Ins	TV-I	0.50	75	1.50	H-I
Upward-Ins	TV-I	0.50	80	1.80	H-I
Upward-Ins	TV-I	0.50	90	2.40	H-I
Upward-Ins	TV-I	0.50	100	3.00	H-I
Upward-Ins	TV-I	0.50	110	3.60	H-I
Upward-Ins	TV-I	0.50	120	4.20	H-I
Upward-Ins	TV-I	0.50	130	4.50	H-I
Upward-Ins	TV-I	0.50	140	4.80	H-I
Upward-Ins	TV-I	0.50	150	5.40	H-I
Upward-Ins	TV-I	0.50	160	6.00	H-I
Upward-Ins	TV-I	0.50	170	6.40	H-I
Upward-Ins	TV-I	0.50	180	6.80	H-I
Upward-Ins	TV-I	0.50	190	7.00	H-I
Upward-Ins	TV-I	0.50	200	7.40	H-I
Upward-Ins	TV-I	0.50	210	8.20	H-I
Upward-Ins	TV-I	0.50	220	9.00	H-I
Upward-Ins	TV-I	0.50	230	9.80	H-I
Upward-Ins	TV-I	0.50	240	10.60	H-I
Upward-Ins	TV-I	0.50	250	11.40	H-I
Upward-Ins	TV-I	0.50	260	12.20	H-I
Upward-Ins	TV-I	0.50	270	13.00	H-I
Upward-Ins	TV-I	0.50	280	13.80	H-I
Upward-Ins	TV-I	0.50	290	14.60	H-I
Upward-Ins	TV-I	0.50	300	15.40	H-I

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward-Ins	TV-I	0.50	310	16.20	H-I
Upward-Ins	TV-I	0.50	320	17.00	H-I
Upward-Ins	TV-I	0.50	330	17.60	H-I
Upward-Ins	TV-I	0.50	340	18.20	H-I
Upward-Ins	TV-I	0.50	350	18.80	H-I
Upward-Ins	TV-I	0.50	360	19.40	H-I
Upward-Ins	TV-I	0.50	370	20.00	H-I
Upward-Ins	TV-I	0.50	380	20.00	H-I
Upward-Ins	TV-I	0.50	390	20.00	H-I
Upward-Ins	TV-I	0.50	400	20.00	H-I
Upward-Ins	TV-I	0.75	40	0.00	H-I
Upward-Ins	TV-I	0.75	50	0.50	H-I
Upward-Ins	TV-I	0.75	55	0.50	H-I
Upward-Ins	TV-I	0.75	60	1.50	H-I
Upward-Ins	TV-I	0.75	65	1.50	H-I
Upward-Ins	TV-I	0.75	70	2.50	H-I
Upward-Ins	TV-I	0.75	72.5	2.50	H-I
Upward-Ins	TV-I	0.75	75	3.00	H-I
Upward-Ins	TV-I	0.75	80	3.50	H-I
Upward-Ins	TV-I	0.75	90	4.50	H-I
Upward-Ins	TV-I	0.75	100	5.50	H-I
Upward-Ins	TV-I	0.75	110	6.50	H-I
Upward-Ins	TV-I	0.75	120	7.50	H-I
Upward-Ins	TV-I	0.75	130	8.60	H-I
Upward-Ins	TV-I	0.75	140	9.80	H-I
Upward-Ins	TV-I	0.75	150	11.00	H-I
Upward-Ins	TV-I	0.75	160	12.20	H-I
Upward-Ins	TV-I	0.75	170	13.40	H-I
Upward-Ins	TV-I	0.75	180	14.80	H-I
Upward-Ins	TV-I	0.75	190	16.40	H-I
Upward-Ins	TV-I	0.75	200	18.00	H-I
Upward-Ins	TV-I	0.75	210	18.40	H-I
Upward-Ins	TV-I	0.75	220	18.80	H-I
Upward-Ins	TV-I	0.75	230	19.20	H-I
Upward-Ins	TV-I	0.75	240	19.60	H-I
Upward-Ins	TV-I	0.75	250	20.00	H-I
Upward-Ins	TV-I	0.75	260	20.00	H-I
Upward-Ins	TV-I	0.75	270	20.00	H-I

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward-Ins	TV-I	0.75	280	20.00	H-I
Upward-Ins	TV-I	0.75	290	20.00	H-I
Upward-Ins	TV-I	0.75	300	20.00	H-I
Upward-Ins	TV-I	0.75	310	20.00	H-I
Upward-Ins	TV-I	0.75	320	20.00	H-I
Upward-Ins	TV-I	0.75	330	20.00	H-I
Upward-Ins	TV-I	0.75	340	20.00	H-I
Upward-Ins	TV-I	0.75	350	20.00	H-I
Upward-Ins	TV-I	0.75	360	20.00	H-I
Upward-Ins	TV-I	0.75	370	20.00	H-I
Upward-Ins	TV-I	0.75	380	20.00	H-I
Upward-Ins	TV-I	0.75	390	20.00	H-I
Upward-Ins	TV-I	0.75	400	20.00	H-I
Upward-Ins	TV-I	1.00	40	0.50	H-I
Upward-Ins	TV-I	1.00	50	1.00	H-I
Upward-Ins	TV-I	1.00	55	1.00	H-50
Upward-Ins	TV-I	1.00	60	2.60	H-I
Upward-Ins	TV-I	1.00	65	2.60	H-60
Upward-Ins	TV-I	1.00	70	4.20	H-I
Upward-Ins	TV-I	1.00	75	5.00	H-I
Upward-Ins	TV-I	1.00	80	5.80	H-I
Upward-Ins	TV-I	1.00	90	7.40	H-I
Upward-Ins	TV-I	1.00	100	9.00	H-I
Upward-Ins	TV-I	1.00	110	11.00	H-I
Upward-Ins	TV-I	1.00	120	13.00	H-I
Upward-Ins	TV-I	1.00	130	14.00	H-125
Upward-Ins	TV-I	1.00	140	14.00	H-125
Upward-Ins	TV-I	1.00	150	19.00	H-I
Upward-Ins	TV-I	1.00	160	19.00	H-I
Upward-Ins	TV-I	1.00	170	19.00	H-I
Upward-Ins	TV-I	1.00	180	19.00	H-I
Upward-Ins	TV-I	1.00	190	19.00	H-I
Upward-Ins	TV-I	1.00	200	19.00	H-I
Upward-Ins	TV-I	1.00	210	19.00	H-I
Upward-Ins	TV-I	1.00	220	19.00	H-I
Upward-Ins	TV-I	1.00	230	19.00	H-I
Upward-Ins	TV-I	1.00	240	19.00	H-I
Upward-Ins	TV-I	1.00	250	19.00	H-I

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward-Ins	TV-I	1.00	260	19.00	H-I
Upward-Ins	TV-I	1.00	270	19.00	H-I
Upward-Ins	TV-I	1.00	280	19.00	H-I
Upward-Ins	TV-I	1.00	290	19.00	H-I
Upward-Ins	TV-I	1.00	300	19.00	H-I
Upward-Ins	TV-I	1.00	310	19.00	H-I
Upward-Ins	TV-I	1.00	320	19.00	H-I
Upward-Ins	TV-I	1.00	330	19.00	H-I
Upward-Ins	TV-I	1.00	340	19.00	H-I
Upward-Ins	TV-I	1.00	350	19.00	H-I
Upward-Ins	TV-I	1.00	360	19.00	H-I
Upward-Ins	TV-I	1.00	370	19.00	H-I
Upward-Ins	TV-I	1.00	380	19.00	H-I
Upward-Ins	TV-I	1.00	390	19.00	H-I
Upward-Ins	TV-I	1.00	400	19.00	H-I
Upward-Ins	TV-I	1.50	40	1.00	H-I
Upward-Ins	TV-I	1.50	50	2.50	H-I
Upward-Ins	TV-I	1.50	55	2.50	H-50
Upward-Ins	TV-I	1.50	60	6.70	H
Upward-Ins	TV-I	1.50	65	6.70	H-60
Upward-Ins	TV-I	1.50	70	10.90	H
Upward-Ins	TV-I	1.50	80	13.00	H-75
Upward-Ins	TV-I	1.50	90	17.20	H-I
Upward-Ins	TV-I	1.50	100	20.00	H-I
Upward-Ins	TV-I	1.50	110	20.00	H-I
Upward-Ins	TV-I	1.50	120	20.00	H-I
Upward-Ins	TV-I	1.50	130	20.00	H-I
Upward-Ins	TV-I	1.50	140	20.00	H-I
Upward-Ins	TV-I	1.50	150	20.00	H-I
Upward-Ins	TV-I	1.50	160	20.00	H-I
Upward-Ins	TV-I	1.50	170	20.00	H-I
Upward-Ins	TV-I	1.50	180	20.00	H-I
Upward-Ins	TV-I	1.50	190	20.00	H-I
Upward-Ins	TV-I	1.50	200	20.00	H-I
Upward-Ins	TV-I	1.50	210	20.00	H-I
Upward-Ins	TV-I	1.50	220	20.00	H-I
Upward-Ins	TV-I	1.50	230	20.00	H-I
Upward-Ins	TV-I	1.50	240	20.00	H-I

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Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward-Ins	TV-I	1.50	250	20.00	H-I
Upward-Ins	TV-I	1.50	260	20.00	H-I
Upward-Ins	TV-I	1.50	270	20.00	H-I
Upward-Ins	TV-I	1.50	280	20.00	H-I
Upward-Ins	TV-I	1.50	290	20.00	H-I
Upward-Ins	TV-I	1.50	300	20.00	H-I
Upward-Ins	TV-I	1.50	310	20.00	H-I
Upward-Ins	TV-I	1.50	320	20.00	H-I
Upward-Ins	TV-I	1.50	330	20.00	H-I
Upward-Ins	TV-I	1.50	340	20.00	H-I
Upward-Ins	TV-I	1.50	350	20.00	H-I
Upward-Ins	TV-I	1.50	360	20.00	H-I
Upward-Ins	TV-I	1.50	370	20.00	H-I
Upward-Ins	TV-I	1.50	380	20.00	H-I
Upward-Ins	TV-I	1.50	390	20.00	H-I
Upward-Ins	TV-I	1.50	400	20.00	H-I
Upward-Ins	TV-I	2.00	40	2.00	H-I
Upward-Ins	TV-I	2.00	50	4.00	H-I
Upward-Ins	TV-I	2.00	55	4.00	H-50
Upward-Ins	TV-I	2.00	60	10.40	H
Upward-Ins	TV-I	2.00	65	10.40	H-60
Upward-Ins	TV-I	2.00	70	16.80	H-I
Upward-Ins	TV-I	2.00	80	20.00	H-I
Upward-Ins	TV-I	2.00	90	20.00	H-I
Upward-Ins	TV-I	2.00	100	20.00	H-I
Upward-Ins	TV-I	2.00	110	20.00	H-I
Upward-Ins	TV-I	2.00	120	20.00	H-I
Upward-Ins	TV-I	2.00	130	20.00	H-I
Upward-Ins	TV-I	2.00	140	20.00	H-I
Upward-Ins	TV-I	2.00	150	20.00	H-I
Upward-Ins	TV-I	2.00	160	20.00	H-I
Upward-Ins	TV-I	2.00	170	20.00	H-I
Upward-Ins	TV-I	2.00	180	20.00	H-I
Upward-Ins	TV-I	2.00	190	20.00	H-I
Upward-Ins	TV-I	2.00	200	20.00	H-I
Upward-Ins	TV-I	2.00	210	20.00	H-I
Upward-Ins	TV-I	2.00	220	20.00	H-I
Upward-Ins	TV-I	2.00	230	20.00	H-I

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward-Ins	TV-I	2.00	240	20.00	H-I
Upward-Ins	TV-I	2.00	250	20.00	H-I
Upward-Ins	TV-I	2.00	260	20.00	H-I
Upward-Ins	TV-I	2.00	270	20.00	H-I
Upward-Ins	TV-I	2.00	280	20.00	H-I
Upward-Ins	TV-I	2.00	290	20.00	H-I
Upward-Ins	TV-I	2.00	300	20.00	H-I
Upward-Ins	TV-I	2.00	310	20.00	H-I
Upward-Ins	TV-I	2.00	320	20.00	H-I
Upward-Ins	TV-I	2.00	330	20.00	H-I
Upward-Ins	TV-I	2.00	340	20.00	H-I
Upward-Ins	TV-I	2.00	350	20.00	H-I
Upward-Ins	TV-I	2.00	360	20.00	H-I
Upward-Ins	TV-I	2.00	370	20.00	H-I
Upward-Ins	TV-I	2.00	380	20.00	H-I
Upward-Ins	TV-I	2.00	390	20.00	H-I
Upward-Ins	TV-I	2.00	400	20.00	H-I
Upward-Ins	TV-I	3.00	40	5.00	H-I
Upward-Ins	TV-I	3.00	50	10.00	H-I
Upward-Ins	TV-I	3.00	55	10.00	H-I
Upward-Ins	TV-I	3.00	60	14.00	H-I
Upward-Ins	TV-I	3.00	70	18.00	H-I
Upward-Ins	TV-I	3.00	80	20.00	H-75
Upward-Ins	TV-I	3.00	90	20.00	H-I
Upward-Ins	TV-I	3.00	100	20.00	H-I
Upward-Ins	TV-I	3.00	110	20.00	H-I
Upward-Ins	TV-I	3.00	120	20.00	H-I
Upward-Ins	TV-I	3.00	130	20.00	H-I
Upward-Ins	TV-I	3.00	140	20.00	H-I
Upward-Ins	TV-I	3.00	150	20.00	H-I
Upward-Ins	TV-I	3.00	160	20.00	H-I
Upward-Ins	TV-I	3.00	170	20.00	H-I
Upward-Ins	TV-I	3.00	180	20.00	H-I
Upward-Ins	TV-I	3.00	190	20.00	H-I
Upward-Ins	TV-I	3.00	200	20.00	H-I
Upward-Ins	TV-I	3.00	210	20.00	H-I
Upward-Ins	TV-I	3.00	220	20.00	H-I
Upward-Ins	TV-I	3.00	230	20.00	H-I

ZACHRY

Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward-Ins	TV-I	3.00	240	20.00	H-I
Upward-Ins	TV-I	3.00	250	20.00	H-I
Upward-Ins	TV-I	3.00	260	20.00	H-I
Upward-Ins	TV-I	3.00	270	20.00	H-I
Upward-Ins	TV-I	3.00	280	20.00	H-I
Upward-Ins	TV-I	3.00	290	20.00	H-I
Upward-Ins	TV-I	3.00	300	20.00	H-I
Upward-Ins	TV-I	3.00	310	20.00	H-I
Upward-Ins	TV-I	3.00	320	20.00	H-I
Upward-Ins	TV-I	3.00	330	20.00	H-I
Upward-Ins	TV-I	3.00	340	20.00	H-I
Upward-Ins	TV-I	3.00	350	20.00	H-I
Upward-Ins	TV-I	3.00	360	20.00	H-I
Upward-Ins	TV-I	3.00	370	20.00	H-I
Upward-Ins	TV-I	3.00	380	20.00	H-I
Upward-Ins	TV-I	3.00	390	20.00	H-I
Upward-Ins	TV-I	3.00	400	20.00	H-I
Upward-Ins	TV-I	4.00	40	0.50	H-I
Upward-Ins	TV-I	4.00	50	15.00	H-50
Upward-Ins	TV-I	4.00	55	15.00	H-50
Upward-Ins	TV-I	4.00	60	15.00	H-50
Upward-Ins	TV-I	4.00	70	15.00	H-50
Upward-Ins	TV-I	4.00	80	15.00	H-50
Upward-Ins	TV-I	4.00	90	15.00	H-50
Upward-Ins	TV-I	4.00	100	15.00	H-I
Upward-Ins	TV-I	4.00	110	15.00	H-I
Upward-Ins	TV-I	4.00	120	15.00	H-I
Upward-Ins	TV-I	4.00	130	15.00	H-I
Upward-Ins	TV-I	4.00	140	15.00	H-I
Upward-Ins	TV-I	4.00	150	15.00	H-I
Upward-Ins	TV-I	4.00	160	15.00	H-I
Upward-Ins	TV-I	4.00	170	15.00	H-I
Upward-Ins	TV-I	4.00	180	15.00	H-I
Upward-Ins	TV-I	4.00	190	15.00	H-I
Upward-Ins	TV-I	4.00	200	15.00	H-I
Upward-Ins	TV-I	4.00	210	15.00	H-I
Upward-Ins	TV-I	4.00	220	15.00	H-I
Upward-Ins	TV-I	4.00	230	15.00	H-I

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Orientation	Orientation Code	NPS	Temperature	Maximum Unprotected Length	Basis:
Upward-Ins	TV-I	4.00	240	15.00	H-I
Upward-Ins	TV-I	4.00	250	15.00	H-I
Upward-Ins	TV-I	4.00	260	15.00	H-I
Upward-Ins	TV-I	4.00	270	15.00	H-I
Upward-Ins	TV-I	4.00	280	15.00	H-I
Upward-Ins	TV-I	4.00	290	15.00	H-I
Upward-Ins	TV-I	4.00	300	15.00	H-I
Upward-Ins	TV-I	4.00	310	15.00	H-I
Upward-Ins	TV-I	4.00	320	15.00	H-I
Upward-Ins	TV-I	4.00	330	15.00	H-I
Upward-Ins	TV-I	4.00	340	15.00	H-I
Upward-Ins	TV-I	4.00	350	15.00	H-I
Upward-Ins	TV-I	4.00	360	15.00	H-I
Upward-Ins	TV-I	4.00	370	15.00	H-I
Upward-Ins	TV-I	4.00	380	15.00	H-I
Upward-Ins	TV-I	4.00	390	15.00	H-I
Upward-Ins	TV-I	4.00	400	15.00	H-I

A - Based on GOTHIC analysis from Attachment E.

B - Bounded by lower temperature GOTHIC Attachment E analysis.

H - Based on horizontal GOTHIC analysis from Attachment E for same NPS and temperature.

H-125 - Based on horizontal GOTHIC analysis from Attachment E for temperature of 125 °F.

H-50 - Based on horizontal GOTHIC analysis from Attachment E for temperature of 50 °F.

H-60 - Based on horizontal GOTHIC analysis from Attachment E for temperature of 60 °F.

H-75 - Based on horizontal GOTHIC analysis from Attachment E for temperature of 75 °F.

H-I - Based on insulated horizontal GOTHIC analysis from Attachment E for same NPS and temperature.

I - Based on interpolation between analysis points from GOTHIC analysis from Attachment E.

L- Based on using GOTHIC analysis from Attachment E at a lower temperature and assuming a linear relationship for higher temperatures.

NA – Size not analyzed

TV-2- Based on using Top Vertical 2-inch NPS data

Attachment F

Space Heating of Enclosures

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Space Heating of Enclosures

Objective:

- Define the temporary space heater input requirements to maintain a desired temperature inside an enclosure during the postulated extreme weather event occurring outside the enclosure.

Postulated Weather Event:

- Cold Weather Duration – 96 hours
- Wind Speed – 10 mph
- Maximum Temperature – 32°F (PSL), 37°F (PTN)
- Minimum Temperature – 16°F (PSL), 19°F (PTN)
- Temperature Profile – Sinusoidal (ASHRAE Diurnal)

Analysis tool:

- GOTHIC, Version 8.3

Inputs/Approach:

- The initial temperatures were 60°F in the room and 50°F as the ambient.
- No credit is taken of sunlight on the outside surface.
- No credit is taken for process-related heat sources inside the enclosure.
- The ambient temperature was immediately decreased to the maximum cold wave temperature and oscillating to the low cold wave temperature and back in a sine wave over a 24-hour period repeated for 4 days.
- Room volumes of 1000, 2500, 5000, 7500, 10,000, 25,000, 50,000, 75,000, and 100,000 ft^3 are used.
- The rooms are 20' tall with a square floor area, subdivided into a 2x2x2 grid of cells with a heater in a corner away from the wall
- Leakage flow paths are considered minimal due to the interest in containing heat. Paths of 1"x1" at the top and 4"x4" at the bottom are included.
- Wall surface areas are multiples of the volume divided by the height. Multipliers of 1, 2, 3, 4, and 5 are used. So, as the rooms get larger the wall surface areas analyzed get larger.
- There were 45 cases with 3" thick concrete wall, 45 cases with 0.0148" steel wall, and 45 cases assuming the use of a durable, high strength coated synthetic woven fabric, such as PTFE coated glass fiber.
- The temperature profiles of both PSL and PTN sites were evaluated for a total of 270 cases.
- The heater power is controlled to achieve 50°F for the transient using a controller. The temperatures remain within ~1°F of this target.

Results

- A review of the data from 270 cases shows that the required heater power is approximately linear with surface area across the volumes analyzed (see Figures 1 and 2 for PSL and PTN respectively).
- For a given surface area there is an insignificant effect of the room volume for the given air leakage. As expected, the required heater power is greater for steel walls.
- The heater power is greater for St. Lucie because of the lower ambient temperatures.

Figure 1 – Space Heater Output Required as a function of Enclosure Surface Area (PSL)

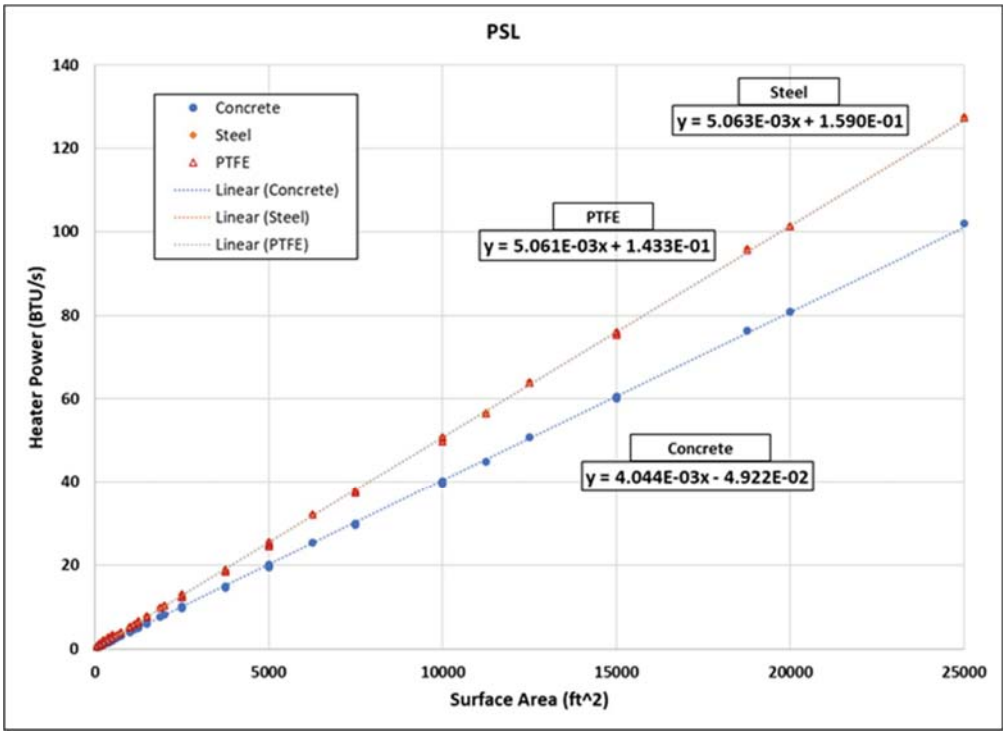

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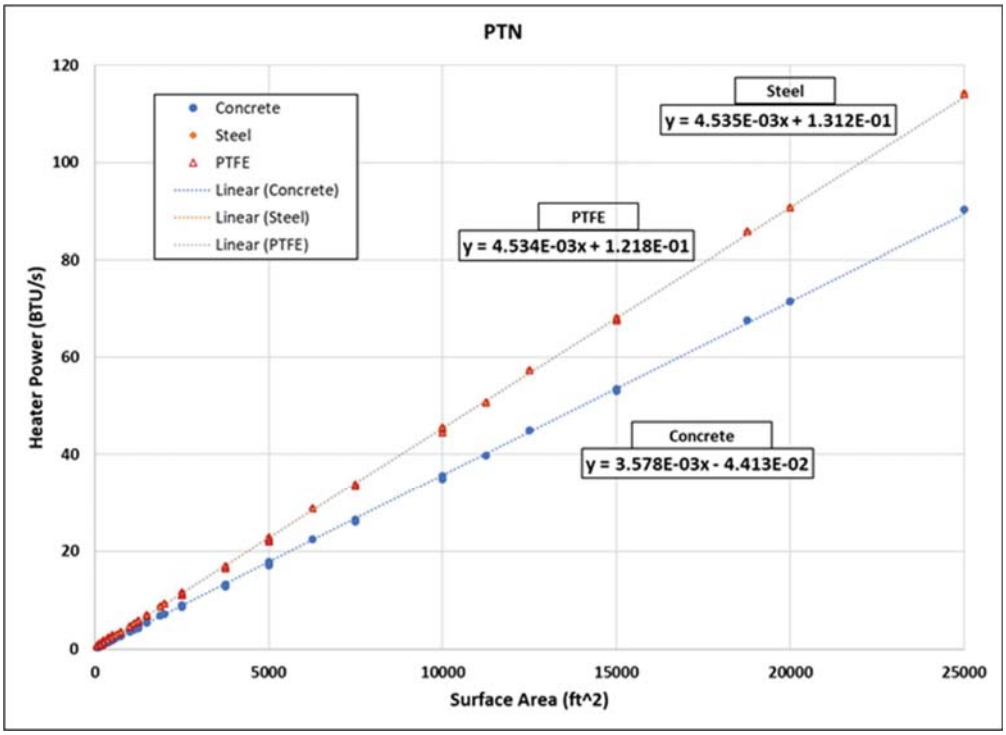
Figure 2 – Space Heater Output Required as a function of Enclosure Surface Area (PTN)



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Attachment G

PSL Turbine Building Enclosure Study

Turbine Building Enclosure Evaluation

Objective:

- Perform a preliminary evaluation using GOHTIC of proposed enclosure of a turbine building using tarps.

Postulated Weather Event:

- Cold Weather Duration – 96 hours
- Wind Speed – 10 mph
- Maximum Temperature – 32°F (PSL), 37°F (PTN)
- Minimum Temperature – 16°F (PSL), 19°F (PTN)
- Temperature Profile – Sinusoidal (ASHRAE Diurnal)

Analysis tool:

- GOTHIC, Version 8.3

Inputs/Approach:

- The PSL Unit 2 turbine building was used for the model configuration.
- The initial temperature in the turbine building was 60°F and 32°F for the ambient.
- No credit is taken of sunlight on the outside surface.
- Credit is taken for process-related heat sources inside the turbine building, excluding piping.
- The ambient temperature was changed to oscillated from the initial temperature to the low cold wave temperature and back in a sine wave over a 24-hour period.
- The turbine building control volumes was subdivided into approximately 5'x5'x5' cells to allow temperature resolution.
- Major rooms (e.g., switchgear room, battery room, CAS) and equipment (e.g., condensers, LP heaters, Main Feedwater Pumps, Air Compressors) were blocked out to remove significant volume from the building volume.
- Openings through the enclosing tarps were modeled between the turbine building volume the atmosphere volume over an appropriate number of cells for total area and percent opening. This included opening between the ground floor and mezzanine and between the mezzanine and operating deck, as well as around piping, conduits, cable trays, etc.
- The mezzanine floor and operating deck were included as thermal conductors, but the ground floor was omitted.
- Hot equipment was modelled as thin thermal conductors with a constant surface temperature of 120°F. The condenser surfaces were also modelled as thin thermal conductors at a constant temperature of 100°C. The condensate pumps were modelled as thin thermal conductors with a constant heat rate based on a rate motor power of 4000 HP per pump.

Results

- The temperatures within the building followed the cold atmospheric temperatures with the corners of the building and regions along the East side nearly as cold.

- Additional heat sources could be added, including the steam, feedwater, condensate, and circulating water piping, particularly around the East side of the building. However, it is unlikely that the temperatures in critical areas could be maintained above freezing with the expected coverage of the tarp enclosures.
- Significant tightening of the openings in the tarp enclosure would have to be made to ensure that the internal heat sources could maintain warm temperatures in the areas of important equipment.
- Figure 1 shows the temperatures of the Turbine building at two times with the nominal openings, 1) the top two images are the start of the simulation with the ambient temperature at 32°F, and 2) the bottom two images show are near the 12-hour point when the ambient temperature is near 16°F. The left two images are shown from the SE corner and the right two images are shown from the NW corner. Grey shows the blocked regions.
- Figure 2 shows the temperatures at various slices at various elevations in the turbine building ground floor with the ambient temperature at 16°F with the nominal openings. The images are shown from the SE corner.
- Figure 3 shows the temperatures at various slices at various elevations in the turbine building mezzanine floor with the ambient temperature at 16°F with the nominal openings. The images are shown from the SE corner.
- Figure 4 shows the temperatures of the Turbine building at two times with the openings reduced by 75%, 1) the top two images are the start of the simulation with the ambient temperature at 32°F, and 2) the bottom two images show are near the 12-hour point when the ambient temperature is near 16°F. The left two images are shown from the SE corner and the right two images are shown from the NW corner. Grey shows the blocked regions.
- Figure 5 shows the temperatures at various slices at various elevations in the turbine building ground floor with the ambient temperature at 16°F with the openings reduced by 75%. The images are shown from the SE corner.
- Figure 6 shows the temperatures at various slices at various elevations in the turbine building mezzanine floor with the ambient temperature at 16°F with the openings reduced by 75%. The images are shown from the SE corner.

Figure 1 – PSL Unit #2 TB – Temperature with Ambient at 32°F and 16°F – Nominal Openings

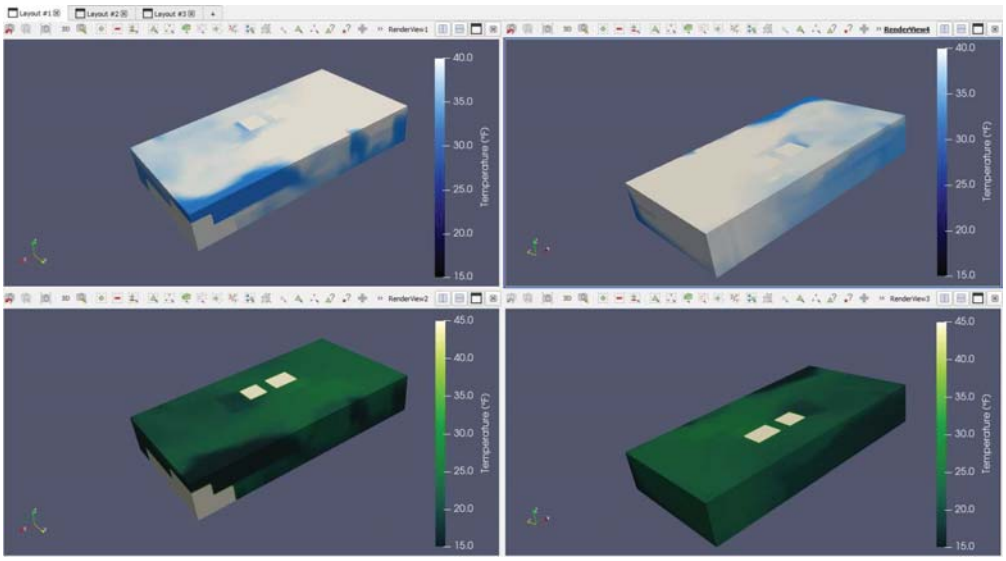


Figure 2 – PSL Unit #2 TB – Ground Floor – Temperature with Ambient 16°F – Nominal Openings

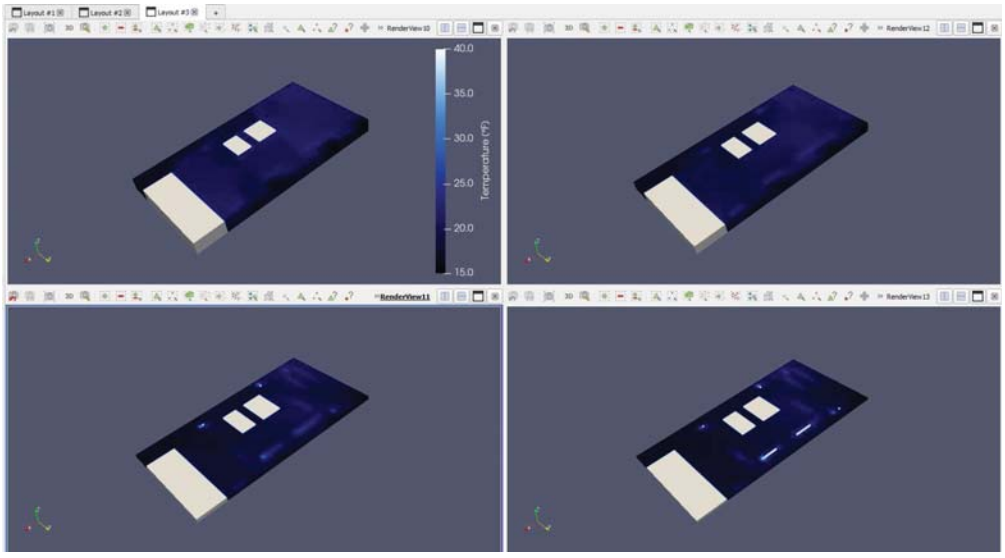


Figure 3 – PSL Unit #2 TB – Mezzanine Floor – Temperature with Ambient 16°F – Nominal Openings

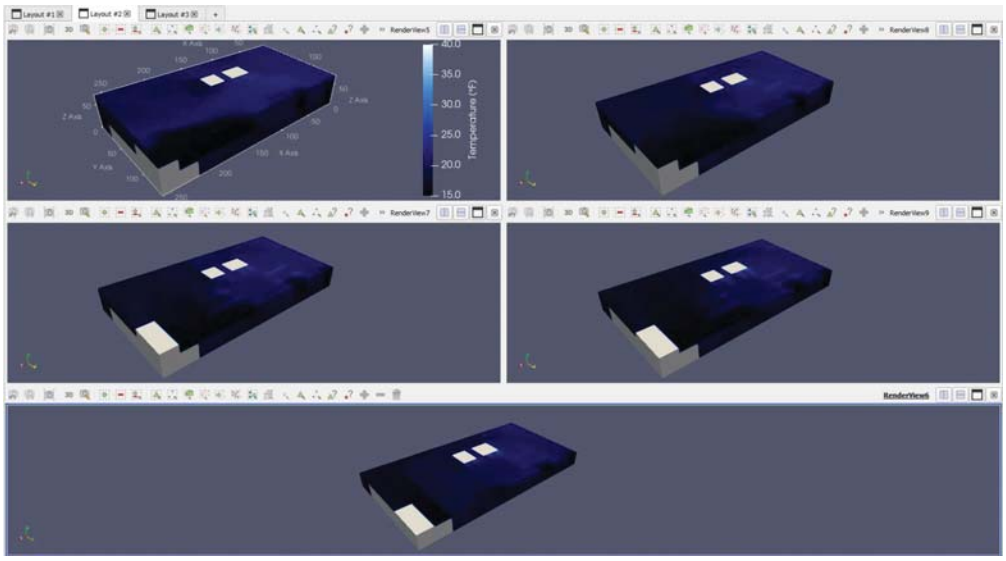


Figure 4 – PSL Unit #2 TB – Temperature with Ambient at 32°F and 16°F – 75% Opening Reduction

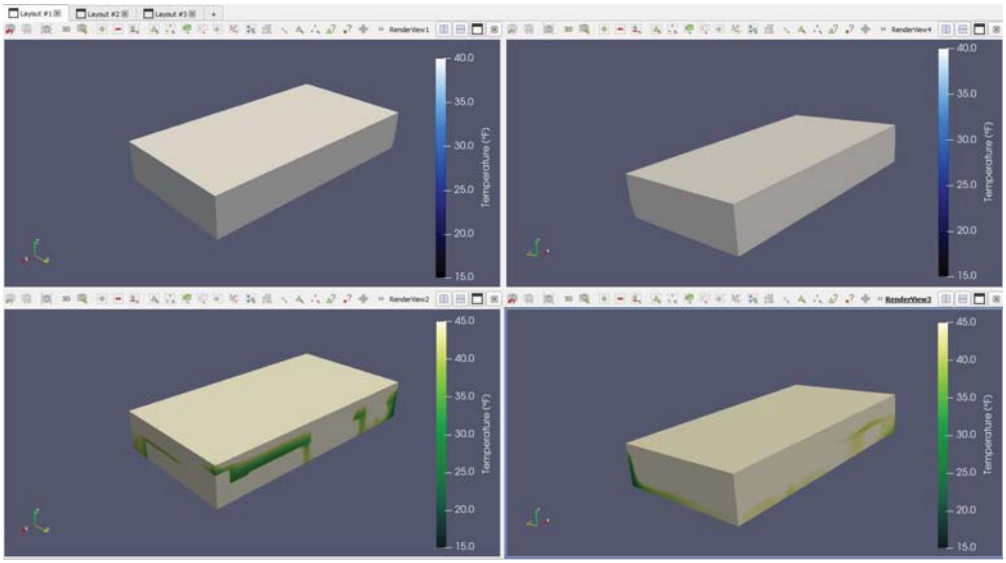


Figure 5 – PSL Unit #2 TB – Ground Floor – Temperature with Ambient 16°F – 75% Opening Reduction

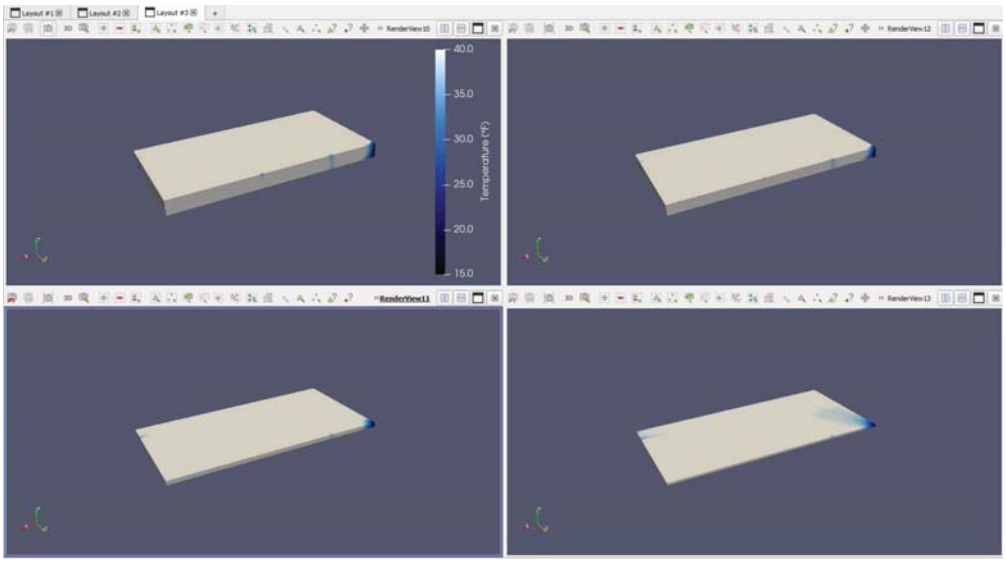
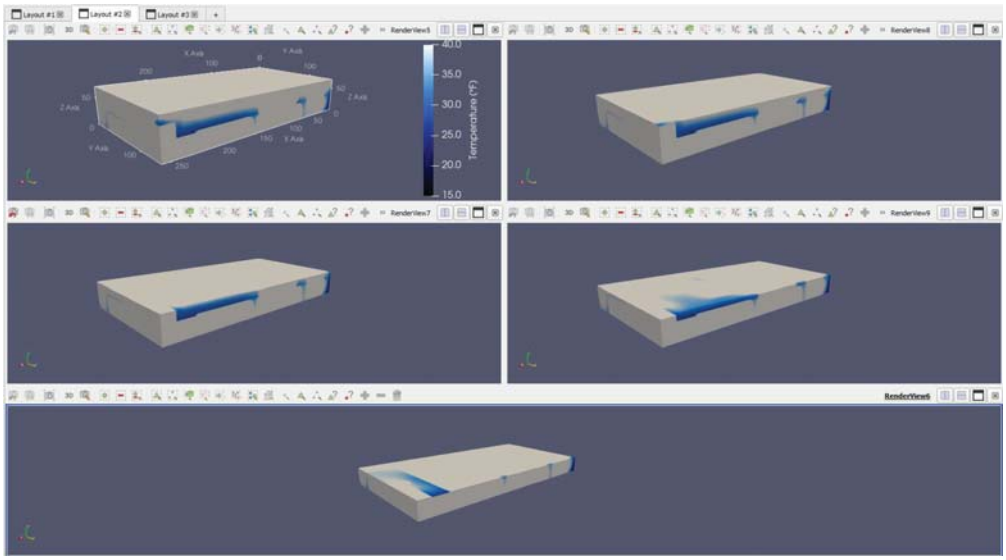


Figure 6 – PSL Unit #2 TB – Mezzanine Floor – Temperature with Ambient 16°F – 75% Opening Reduction



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Attachment H

PTN Refueling Water Storage Tank Temperature Study

Turkey Point RWST Winterization GOTHIC Model

A GOTHIC model, shown in Figure 1, is used to evaluate the cooldown behavior of the Turkey Point Refueling Water Storage Tank (RWST) over a four-day period in which the daily temperature cycles between 16°F and 37°F, and the wind speed is 10 mph to determine the minimum RWST temperature necessary to prevent a cooldown to less than 39°F (Technical Specification LCO 3.5.4) over the course of the four-day cold snap. Because of the potential for the water along the tank walls and along the surface of the water to cooldown faster than the water in the interior of the RWST, the tank is modeled with a subdivided control volume. The planes at the tank shell start at 3 inches and increase logarithmically from that grid boundary toward the tank centerline. Planes in the Z-direction are 2.4 feet in height up to the knuckle where the umbrella roof meets the cylindrical shell with a couple planes withing the dome region. Because of symmetry, only a thin wedge is needed to represent the RWST. To obtain the desired plane width near the cylindrical shell an angle of ~19° is used.

The RWST has two vents giving significant margin to inflow of air as the water density increases along with the air volume. Therefore, placement and size of a vent is not critical. The top and side views of this control volume are shown in Figure 2 and Figure 3. The model run time is 4-5 hours for this slim wedge of the tank. A second subdivided control volume represents the atmosphere and has grid lines in the Z-direction only which match the z-axis grid lines of the RWST.

The tank wall and dome are modeled with conductors consisting of 5/16-inch of carbon steel, consistent with the dome and the upper portion of the tank wall. The tank wall consists of three sections:

- The lowest ring has a thickness of ~7/16-inch (0.423")
- The middle ring has a thickness of ~3/8 inch (0.367")
- The upper ring has a thickness of 5/16-inch

Modeling the entire wall at the 5/16-inch thickness conservatively minimizes heat capacity. Although painted, no coatings are included on the cases analyzed because the paint acts as a weak insulator. Multiple tank wall configurations are considered:

- Bare Metal
    - No insulation
    - 1 inch of insulation
    - 2 inches of insulation

The insulation under consideration is ProRox® PSM 660 ALU^{UK}, with a thermal conductivity of 0.023 Btu/hr·ft·°F (0.040 W/m·K) at 122°F (50°C). The thermal conductivity is varied as a function of temperature with a 2nd order curve fit used to extrapolate the data to the range of temperatures analyzed.

References

1. Drawing 5610-C-18-393 Sh1 Rev 007, Primary and Refueling Water Storage Tanks
2. Calculation CN-SEE-IV-08-16, Rev 0, Turkey Point Units 3 & 4 RWST Draindown Analysis
3. Turkey Point technical Specifications LCO 3/4.5.4 Refueling Water Storage Tank

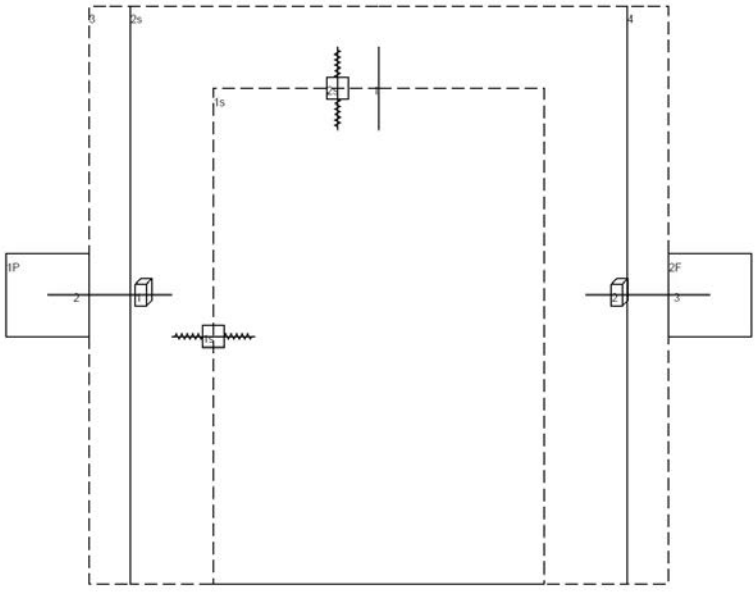

Figure 1: Diagram of the GOTHIC Model of the Turkey Point RWST

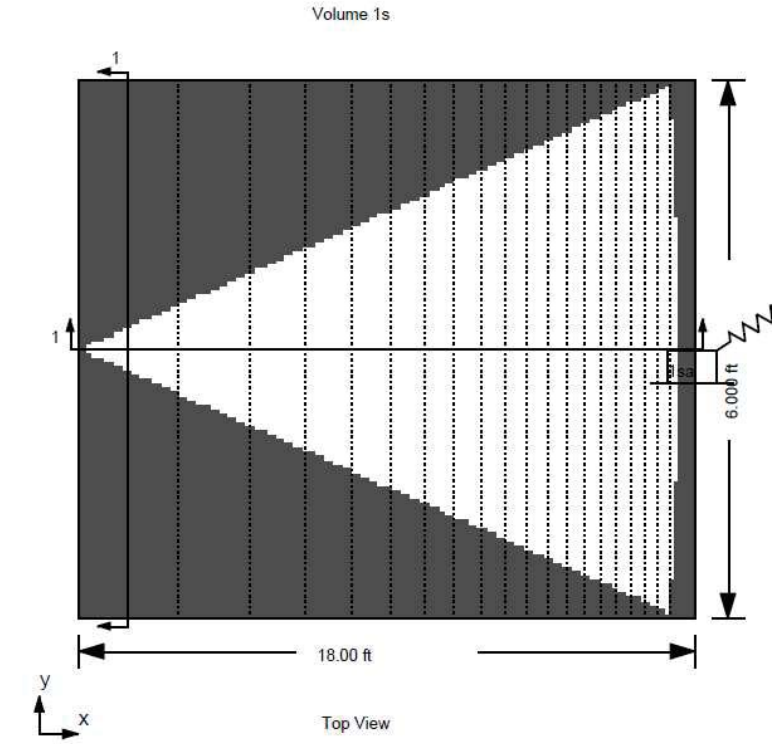

Figure 2: Model Top View of the Turkey Point RWST

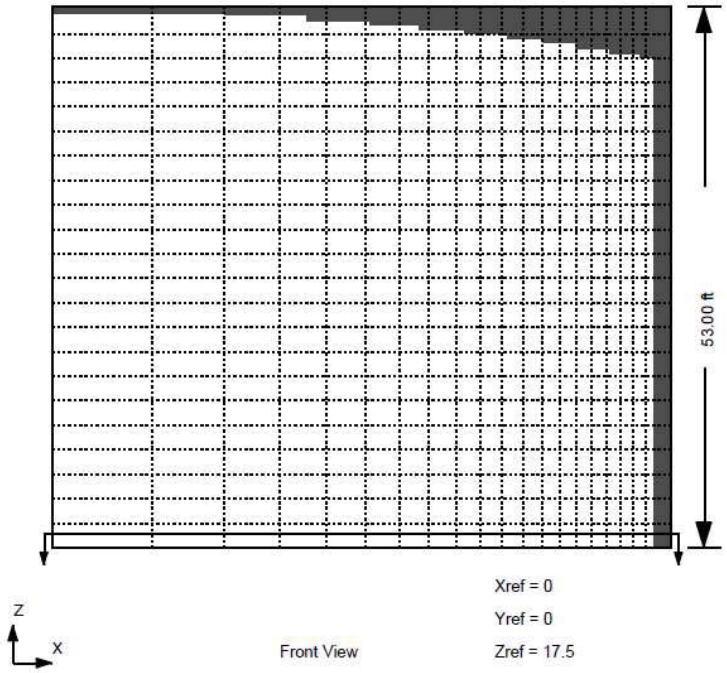

Figure 3: Model Side View of the Turkey Point RWST

GOTHIC model runs have confirmed that with bare metal, no insulation and an initial RWST temperature of 65°F, the minimum RWST temperature falls to 44.6°F over the four-day cold snap. The results of additional cases analyzed are shown in Figure 4. The lowest initial temperature analyzed that remains above 39°F after four hours is 54°F. The smoothness of the response degrades as the water temperature approaches freezing because of the reversal in the slope of the density with decreasing temperature. The decrease in the water density at these low temperatures upsets the circulation pattern that exists prior to this time. This change in circulation patterns can be seen in the liquid velocity vectors graphs (Figure 5) at four days for two cases with bare metal and no insulation with initial temperatures of 65°F and 52°F. Because of the buoyancy driven flows the RWST stays well mixed with an insignificant temperature difference through the liquid as can be seen in Figure 6. Therefore, use of a control variable to determine the minimum tank temperature is appropriate.

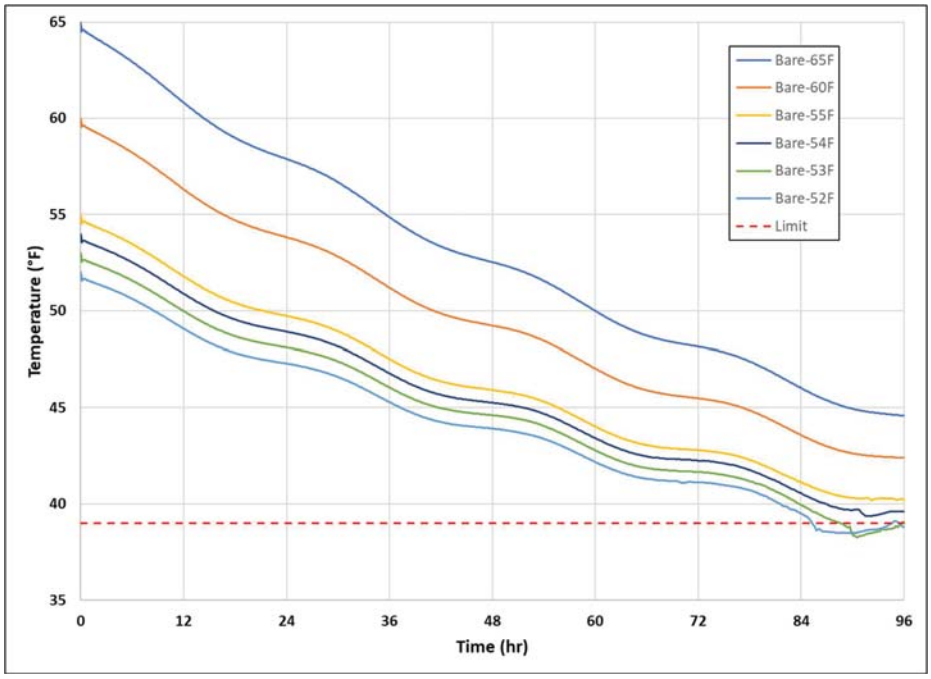

Figure 4: RWST Temperature, Bare Metal, No Insulation

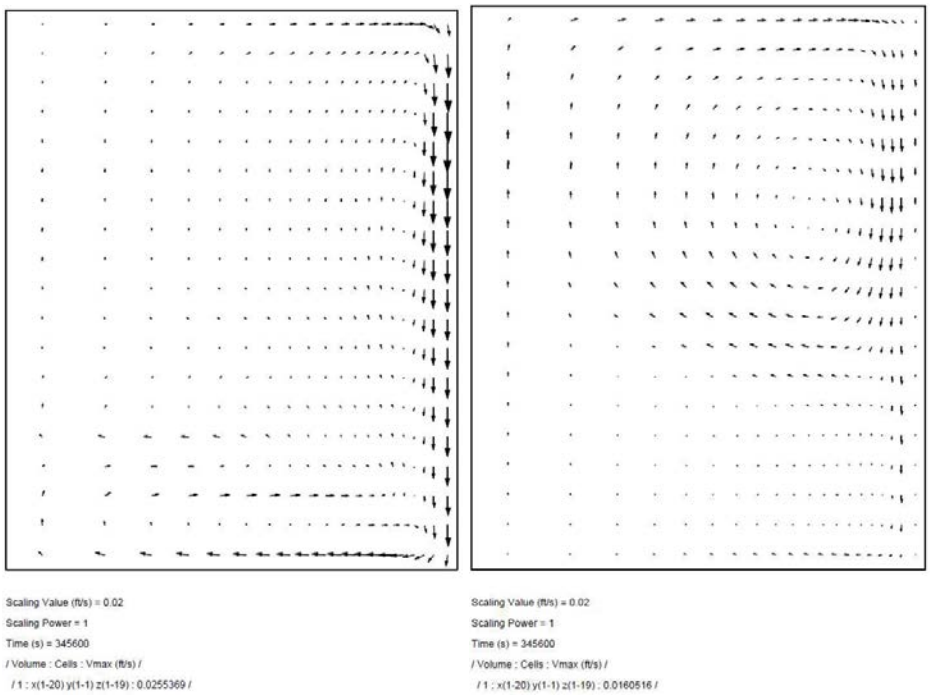

Figure 5: RWST Liquid Velocity Vectors, Bare Metal, No Insulation, 65°F (left) and 52°F (right) at 4 Days

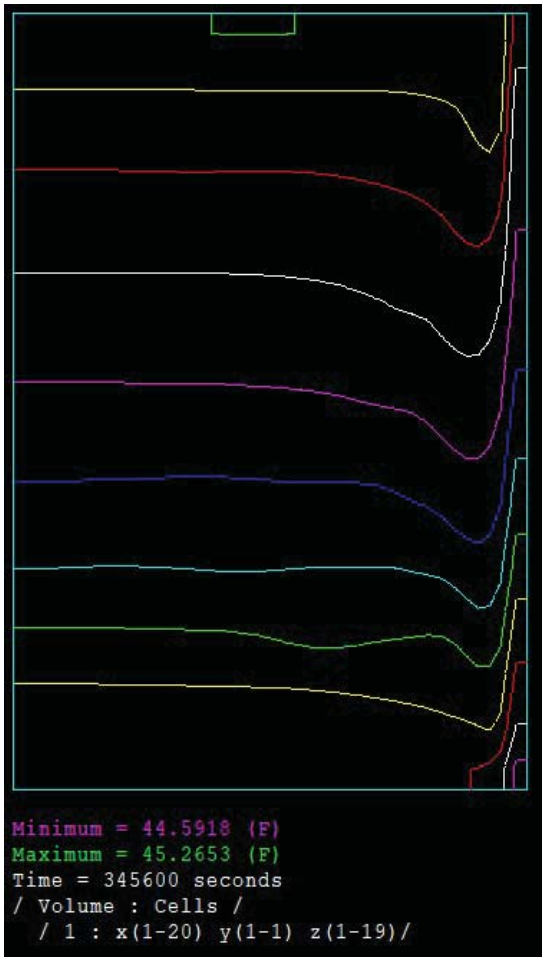

Figure 6: RWST Liquid Temperature Contours, Bare Metal, No Insulation, 65°F at 4 Days

With 1 inch and 2 inches of insulation, the minimum initial RWST temperatures necessary to maintain RWST temperature above 39°F over the cold snap are 42°F and 41°F, respectively (Figure 7 and Figure 8).

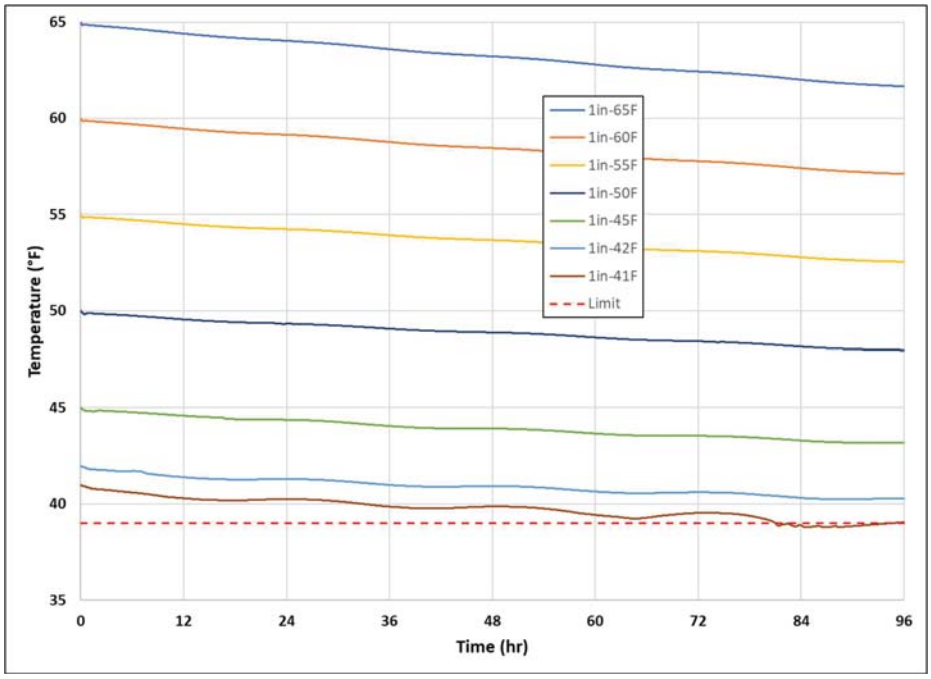

Figure 7: RWST Liquid Temperature, 1" Insulation

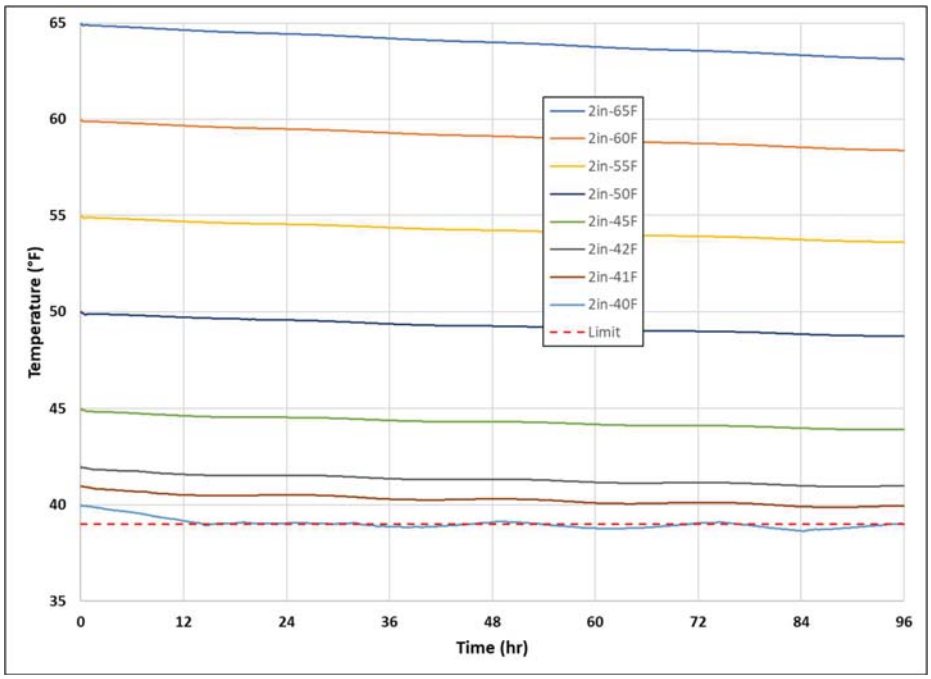

Figure 8: RWST Liquid Temperature, 2" Insulation

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Attachment I

PTN Fire Protection Freeze Protection Strategy

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PTN - Fire Protection System Freeze Protection Strategy

This paper addresses the general strategies to be employed at PTN site to protect the fire protection systems from freezing during the postulated cold weather event.

Water Supply

Water supply for the fire protection systems is provided via below-ground and above-ground piping to the stationary fire pumps. Piping from pumps to the site fire loop valve pit is also above-ground. Below-ground piping is protected by soil from freezing whereas above-ground piping is susceptible to freezing.

Recommendation for below-ground piping:

- None, no action required.

Recommendation for above-ground piping:

- The preferred strategy is to utilize flow to prevent freezing where possible.
- If strategy for wet pipe/deluge/hose station uses continuous or intermittent flow, evaluate for credit for the above-ground mitigation strategy.
- If implementation of a flow strategy cannot be achieved, heat trace and insulate where feasible.

Fire Pumps

PTN uses one (1) electric driven fire pump and one (1) diesel driven fire pump. NFPA 20 Section 4.13.3.1 establishes that pump rooms or pump houses, where required, be maintained above 40°F; additionally, per NFPA 20 Section 11.6.5.1, the temperature of the pump room, pump house, or area where engines are installed shall be designed so that the temperature is maintained at the minimum recommended by the engine manufacturer.

Per PTN personnel, the diesel driven fire pump is located within an unheated pumphouse enclosure. Diesel fuel is susceptible to "gelling" in cold climates as the paraffins in the fuel solidify out; paraffins start to crystalize out at approx. 32°F and have the potential to clog the fuel filter. Temperatures necessary for this gelling to be of significance are on the order of 10°F - 15°F; at these temperatures clogging of the tank, fuel filter, and/or fuel lines can occur. Use of additives to lower the cloud point (temperature at which paraffin wax begins to crystallize) can be mixed with the diesel fuel. Of concern is also water entrainment within the fuel or coolant; ice formation has the potential to clog lines or filters at temperatures ranging from 20°F to 30°F.

Recommendations:

- Operating pumps with a combination of recirculation, and calculated system demand, will minimize chances of pump freezing, ensure pump doesn't overheat, and provide flow to various water suppression systems susceptible to freezing.

- Consideration of water source level requirements and rate of replenishment must be evaluated as well for completeness.
- Site environmental limits on operating the diesel-driven pump needs to be evaluated; alternating between electric and diesel pumps can be effective if de-energized pump is maintained in a condition that precludes freezing - evaluation of operation schedule, based on system configuration, is required.
- Use appropriate additives consistent with the anticipated temperature profile to reduce potential for fuel gelling or icing. Utilize a winter mix for diesel engine coolant if only water is used.
- If implementation of a flow strategy cannot be achieved, place fire pumps in conditioned enclosures (temporary or permanent) to minimize potential for pump freezing. Temporary insulated enclosures for pumps can be installed with space heaters to keep pumps above 40°F. In the case of the existing enclosure for the diesel driven fire pump at PTN, a heater should be considered if inside temperatures have the potential to be sustained below 40°F.
- Walkdowns are required to determine length of above-ground piping. Dependent upon length of above-ground pipe, recommendations could include application of heat trace and/or insulation if utilization of flow to mitigate freezing is not practicable.

Fire Loop Piping

Most of the piping associated with the main fire loops at PTN are buried and therefore not considered impacted by the postulated weather event. Dry-barrel hydrants are used around the sites and not considered likely to freeze as they are not full of water.

Recommendation:

- None, no action required.

Pre-Action Systems

Pre-action systems are not predisposed to freezing in the overhead as the smaller lines are air or nitrogen filled. Risk of freezing is limited to the wet-pipe portion of the system fed from the site fire loop and terminating at the deluge valve.

Recommendations:

- Focus should be on high-risk protected systems (i.e., EDG, Transformers, etc.).
- Heat tracing and insulating the water-filled portion of the line, up to and including the deluge valve, would allow the system to remain operable.
- Providing a trickle flow via the piping drain line (directed to site drain) could mitigate line freezing by maintaining water flow.

Deluge Systems

Like pre-action systems, deluge systems are not pre-disposed to freezing as these open systems are not normally filled with water. At issue are low-points in the piping that do not effectively

drain. Freezing in these areas could rupture pipe/fittings leaving the system effectively inoperable.

Recommendations:

- Focus should be on high risk protected systems (i.e., EDG, Transformers, etc.).
- Installation of low-point drain valves or weep-holes to ensure proper draining of the deluge piping. Use of weep-holes is limited as they can affect spray discharge patterns and would require vendor analysis to establish quantity and size supportable by the system. NOTE: PTN does not have low-point drains or weep-holes installed in any of the installed deluge systems; however, an LTAM (PTN-14-0005) for Low Point Drains in Deluge Systems at PTN has been identified.
- Deluge valve should be protected from freezing via use of electric heat tracing and insulation, heated temporary enclosure, or insulation (fixed or flexible jacketing, etc.).
- Providing a trickle flow via the piping drain line (directed to site drain) could mitigate line freezing by maintaining water flow.

Wet-Pipe Systems

Due to their nature, wet-pipe systems will be pre-disposed to freezing. Application of antifreeze in the lines is not recommended due to flammability issues associated with the antifreeze and the locations around the sites that employ these wet-pipe sprinkler systems.

Recommendations:

- Focus should be on high risk protected systems (i.e., EDG, Transformers, etc.).
- Declare systems not available for the duration of postulated weather event and employ compensatory actions in those areas.
- It is further recommended, to prevent potential damage to the system resulting from frozen lines, that the system be drained. This would ensure that the system would not be declared inoperable following the postulated event.

Hose Stations

Above ground wet pipe leading to the hose station is susceptible to freezing.

Recommendation:

- Maintain operability of the hose stations opening drain valves to keep water moving through the dead-legs that feed the hose stations. Lines feeding the hose stations at PTN are fed by 2.5" minimum. Requisite flow through the small-bore drains on those lines feeding these hose stations, to minimize freezing, would not be significant.

Gaseous Suppression Systems

Gaseous suppression systems are not considered susceptible to cold weather events like water-based systems are. Discharge times may be affected by the system piping temperature being lower than normal; however, as these gaseous systems are typically employed in a flooding

capacity and the low boiling points of these suppressants are suited for use at the temperatures being considered.

In the event lower temperatures reduces gas pressure below required levels, the system would be left "in service" but declared non-functional and the appropriate compensatory measures executed.

Recommendation:

- None, no action required.

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Attachment J

PTN Fire Protection Hose Reel Flow Study

PTN Fire Protection Hose Reel Flow Study

Evaluation Summary

Consistent with previously established methodology, it was deemed that maintaining fire water flow throughout the site was not considered practicable due to the number of potential flow locations. To provide a more manageable quantity, focus is limited to hose-stations within the power block; this revised approach assumes that water-based suppression systems for non-essential buildings would be declared un-available for the duration of the winter-freeze event. Hotel packs would be staged near adjacent hydrants in the event a fire occurred. For those areas inside considered essential, where automatic suppression systems are subject to cold temperatures, and cannot be protected, those suppression systems would also be declared un-available; reliance would be on hose-stations for fire suppression. Hose-stations were identified via drawing series 5610-M-3016. Those sections of fire protection piping evaluated are tabulated below.

Location	Elev.	Line No.	Component	Length (ft.)	Min. Flow (gpm)
YARD	18'-0"	16"/14"-11-F	FWP P-101 SUCT.	10.5	0.15
YARD	18'-0"	10"-11-F	FWP P-101 DISCH.	63.5	0.80
YARD	18'-0"	14"-11-F	FWP P-39 SUCT.	21.5	0.30
YARD	18'-0"	10"-11-F	FWP P-39 DISCH.	39.5	0.50
YARD	**18'-0"**	**10"-11-F**	**FP TO 1-4 FIRE LOOP HDR**	**84.5**	**1.25**
YARD	18'-0"	16"/14"-11-F	FP CROSS CONNECT	61.0	0.15
YARD	18'-0"	2-1/2"-11-F	FWP P-234A SUCT.	33.5	0.40
YARD	18'-0"	2-1/2"-11-F	FWP P-234B SUCT.	41.0	0.40
YARD	18'-0"	2-1/2"-11-F	FWP P-234A/B CROSS	3.0	0.10
YARD	18'-0"	1-1/2"-11-F	FWP P-234A DISCH.	3.0	0.10
YARD	18'-0"	1-1/2"-11-F	FWP P-234B DISCH.	3.0	0.10
YARD	18'-0"	1-1/2"-11-F	JP TO 1-4 FIRE LOOP HDR	10.0	0.10
U3 TB	44'-6"	10"-11-F	10" FIRE HEADER	324.0	4.10
U3 TB	37'-0"	10"-11-F	10" FIRE HEADER (INSUL.)	38.0	0.10
U3/4 TB	14'-0"	10"-11-H	10" FIRE LOOP (BURIED)	N/A	N/A
U3 TB	42'-0"	4"-11-F	HS-03-06	40.5	0.40
U4 TB	42'-0"	4"-11-F	HS-04-05	40.5	0.40
U4 TB	42'-0"	4"-11-F	HS-04-08	40.5	0.40
U3/4 TB	**39'-0"**	**6"-11-F**	**6" FIRE HEADER**	**646.5**	**19.50**
U3 TB	18'-0"	2-1/2"-11-F	HS-03-01	19.5	0.20
U3 TB	18'-0"	2-1/2"-11-F	HS-03-02	26.5	0.25
U3 TB	18'-0"	2-1/2"-11-F	HS-03-03	46.0	0.40
U3 TB	30'-0"	2-1/2"-11-F	HS-03-04	10.5	0.10
U3 TB	30'-0"	2-1/2"-11-F	HS-03-05	31.0	0.30
U3 TB	42'-0"	2-1/2"-11-F	HS-03-07	29.0	0.25
U3 TB	42'-0"	2-1/2"-11-F	HS-03-08	29.0	0.25
U4 TB	18'-0"	2-1/2"-11-F	HS-04-01	26.5	0.25
U4 TB	30'-0"	2-1/2"-11-F	HS-04-03	10.5	0.10
U4 TB	42'-0"	2-1/2"-11-F	HS-04-06	29.0	0.25
U4 TB	42'-0"	2-1/2"-11-F	HS-04-07	29.0	0.25
U4 TB	**28'-0"**	**4"-11-F**	**BRANCH**	**31.5**	**0.35**

PTN Fire Protection Hose Reel Flow Study

Location	Elev.	Line No.	Component	Length (ft.)	Min. Flow (gpm)
U4 TB	18'-0"	2-1/2"-11-F	HS-04-02	27.0	0.25
U4 TB	30'-0"	2-1/2"-11-F	HS-04-04	5.0	0.10
YARD	27'-0"	4"-11-F	AUX. BLDG. FIRE HEADER	88.0	1.00
U3 AB	58'-0"	1-1/2"-11-F	HS-AB-04	87.0	1.00
U4 AB	58'-0"	1-1/2"-11-F	HS-AB-05	87.0	1.00

To preclude freezing, the total flow required by the U3/4 Turbine Building hose-stations (HS-03-01, HS-03-02, HS-03-03, HS-03-04, HS-03-05, HS-03-07, HS-03-08, HS-04-01, HS-04-03, HS-04-04, HS-04-06, and HS-04-07) supplied via fire header 6"-11-F, is approximately 3 gpm. The 6" fire header, which supplies the aforementioned hose-stations, requires a flow of approximately 20 gpm to preclude it freezing anywhere along the line. The U3/4 Turbine Building has three (3) hose stations (HS-03-06, HS-04-05, and HS-04-08), supplied via fire header 10"-11-H, which would require approximately 0.4 gpm each (1.2 gpm total) to preclude their freezing during the event; as 10"-11-H is below grade, no minimum flow is considered as it is not considered susceptible to freezing during the postulated event.

Additionally, it was also identified that ancillary flow to the Auxiliary Building Header (via 4"-11-F) and two (2) hose-stations (HS-AB-04 and HS-AB-05) of approximately 3 gpm would be required. Therefore, total flow required to ensure the identified hose-stations around PTN is approximately 25 gpm (20 gpm + 1.2 gpm + 3 gpm).

As the piping around the electric and diesel fire pumps (P-39 and P-101, respectively) and jockey pumps (P-234A and P-234B) are primarily above ground. The required flow necessary preclude fire pump and jockey pump piping is conservatively 1 gpm; however, the flow necessary to preclude the pump discharge common piping to the 1-4 Fire Loop Header from freezing is approximately 1.25 gpm. Of note, the total demand flow of 25 gpm exceeds the require flow necessary to protect the fire pumps; therefore, opening hose-stations valves to an adequate minimum flow of approximately 2 gpm would ensure that the hose-stations, 6" fire header, and the yard piping would be adequately protected for the duration of the event.

Reliance on personnel to manually open these valves during the event could be problematic due to the nature of the event – consideration should be given to installation of thermostatic freeze protection valves such as the HAT/FP made by ThermOmegaTech (as shown right), at the hose station, just upstream of the hose valve. The discharge from the HAT/FP could then be routed to drains near the hose stations at their elevation or over the side of the turbine building down to grade elevation drains – gravity would help ensure that this flow kept moving to the drains.

Per the vendor, the HAT/FP utilizes a thermostatic wax actuator to automatically monitor ambient or water temperatures and will bleed off the cold water in the lines before freezing can occur. These valves initiate flow when the thermostatic actuator senses the valve's set-point, typically 35°F (1.6°C), and will remain open if the discharge water temperature is below 5 degrees above that, typically 40°F (4.4°C). The HAT/FP freeze protection valve can be installed in either the

PTN Fire Protection Hose Reel Flow Study

standard (monitors ambient air temperature) orientation or reverse flow (senses water temperature) orientation.

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Attachment K

Strategies for HVAC Commodities

ID	Types (Instr, Piping, Tanks, etc.)	Normally Operating?	Basis for Action	Action Required	Recommended Strategies (Incl Long Lead Items, Outage work, etc.)
1	Ducting	Yes	Not effected by cold temperatures	None	None
2	Instruments - General	Yes	Not effected by cold temperatures	None	None
3	Filter Train	Yes	Filter trains are not effected by cold weather	None	None
4	Filter Train	Yes	Filter trains with a demister can be effected by cold weather due to freezing moisture.	Mitigate	If the demister is within a building, no action required. Otherwise, ensure demister is provided heat. Filters are not affect by cold weather.
5	Fan	Yes	Cold weather has little to no affect on a fan or its motor.	None	None
6	Air Handling Unit	Yes	If AHU has cooling coil, then subject to freezing	Mitigate	Keep unit in operation. Do not use cooling mode. If not exposed to environment, then no action required.
7	Air Handling Unit	Yes	If AHU does not have cooling coil, then not subject to freezing	None	None
8	Air Condensing Unit	Yes	Motors and condensers are generally unaffected by cold weather. Likely neither will be required to operate.	None	No Action required. Cold weather should not have an adverse affect on this equipment.
9	Roof Ventilators	Yes	Motors are generally unaffected by cold weather	None	None
10	Power Ventilator	Yes	Motors are generally unaffected by cold weather	None	None
11	Thru Wall AC Units	Yes	Thru-wall units have condensate lines and is subject to freezing.	Mitigate	Turn off, or go into fan only mode
12	Heat Pump	Yes	Heat Pumps have condensate lines and is subject to freezing.	Mitigate	Turn off, or go into fan or heating mode
13	Motor Operated Damper	Standby	Damper is exposed to environment	None	No action required. Motor is not exposed and should be able to overcome any lubricant viscosity change within damper
14	Motor Operator Valve	Standby	Valve is exposed to environment	None	No action required. Motor is not exposed and should be able to overcome any lubricant viscosity change within valve
15	Motor Operated Louver	Standby	Louver is exposed to environment	None	No action required. Motor is not exposed and should be able to overcome any lubricant viscosity change within louver

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Attachment L

PTN Phase 1 System Freeze Protection Evaluation

ID	Plant	Unit	PTN System	P&ID	Segment	Types (Instr, Piping, Tanks, etc.)	Component/Equipment	Normally Operating	Operability/Functional Limit	Basis for Action	Action Required	Recommended Strategies (Incl Long Lead Items, Outage work, etc.)	Remarks	Other Key References & Inputs
1	PTN	0	SWS / 012	5610-M-3012 Sh. 1	1	Piping	8", 6", 4" service water header	Yes	N/A	Normally flowing	None	Varying flow rates due to normal SW demands in downstream buildings are expected to preclude freezing in the SW header.		
2	PTN	0	SWS / 012	5610-M-3012 Sh. 1	1	Vents / Drains / Misc. Connections	Various vents, drains, service taps	No	Not required for power generation	None	None	None		
3	PTN	0	SWS / 012	5610-M-3012 Sh. 1	2	Piping	2" supply to service water taps at U3 DGs	No	Not required for power generation	None	None	None		
4	PTN	0	SWS / 012	5610-M-3012 Sh. 1	3	Piping	6" header supply to Aux Bldg SW loads	Yes	Supplies N2 compressor seals and other loads	Normally flowing	None	Varying flow rates due to normal SW demands in downstream buildings are expected to preclude freezing in the SW header.	See entries for 5610-M-3012 Sh. 2, this worksheet	
5	PTN	0	SWS / 012	5610-M-3012 Sh. 1	4	Piping	2" & 1" supply to AFW pump oil coolers (alternate cooling water supply)	No	Not required for power generation	None	None	None		
6	PTN	0	SWS / 012	5610-M-3012 Sh. 1	5	Piping	1-1/2" supply to containment hatch area SW taps	No	Not required for power generation	None	None	None		
7	PTN	0	SWS / 012	5610-M-3012 Sh. 1	6	Piping	1/2" - 2" supply to T.O. shack water cooler & shower/fountain	No	Not required for power generation	None	None	None		
8	PTN	0	SWS / 012	5610-M-3012 Sh. 1	7	Piping	2-1/2" & 2" piping to Control Building computer room	Yes	Not required for power generation	None	None	None		
9	PTN	0	SWS / 012	5610-M-3012 Sh. 1	7	Instr. Local	Local pressure instrument	Yes	Not required for power generation	None	None	None		
10	PTN	0	SWS / 012	5610-M-3012 Sh. 1	8	Piping	3" supply to south site SW loads	Yes	Not required for power generation	None	None	None		
11	PTN	0	SWS / 012	5610-M-3012 Sh. 1	9	Piping	2" & 1-1/2" SW supply to various loads & taps	Yes	Not required for power generation	None	None	None	See entry for 5610-M-3012 Sh. 3, this worksheet	
12	PTN	0	SWS / 012	5610-M-3012 Sh. 1	9	Vents / Drains / Misc. Connections	Various vents, drains, service taps	No	Not required for power generation	None	None	None		
13	PTN	0	SWS / 012	5610-M-3012 Sh. 1	10	Piping	1-1/2" line to abandoned breathing air compressor	No	Not required for power generation	None	None	None		
14	PTN	0	SWS / 012	5610-M-3012 Sh. 1	11	Piping	1-1/2" line to abandoned piping in TPCW system	No	Not required for power generation	None	None	None		
15	PTN	0	SWS / 012	5610-M-3012 Sh. 1	12	Piping	1-1/2" SW line to cold chemistry lab	No	Not required for power generation	None	None	None	It is presumed that an alternate supply of domestic water can be supplied to the cold chemistry lab if required.	
16	PTN	0	SWS / 012	5610-M-3012 Sh. 1	13	Piping	2"-3/4" supply to U4 Amertap condenser cleaning	Yes	Not required for power generation	None	None	None		
17	PTN	0	SWS / 012	5610-M-3012 Sh. 1	13	Vents / Drains / Misc. Connections	Various vents, drains, service taps	No	Not required for power generation	None	None	None		
18	PTN	0	SWS / 012	5610-M-3012 Sh. 1	14	Piping	2" & 1-1/2" SW supply to various loads & taps	Yes	Not required for power generation	None	None	None		
19	PTN	0	SWS / 012	5610-M-3012 Sh. 1	15	Piping	2"-3/4" supply to U3 Amertap condenser cleaning	Yes	Not required for power generation	None	None	None		
20	PTN	0	SWS / 012	5610-M-3012 Sh. 1	16	Piping	2" & 1-1/2" SW supply to various manifolds & taps	Yes	Not required for power generation	None	None	None		
21	PTN	0	SWS / 012	5610-M-3012 Sh. 1	17	Piping	2" & 1-1/2" SW supply to various manifolds & taps	Yes	Not required for power generation	None	None	None		
22	PTN	0	SWS / 012	5610-M-3012 Sh. 1	18	Piping	8" header to U3/U4 TPCW system LO coolers (alternate supply)	No	Not required for power generation	None	None	None		
23	PTN	0	SWS / 012	5610-M-3012 Sh. 1	18	Vents / Drains / Misc. Connections	Various vents, drains	No	Not required for power generation	None	None	None		
24	PTN	0	SWS / 012	5610-M-3012 Sh. 2	1	Piping	3" Piping to backup circ water pump lube water supply	No	N/A	None	None	None	Backup secondary system, not required for power generation.	
25	PTN	0	SWS / 012	5610-M-3012 Sh. 2	2	Piping	1" & 1/2" Piping to makeup water vacuum pump seal supply	Yes	N/A	Normally flowing	None	None	GTM Skid not required for short term power operation.	
26	PTN	0	SWS / 012	5610-M-3012 Sh. 2	3	Piping	1/2" supply to nitrogen compressor seal	Standby	Intermittently required for normal operation of N2 compressor	Ensure continued availabilty of nitrogen to plant loads	Protect	insulate and heat trace Alternative: Have sufficient N2 supply on hand in storage tanks or tanker truck to preclude the need to operate the N2 compressors over the 4 day freeze event.		
27	PTN	0	SWS / 012	5610-M-3012 Sh. 2	4	Piping	6" to 1-1/2" supply to various building loads	Yes	Not required for power generation	Normally flowing	None	Varying flow rates due to normal SW demands in downstream buildings are expected to preclude freezing in the SW header.		
28	PTN	0	SWS / 012	5610-M-3012 Sh. 2	4	Vents / Drains / Misc. Connections	Various vents, drains, service taps	No	Not required for power generation	None	None	None		
29	PTN	0	SWS / 012	5610-M-3012 Sh. 2	5	Piping	6" service water header outside Aux Bldg	Yes	Supplies N2 compressor seals and other loads	Normally flowing	None	Varying flow rates due to normal SW demands in downstream buildings are expected to preclude freezing in the SW header.		
30	PTN	0	SWS / 012	5610-M-3012 Sh. 2	5	Vents / Drains / Misc. Connections	Various vents, drains, service taps	No	Not required for power generation	None	None	None		
31	PTN	0	SWS / 012	5610-M-3012 Sh. 2	6	Piping	2" - 1/2" piping to Swloads	Yes	Not required for power generation	None	None	None	This segment supplies the TSC and the nuclear chemistry building lab sink, among other loads. It is presumed that alternative sources of domestic water could be made available to these locations if freezing conditions were encountered.	
32	PTN	0	SWS / 012	5610-M-3012 Sh. 2	6	Vents / Drains / Misc. Connections	Various vents, drains, service taps	No	Not required for power generation	None	None	None		

33	PTN	0	SWS / 012	5610-M-3012 Sh. 3	-		-		-	-	None	None	Domestic service water failure in these locations is not a concern for power generation and is not subject to Technical Specification requirements. No control room alarm or annunciation is depicted on this sheet. No protection strategies are recommended.	-
34	PTN	0	SWS / 012	5610-M-3012 Sh. 4	1	Piping	2" SW supply to Radwaste Bldg	Yes	Not required for power generation	None	None	None		
35	PTN	0	SWS / 012	5610-M-3012 Sh. 4	2	Piping	1" - 1/2" shower/eyewash lines	No	Not required for power generation	None	None	None		
12	PTN	0	IAS / 013	5610-M-3013	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	0-ONOP-103.2 already addresses the following: • IAS-046, IA 0F5A PARTICULATE FILTER DRAIN VALVE • IAS-047, IA 0F5B PARTICULATE FILTER DRAIN VALVE •☒40-2033, IA CROSSTIE HEADER DRAIN YS-1440 STRAINER BLOWDOWN VLV •☒40-2031, IA CROSSTIE PIPING DRAIN YS-4-1441 STRAINER BLOWDOWN VLV •☒4-40-2340, IA SWING DRYER CROSSTIE PIPING DRAIN YS-4-1433 STRAINER BLOWDOWN VLV •☒4-40-2336, UNIT 4 IA CROSSTIE PIPING DRAIN YS-4-1432 STRAINER BLOWDOWN •☒4-40-2334, IA SWING DRYER CROSSTIE PIPING DRAIN YS-4-1434 STRAINER BLOWDOWN VLV The following shall be specifically added to 0-ONOP-
13	PTN	0	IAS / 013	5610-M-3013, Sh. 1	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (IAS-068) is periodically opened to drain the associated line (4"-17-S). Some or all of the following valves should be evaluated as being Normally Closed in lieu of Normally Open (3-40-207, 4-40-207, -207A, -208). Then consider if any of the closed valves should be added to 0-ONOP-103.2. (This assumes all the Air Connections are above the branch piping centerlines)
1	PTN	0	FP / 016	5610-M-3016 SH 1	1	Outdoor Tanks	Raw Water Storage Tanks T63A/B and raw water supply to tank	Yes	Provides water supply for Fire Protection system via Fire Pumps P101 & P39 and Jockey Pumps P234A/B and water to the Service Water Pumps	Maintain Fire Protection system function	Protect	Large water source would take days to freeze. If pumps are place in service to provide minimal flow with recirculation the pump heat could offset some temperature drop (limited) in the tank.	Tank capacities are 500,000 gallons for T63A and 750,000 gallons for T63B; both are aboveground Storage Tanks. 800 gpm supply from Miami Dade Water and Sewer.	
2	PTN	0	FP / 016	5610-M-3016 SH 1	2	Piping	Piping from municipality	Yes	Provides water to Raw Water Storage Tank	Maintain Fire Protection system function	None	Underground piping not susceptible to freeze event.		
16	PTN	0	FP / 016	5610-M-3016 SH 10	1	Piping	Various suppression system piping and components	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	Protect	**Deluge systems:** install drain piping (with valves) or weep holes on low points for proper drainage; weep holes would require vendor guidance to ensure that flow pattern and volume not adversely impacted. Additionally, insulation and heat trace of above-ground lines to the deluge valves and pressure switches. LTAM for Low Point Drains in Deluge System(s) is PTN-14-0005. **Focus should be on high-risk protected systems (i.e., EDG, Transformers, etc.).**	Most buildings presumed to have source of heat available to keep temperatures above 40°F to preclude freezing of fire protection piping. Buildings without heat need mitigation strategies.	

17	PTN	0	FP / 016	5610-M-3016 SH 11	1	Piping	Various suppression system piping and components	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	Protect	**Deluge systems:** install drain piping (with valves) or weep holes on low points for proper drainage; weep holes would require vendor guidance to ensure that flow pattern and volume not adversely impacted. Additionally, insulation and heat trace of above-ground lines to the deluge valves and pressure switches. LTAM for Low Point Drains in Deluge System(s) is PTN-14-0005. **Focus should be on high-risk protected systems (i.e., EDG, Transformers, etc.).**	Most buildings presumed to have source of heat available to keep temperatures above 40°F to preclude freezing of fire protection piping. Buildings without heat need mitigation strategies.	
18	PTN	0	FP / 016	5610-M-3016 SH 11	2	Piping	Various suppression system piping and components	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	Protect	Focus should be on high-risk protected systems (i.e., EDG, Transformers, etc.). **Wet Pipe systems:** declare system as nonfunctional and drain; employ comepensatory actions. Declaring nonfunctional and draining prevents potential damage to system which would render inoperable.	Most buildings presumed to have source of heat available to keep temperatures above 40°F to preclude freezing of fire protection piping. Buildings without heat need mitigation strategies.	
19	PTN	0	FP / 016	5610-M-3016 SH 12	1	Piping	Various suppression system piping and components	No	Provides backup to the Fire Water Pumps in event of failure of the Fire Water Pumps	Maintain Fire Protection system function	Mitigate	Backup pumps connected to Fire Loop via hose conncetions. Need walkdown to establish above-ground an dbelow-ground piping		
3	PTN	0	FP / 016	5610-M-3016 SH 2	1	Piping	Service Water piping from Raw Water Storage Tanks to Service Water Pumps	Yes	Provides Service water to Raw Water Supply Manifold, WTP Area, TSC and U4 Diesel Rooms, Turbine Plant and backup supply to Units 1 - 4 Fire Loop	Maintain Fire Protection system function	Protect	Above ground piping may or may not be susceptible to freezing depending upon service water system demands.		
5	PTN	0	FP / 016	5610-M-3016 SH 3	1	Piping	Fire water piping from the Raw Water Storage Tanks to the two (2) 100% capacity Fire Pumps and two (2) Jockey Pumps. From Pumps to site Fire Water Distribution Loop.	Standby	Provides water to site Fire Loop	Maintain Fire Protection system function	Protect	Operating pumps with a combination of recirculation, and calculated system demand, will minimize chances of pump freezing, ensure pump doesn't overheat, and provide flow to various water suppression systems susceptible to freezing. Site environmental limits on operating the diesel-driven pump needs to be evaluated; alternating between electric and diesel pumps can be effective if de-energized pump is maintained in a condition that precludes freezing - evaluation of operation schedule based on system configuration is considered required. If implementation of a flow strategy cannot be achieved, place pumps in enclosures (temporary or permanent) - the Diesel at PTN is in an unheated enclosure; NFPA 20 Section 4.13.3 states pump rooms or houses be maintained greater than 40°F. Addition of space heater should be utilized if ambient temperatures fall below 40°F. **Walkdowns required to determine length of aboveground piping.** Dependent upon length of pipe recommendations would include application of heat trace and insulation if utilization of flow to mitigate freezing is not possible.	Aboveground piping, Pumps operates in "Standby Mode" - fire piping is effectively deadleg piping. Diesel fuel is susceptible to "gelling" in cold climates as the paraffins in the fuel solidify out - this has the potential to clog the fuel filter. Paraffins start to crystaliize out at approx. 32°F. Temperatures necessary for gelling to be of significance are on the order of 10°F - 15°F; at these temperatures clogging of the tank, fuel filter, and/or fuel lines can occur. Of greater concern is water entrainment within the fuel; frozen water has the potential to clog fuel lines or filters at temperatures ranging from 20°F to 30°F. Use of additives to lower the cloud point (temperature at which paraffin wax begins to crystallize) can be mixed with the diesel fuel.	
4	PTN	0	FP / 016	5610-M-3016 SH 3	2	Piping	Diesel Engine Fuel & Coolant Lines	Standby	Provides motive power to Diesel Drive Fire Pump P101; 100% capacity for Design Basis Fire	Maintain Fire Protection system function	Protect	Coolant and fuel lines are susceptible to freezing due to water within the lines. "Gelling" of fuel is a result of the paraffins in diesel fuel solidifying due to low temperature over period days; engine block heater and/or use of winterized fuel (additives to minimize gelling) counter this gelling. Insulating or heat tracing of lines should be considered. Switching to a winter blend of water and anti-freeze, if not already done, should be considered for the engine coolant. A temporary enclosure over the diesel engine could be used as well to maintain ambient temperatures within tolerable limits - combustion ventilation requirements could be problematic.	Aboveground Diesel Engine	

6	PTN	0	FP / 016	5610-M-3016 SH 3	2	Piping	Diesel Engine Fuel & Coolant Lines	Standby	Provides motive power to Diesel Drive Fire Pump P101; 100% capacity for Design Basis Fire	Maintain Fire Protection system function	Protect	Coolant and fuel lines are susceptible to freezing due to water within the lines. "Gelling" of fuel is a result of the paraffins in diesel fuel solidifying due to low temperature over period days; engine block heater and/or use of winterized fuel (additives to minimize gelling) counter this gelling. Insulating or heat tracing of lines should be considered. Switching to a winter blend of water and anti-freeze, if not already done, should be considered for the engine coolant. A temporary enclosure over the diesel engine could be used as well to maintain ambient temperatures within tolerable limits - combustion ventilation requirements could be problematic.	Aboveground Diesel Engine	
7	PTN	0	FP / 016	5610-M-3016 SH 4	1	Piping	Fire loop piping	Standby	Turkey Point Fire Loop provides water to various suppression systems around the site covering PTN Units 1 - 4	Maintain Fire Protection system function	None	Underground piping not susceptible to freeze event.	All main fire loop piping is underground which is effectively protected for 4 day cold snap.	
8	PTN	0	FP / 016	5610-M-3016 SH 4	2	Piping	Various suppression system piping and components	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	Protect	Focus should be on high-risk protected systems (i.e., EDG, Transformers, etc.). **Pre-Action Systems:** heat trace/insulate the standpiping up to the releasing valve. Utilize drain lines at releasing valve and hose stations to provide minimum flow to keep dead leg flow moving. Route water to drains to preclude ice hazards. **Wet Pipe systems:** declare system as INOPERABLE and drain; place firewatches. **Deluge systems**: install drain piping (with valves) or weep holes on low points for proper drainage; weep holes would require vendor guidance to ensure that flow pattern and volume not adversely impacted. Additionally, insulation and heat trace of lines to the deluge valves and pressure switches. LTAM for Low Point Drains in Deluge System(s) is PTN-14-0005	Most buildings presumed to have source of heat available to keep temperatures above 40°F to preclude freezing of fire protection piping. Buildings without heat need mitigation strategies.	
9	PTN	0	FP / 016	5610-M-3016 SH 5	1	Piping	Fire loop piping	Standby	Turkey Point Fire Loop provides water to various suppression systems around the site.	Maintain Fire Protection system function	None	Underground piping not susceptible to freeze event.	All main fire loop piping is underground which is effectively protected for 4 day cold snap.	
10	PTN	0	FP / 016	5610-M-3016 SH 6	1	Piping	Fire Loop Piping	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	None	Underground piping not susceptible to freeze event.	All main fire loop piping is underground which is effectively protected for 4 day cold snap.	
11	PTN	0	FP / 016	5610-M-3016 SH 6	2	Piping	Fire Loop Piping and various suppression system piping and components	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	Protect	Focus should be on high-risk protected systems (i.e., EDG, Transformers, etc.). **Pre-Action Systems:** heat trace/insulate the standpiping up to the releasing valve. Utilize drain lines at releasing valve and hose stations to provide minimum flow to keep dead leg flow moving. Route water to drains to preclude ice hazards. **Wet Pipe systems:** declare system as INOPERABLE and drain; place firewatches. **Deluge systems**: install drain piping (with valves) or weep holes on low points for proper drainage; weep holes would require vendor guidance to ensure that flow pattern and volume not adversely impacted. Additionally, insulation and heat trace of lines to the deluge valves and pressure switches.	Most buildings presumed to have source of heat available to keep temperatures above 40°F to preclude freezing of fire protection piping. Buildings without heat need mitigation strategies.	
12	PTN	0	FP / 016	5610-M-3016 SH 7	1	Piping	Various suppression system piping and components	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	Protect	Focus should be on high-risk protected systems (i.e., EDG, Transformers, etc.). **Deluge systems:** install drain piping (with valves) or weep holes on low points for proper drainage; weep holes would require vendor guidance to ensure that flow pattern and volume not adversely impacted. Additionally, insulation and heat trace of lines to the deluge valves and pressure switches.	Most buildings presumed to have source of heat available to keep temperatures above 40°F to preclude freezing of fire protection piping. Buildings without heat need mitigation strategies.	
13	PTN	0	FP / 016	5610-M-3016 SH 8	1	Piping	Various suppression system piping and components	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	Protect	**Pre-Action Systems:** heat trace/insulate the standpiping up to the releasing valve. Utilize drain lines at releasing valve and hose stations to provide minimum flow to keep dead leg flow moving. Route water to drains to preclude ice hazards. **Focus should be on high-risk protected systems.**	Most buildings presumed to have source of heat available to keep temperatures above 40°F to preclude freezing of fire protection piping. Buildings without heat need mitigation strategies.	

14	PTN	0	FP / 016	5610-M-3016 SH 8	2	Piping	Various suppression system piping and components	Standby	Provides water for local fire fighting application	Maintain Fire Protection system function	Protect	**Wet Pipe systems:** declare system as nonfunctional and drain; place firewatches. Declaring nonfunctional and draining prevents potential damage to system which would render inoperable. **Focus should be on high-risk protected systems.**	Most buildings presumed to have source of heat available to keep temperatures above 40°F to preclude freezing of fire protection piping. Buildings without heat need mitigation strategies.	
15	PTN	0	FP / 016	5610-M-3016 SH 9	1	Piping	Various suppression system piping and components	Standby	Provides gaseous suppression for fire fighting application	Maintain Fire Protection system function	None	Gaseous Systems not considered as susceptible to failure due to lowered ambient temperatures - discharge may be slowed. In the event temperatures reduce gas pressure below required limits, system should be declared "non-functional" and compensatory actions initiated.	Gaseous suppression is two-phase flow of liquid and gas - piping temperature affects the rate of suppressant phase change from liquid to gas.	
1	PTN	0	ICW / 019	5610-M-3019 Sh. 1	1	Piping	8", 10" & 12" Main Piping	No	Provides supplemental cooling for ICW via injecting chilled Unit 5 well water into either the Unit 3 or Unit 4 ICW system piping upstream of the Unit 3 or Unit 4 CCW heat exchangers in order to mitigate elevated Containment temperatures. This is a NNS system.	None	Mitigate	Align and run the system to ensure flow through the supplemental line on a periodic basis to protect the SR piping on 5613/4-M-3019 Sh. 2. The smallest sized pipe in the full supplemental system is 4", therefore, with no insulaton flow needs to be established every 9.5 hours to prevent >25% freezing. (UHS Temperature ~50°F Min.)	Protection of the piping on this P&ID is not required, since the system would not need to be used during a severe cold weather event (only needed during extreme hot summer weather when ICW temperatures are high and Containment temperature is near the 120F TS limit. This piping is NNS and a break or damage to this piping would not impact unit generation or require a shutdown However, on 5613/4-M-3019 Sh. 2, to prevent damage to the SR portion of this system, it is recommended a "Mitigate" strategy is used, and running the supplemental system on a periodic basis to prevent freezing. Per 0-ONOP-103.2, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure". Another option is don't mitigate this system and protect the SR ICW Supplemental piping with 1" insulation to prevent >25% freezing.	5613-M-3019 Sh. 2 5614-M-3019 Sh. 2 EC 283870 0-ONOP-103.2
2	PTN	0	ICW / 019	5610-M-3019 Sh. 1	1	Piping	Unit 5 Well Pump and Pump 0P9	No	See above for piping		Mitigate	See above for piping	See above for piping	
3	PTN	0	ICW / 019	5610-M-3019 Sh. 1	1	Motors	Unit 5 Well Pump and Pump 0P9	No	See above for piping		Protect	Determine what protection is needed to maintain the motor. A mitigate option is to use tenting and space heaters.	See above for piping	
4	PTN	0	ICW / 019	5610-M-3019 Sh. 1	1	Vents / Drains / Misc. Connections	All vents, drains, and connections	No	None		None	No protection required	A break in any of these lines would cause leakage from the system; however, the system is NNS, there would only be minimal system leakage, and a majority of flow would still go through the system to prevent freezing of the main SR pipe.	
5	PTN	0	ICW / 019	5610-M-3019 Sh. 1	1	Heat Exchangers	Chillers	No	See above for piping		Protect	Determine what protection is needed to maintain the chillers. The chillers are not required to be functional, but the flow path through them cannot freeze and prevent system from flowing. A mitigate option is to use tenting and space heaters.	See above for piping	
6	PTN	0	ICW / 019	5610-M-3019 Sh. 1	1	Instr. Local	All local instruments	No	None		None	No protection required	A break in any of these lines would cause leakage from the system; however, the system is NNS, there would only be minimal system leakage, and a majority of flow would still go through the system to prevent freezing of the main SR pipe.	
1	PTN	0	WTP / 021	5610-M-3021 Sh. 1	1	Piping	8"-10-F Pipe and 6"-10-F Pipe	Yes	Inlet Flow to Raw Water Pump	Pressure Boundary	None	None	No impact on the power generation. Location : RWT Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
2	PTN	0	WTP / 021	5610-M-3021 Sh. 1	2	Pump	P17A and P17B Raw Water Pump	Yes	Inlet / Outlet Flow	Pressure Boundary	None	None	RWT Area	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
3	PTN	0	WTP / 021	5610-M-3021 Sh. 1	3	Piping	3" Pipe and 6" -10-F Pipe	Yes	Outlet Flow to Water Purification Plant	Pressure Boundary	None	None	No impact on the power generation. Location : RWT Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3

4	PTN	0	WTP / 021	5610-M-3021 Sh. 1	3	Vents / Drains / Misc. Connections	4"-10-F Pipe reducer 6"-10-F pipe capped welded	No	Pressure Boundary	Dead Leg	None	None	No impact on the power generation. Location : RWT Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
5	PTN	0	WTP / 021	5610-M-3021 Sh. 1	4	Piping	8" Pipe reducer to 6" Pipe	No	Raw Water Supply to WTP	Pressure Boundary	None	None	No impact on the power generation. Location : WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
6	PTN	0	WTP / 021	5610-M-3021 Sh. 1	5	Piping	6" Pipe	Yes	Supply from the Raw Water Supply and Service Water System	Pressure Boundary	None	None	No impact on the power generation. Location : RWT Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing or insulation .	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
7	PTN	0	WTP / 021	5610-M-3021 Sh. 1	6	Piping	8" Pipe	Yes	Supply from Well Water; Supply to CWP Lube Water Storage Tank; Waste Header	Pressure Boundary	None	None	No impact on the power generation. Location : East of New WTP Area. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
8	PTN	0	WTP / 021	5610-M-3021 Sh. 1	7	Piping	1/2" Pipe	Yes	Instrument Air	Provides Instrument Air	None	None	No impact on the power generation. Location ; East of New WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation .	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
9	PTN	0	WTP / 021	5610-M-3021 Sh. 1	8	Vents / Drains / Misc. Connections	3/4" Pipe	No	None	Dead Leg	None	None	No impact on the power generation. Location : 397 -WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
10	PTN	0	WTP / 021	5610-M-3021 Sh. 1	9	Vents / Drains / Misc. Connections	6" Pipe and 3/4" Pipe	No	Fire Department Connection	Pressure Boundry	None	None	No impact on the power generation. Location : East of new WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation .	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
11	PTN	0	WTP / 021	5610-M-3021 Sh. 1	10	Pipe	6" Pipe	No	None	Pressure Boundry	None	Inspect during walkdown		Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3

12	PTN	0	WTP / 021	5610-M-3021 Sh. 1	11	Pipe	6" Pipe	Yes	Product Water to Demin Water System	Pressure Boundry	None	None	No impact on the power generation. Location : East of new WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
13	PTN	0	WTP / 021	5610-M-3021 Sh. 1	12	Pipe	8" Pipe	Yes	Waste Water Intake Canal	None	None	Inspect during walkdown		Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
14	PTN	0	WTP / 021	5610-M-3021 Sh. 1	13	Pipe	8" Pipe and 6" Pipe	Yes	Supply Water to Lube Water Storage Tank	Pressure Boundary	None	None	No impact on the power generation. Location : East of new WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
15	PTN	0	WTP / 021	5610-M-3021 Sh. 2	1	Piping	6"-9-S Pipe	Yes	Product Water from WTP	Pressure Boundary	None	None	No impact on the power generation. Location : WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
16	PTN	0	WTP / 021	5610-M-3021 Sh. 2	1	Piping	4" Pipe	No	None	Dead Leg	None	None	No impact on the power generation. Location : WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
17	PTN	0	WTP / 021	5610-M-3021 Sh. 2	1	Piping	Control Valve CV-539	Yes	Maintain Primary Water Flow	Pressure Boundary/ Flow Control	None	None		Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
18	PTN	0	WTP / 021	5610-M-3021 Sh. 2	1	Vents / Drains / Misc. Connections	Pipe connected to Shutoff Valve	No	None	Dead Leg	None	None	No impact on the power generation. Location : WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
19	PTN	0	WTP / 021	5610-M-3021 Sh. 2	1	Instr. Control / Protection	Instrument air tubing/ controller for CV-539	Yes	CV-539 control	Flow Control	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation .	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3

20	PTN	0	WTP / 021	5610-M-3021 Sh. 2	1	Drains / Misc. Connections	4-3/4"-9 Pipe	No	None	Dead Leg	None	None	No impact on the power generation. Location : WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
21	PTN	0	WTP / 021	5610-M-3021 Sh. 2	2	Vents / Drains / Misc. Connections	3/8" x.065" SS Tubing	No	Primary Sensing Element	Pressure Boundary	None	None	No impact on the power generation. Location : WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
22	PTN	0	WTP / 021	5610-M-3021 Sh. 2	2	Vents / Drains / Misc. Connections	3/8" x.065" SS Tubing	Yes	Water Sample to Chemistry Lab	Pressure Boundary	None	None	No impact on the power generation. Location : WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
23	PTN	0	WTP / 021	5610-M-3021 Sh. 2	3	Bypass Connection / Vents / Drains / Misc. Connections	3/4" Pipe	No	None	Dead Leg	None	None	No impact on the power generation. Location : 397- WTP Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
24	PTN	0	WTP / 021	5610-M-3021 Sh. 2	3	Bypass Connection / Vents / Drains / Misc. Connections	3/4" pipe	Yes	Maintain Primary Water Flow to EDG Cooling System	Pressure boundary	None	None	No impact on the power generation. Location : 386 WTP Chem Storage Area Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	Water Treatment System or primary water make-up system does not create any abnormal condition in reactor operation; therefore a componet failure or temporary outage is not important for reactor safety per UFSAR 9.6.3
25	PTN	0	WTP / 021	5610-M-3021 Sh. 3	Void	Void	Void	Void	Void	Void	Void	Void	Void	Void
27	PTN	0	WTP / 021	5610-M-3021 Sh. 4	1	Vents / Drains / Misc. Capped Connections	1" Pipe and 2" Pipe	No	Local Indication / Alternate Air Supply to Water Storage Tank	None	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	No T.S or FSAR limits per TP Extreme Temperature Reassessment
28	PTN	0	WTP / 021	5610-M-3021 Sh. 4	2	Vents / Drains / Misc. Capped Connections	1" and 3/8" SS Tubing	No	Manual Grab Sample	Water Sample	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	No T.S or FSAR limits per TP Extreme Temperature Reassessment
29	PTN	0	WTP / 021	5610-M-3021 Sh. 4	3	Piping	3" Pipe	Yes	Level Transmitter	Lo LVL Audible and Visual Alarm	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	No T.S or FSAR limits per TP Extreme Temperature Reassessment
30	PTN	0	WTP / 021	5610-M-3021 Sh. 4	4	Piping	8" Pipe and 4" Pipe	Yes	Lube Water Pump Suction Line	Lube Water to Circulating Water Pumps	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	No T.S or FSAR limits per TP Extreme Temperature Reassessment
31	PTN	0	WTP / 021	5610-M-3021 Sh. 4	4	Piping	3/4" Pipe	No	None	Dead Leg	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	No T.S or FSAR limits per TP Extreme Temperature Reassessment
32	PTN	0	WTP / 021	5610-M-3021 Sh. 4	5	Piping	8" Pipe and 6" Pipe	Yes	Supply Water from WTP to Lube Storage Tank; Lube Storage Tank Overflow Drain to Intake Canal	Pressure Boundary	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	No T.S or FSAR limits per TP Extreme Temperature Reassessment
33	PTN	0	WTP / 021	5610-M-3021 Sh. 4	5	Vents / Drains / Misc. Connections	3" Pipe and 4" Pipe	No	Pressure Releif	Safety Releif Valve	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	No T.S or FSAR limits per TP Extreme Temperature Reassessment
34	PTN	0	WTP / 021	5610-M-3021 Sh. 4	6	Piping	3" Pipe; 4" Pipe; 6" Pipe; 10" Pipe; 8" Pipe	Yes	Sump Drain to Intake Canal	Stagnent Water to Freeze up	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	

35	PTN	0	WTP / 021	5610-M-3021 Sh. 4	7	Vents / Drains / Misc. Connections	50-704 Shutoff Valve connected to the Lube Storage tank	No	None	Dead Leg	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	
36	PTN	0	WTP / 021	5610-M-3021 Sh. 4	8	Vents / Drains / Misc. Blind Flanged Connections	6" Pipe and 1" Pipe	No	None	Pressure Boundary	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	
37	PTN	0	WTP / 021	5610-M-3021 Sh. 4	9	Vents / Drains / Misc. Connections	1" Pipe	No	None	None	None	None		
26	PTN	0	WTP / 021	5610-M-3021 Sh. 4		Outdoor Tank	CWP Lube Water Storage Tank	Yes	CWP Lube Water Storage Tank is used in circulating water pumps lube water system per UFSAR 9.6-9	Reject Waste Water from WTP	None	No protection required, tank and contents will not freeze.	An outdoor tank vent can be blocked by ice formation, creating a vacuum. The vacuum condition can adversely affect the tank parameters being monitored and cause unwanted system protective actuations.	No T.S or FSAR limits per TP Extreme Temperature Reassessment
38	PTN	0	WTP / 021	5610-M-3021 Sh. 5	1	Piping	3/8" x .065" SS Tubing	Yes	Water Sample	Product Water Sample to Nuclear Chemstry Lab	None	None	No impact on the power generation. Suggestion : To avoid freezing and possible damage to equipment,consider adding heat tracing and insulation	
39	PTN	0	WTP / 021	5610-M-3021 Sh. 6	Void	Void	Void	Void	Void	Void	Void	Void	Void	Void
32	PTN	0	025	5610-M-3025 Sh. 1	1	Ducting	Control Bldg supply and exhaust ductwork	Yes	TS 3/4.7.5; CREVS availability required to provide habitable environment for post-accident plant operations	Not affected by cold temperatures	None	None	Ducting is not susceptible to damage from freezing	
33	PTN	0	025	5610-M-3025 Sh. 1	1	Instruments - General	Local D/P gages, damper position switches, temperature indication switches (thermostats), duct flow elements / switches	Yes	TS 3/4.7.5; CREVS availability required to provide habitable environment for post-accident plant operations	Located inside control building; not affected by cold temperatures	None	None	No instruments contain water that is susceptible to freezing	
34	PTN	0	025	5610-M-3025 Sh. 1	1	Instr. Control / Protection	Normal intake radiation monitors (CREVS Actuation)	Yes	TS 3/4.7.5; CREVS availability required to provide habitable environment for post-accident plant operations	Located inside control building equipment room; not affected by cold temperatures	None	None		
35	PTN	0	025	5610-M-3025 Sh. 1	1	Filter Train	CREVS recirc filters; compensatory filter unit	Standby	TS 3/4.7.5; CREVS availability required to provide habitable environment for post-accident plant operations	Filter trains are not affected by cold weather	None	None		
36	PTN	0	025	5610-M-3025 Sh. 1	1	Air Handling Unit	A, B, C CREVS AHUs	Yes	TS 3/4.7.5; CREVS availability required to provide habitable environment for post-accident plant operations	Cold weather has little to no effect on a fan or its motor. Coils are direct expansion (DX), not subject to freezing	None	None	Control room HVAC system does not include heating capability. Control building environment is assumed to be maintained above freezing by general measures taken by PTN for building interiors.	
37	PTN	0	025	5610-M-3025 Sh. 1	1	Air Condensing Unit	Control Room AHU condensing unit	Yes	TS 3/4.7.5; CREVS availability required to provide habitable environment for post-accident plant operations	Motors and condensers are generally unaffected by cold weather.	None	None		
38	PTN	0	025	5610-M-3025 Sh. 1	1	Fan	CREVS filter supply fans; Compensatory filter supply fan	Standby	TS 3/4.7.5; CREVS availability required to provide habitable environment for post-accident plant operations	Fans are located indoors. Cold weather has little to no effect on a fan or its motor. Outdoor kitchen fan ductwork blanked off.	None	None		
39	PTN	0	025	5610-M-3025 Sh. 1	1	Motor Operated Damper	Indoor and outdoor motor operated dampers	Yes	TS 3/4.7.5; CREVS availability required to provide habitable environment for post-accident plant operations	For the three outdoor supply dampers, gearbox lubricant may impart additional resisting torque on the damper motors at reduced temperatures that could impede full-range damper operation. Other dampers are internal to the SFP area.	Protect	Verify the damper motor/gearbox lubricant is adequate for cold-weather conditions to avoid excessive resisting torque.		
65	PTN	0	025	5610-M-3025 Sh. 2	1	Piping	Computer room chilled water piping, portions on Aux Bldg roof serving train A and B chiller packages	Yes	TS 3/4.3.3 -- Monitoring instrumentation operability;	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate and heat trace the standby chilled water train; Alternative: periodically cycle chilled water flow in the idle train, or run both trains continuously.		
66	PTN	0	025	5610-M-3025 Sh. 2	1	Vents / Drains / Misc. Connections	Various manual vent and drains	No	TS 3/4.3.3 -- Monitoring instrumentation operability; (Chilled water pressure boundary)	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate and heat trace dead legs, if warranted by length and existing insulation configuration.		

67	PTN	0	025	5610-M-3025 Sh. 2	1	Heat Exchangers	Chiller evaporator	Yes	TS 3/4.3.3 -- Monitoring instrumentation operability;	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate / cover / enclose chiller evaporator to prevent freezing in standby unit Alternative: periodically cycle chilled water flow in the idle train, or run both trains continuously.		
68	PTN	0	025	5610-M-3025 Sh. 2	1	Outdoor Tanks	Chilled water air separator	Yes	TS 3/4.3.3 -- Monitoring instrumentation operability;	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate / cover / enclose chiller air separator to prevent freezing in standby unit Alternative: periodically cycle chilled water flow in the idle train, or run both trains continuously.		
69	PTN	0	025	5610-M-3025 Sh. 2	1	Instr. Local	Local pressure indication	Yes	None	Local indication not required for power operation	None	None		
70	PTN	0	025	5610-M-3025 Sh. 2	1	Instr. Control / Protection	Pressure, flow, and temperature transmitters	Yes	TS 3/4.3.3 -- Monitoring instrumentation operability; Alarm annunciation in control room	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate and heat trace pressure and flow instrument tubing		
71	PTN	0	025	5610-M-3025 Sh. 2	2	Piping	Piping to expansion tank	Yes	TS 3/4.3.3 -- Monitoring instrumentation operability;	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate and heat trace both trains		
72	PTN	0	025	5610-M-3025 Sh. 2	2	Vents / Drains / Misc. Connections	Various manual vent and drains	No	Chilled water pressure boundary	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate and heat trace dead legs, if warranted by length and existing insulation configuration.		
73	PTN	0	025	5610-M-3025 Sh. 2	2	Outdoor Tanks	Chilled water expansion tank	Yes	TS 3/4.3.3 -- Monitoring instrumentation operability;	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate / cover / enclose chiller expansion tanks to prevent freezing, if required based on size and insulation configuration		
74	PTN	0	025	5610-M-3025 Sh. 2	2	Instr. Control / Protection	Expansion tank level gage and switch	Yes	TS 3/4.3.3 -- Monitoring instrumentation operability; Alarm annunciation in control room	safety related chilled water system is required to maintain computer room temps within EQ limits	Protect	Insulate and heat trace level gage sensing lines		
75	PTN	0	025	5610-M-3025 Sh. 2	3	Piping	Chilled water makeup line	No	None	Not required for power operation	None	None	Ensure sufficient expansion tank inventory before cold weather event;	
76	PTN	0	025	5610-M-3025 Sh. 2	3	Instr. Local	Local pressure indication	No	None	Local indication not required for power operation	None	None		
56	PTN	0	026	5610-M-3026 Sh. 1	1	Ducting	Radwaste supply, filtration, and exhaust ductwork	Yes	Not required for power generation, but required for continuous radiation monitoring of radwaste areas	Not affected by cold temperatures	None	None	Ducting is not susceptible to damage from freezing	
57	PTN	0	026	5610-M-3026 Sh. 1	1	Instruments - General	Local D/P gages; Bldg inlet filter media limit switches;	Yes	Local indication only, not required for power generation	Located inside control building; not affected by cold temperatures	None	None	No instruments contain water that is susceptible to freezing	
58	PTN	0	026	5610-M-3026 Sh. 1	1	Instr. Annunciation / Indication	temperature switches and transmitters for AHU and fan control	Yes	Not required for power operation	Not affected by cold temperatures	None	None	Instruments contains no water that is susceptible to freezing	
59	PTN	0	026	5610-M-3026 Sh. 1	1	Filter Train	Radwaste bldg exhaust filtration	Yes	Not required for power generation, but required for continuous radiation monitoring of radwaste areas	Filter trains are located indoors and are not affected by cold weather	None	None		
60	PTN	0	026	5610-M-3026 Sh. 1	1	Filter	Air handler pre-filters	Yes	Not required for power generation	Radwaste AHUs are located indoors; cooling function not required for power generation, likely not used during cold weather event	None	None		
61	PTN	0	026	5610-M-3026 Sh. 1	1	Fan	Radwaste bldg exhaust filtration fans	Yes	Not required for power generation, but required for continuous radiation monitoring of radwaste areas	Fans are located indoors. Cold weather has little to no effect on a fan or its motor.	None	None		
62	PTN	0	026	5610-M-3026 Sh. 1	1	Air Handling Unit	Radwaste Control room AHU; Respirator repair room AHU; Respirator drying room AHU;	Yes	Not required for power generation	Cold weather has little to no effect on a fan or its motor. Coils are direct expansion (DX), not subject to freezing.	None	None	Radwaste control room and respirator room AHUs do not include heating capability. Building environment is assumed to be maintained above freezing by general measures taken by PTN for building interiors.	

63	PTN	0	026	5610-M-3026 Sh. 1	1	Air Condensing Unit	Condensers for Radwaste Control Room AHU and respirator repair room AHU	Yes	Not required for power generation	Motors and condensers are generally unaffected by cold weather. This unit is not required for power generation.	None	None		
64	PTN	0	026	5610-M-3026 Sh. 1	1	Filter	Radwaste bldg inlet filtration media rolls	Yes	Not required for power generation	Filter roll motors are indoors	None	None		
44	PTN	0	060	5610-M-3060 Sh. 1	1	Ducting	Aux Bldg supply and exhaust ductwork	Yes	Non-safety related, but required to be available for post-accident heat removal in Aux Bldg	Not affected by cold temperatures	None	None	Ducting is not susceptible to damage from freezing	
45	PTN	0	060	5610-M-3060 Sh. 1	1	Instruments - General	Local D/P gages, exhaust damper position switches	Yes	Local indication only, not required for power generation	Located inside control building; not affected by cold temperatures	None	None	No instruments contain water that is susceptible to freezing	
46	PTN	0	060	5610-M-3060 Sh. 1	1	Instr. Annunciation / Indication	plant stack flow element / transmitter	Yes	Input to SPDS/SAS	Not affected by cold temperatures	None	None	Instruments contains no water that is susceptible to freezing	
47	PTN	0	060	5610-M-3060 Sh. 1	1	Instr. Annunciation / Indication	U3 SFP SPING radiation detector	Yes	Input to SPDS/SAS	Not required for power operations (no longer in Tech Spec's); Vent stack SPING is located in the Aux Bldg fan room. Procedures call for portable monitoring in the event the SPING monitors fail	None	None		
48	PTN	0	060	5610-M-3060 Sh. 1	1	Filter Train	Aux Bldg exhaust pre-filters and HEPA filters Radioactive lab exhaust filters	Yes	Promotes	Filter trains are located indoors and are not affected by cold weather	None	None		
49	PTN	0	060	5610-M-3060 Sh. 1	1	Filter	Supply fan prefilters Laundry area filters	Yes	Not required for power generation	Filter trains are not affected by cold weather	None	None		
50	PTN	0	060	5610-M-3060 Sh. 1	1	Fan	Aux Bldg Exhaust Fans	Yes	Non-safety related, but should be available for bldg heat removal as indicated by UFSAR Sec 9.8.1.2. Fans promote movement of potentially contaminated air away from non-contaminated areas.	Fans are located indoors. Cold weather has little to no effect on a fan or its motor.	None	None	0-ONOP-103.2 calls for turning off one exhaust fan to help mitigate low temperature conditions in the Aux Bldg. Aux Bldg HVAC does not include heating capability. Building environment is assumed to be maintained above freezing by general measures taken by PTN for building interiors.	
51	PTN	0	060	5610-M-3060 Sh. 1	1	Fan	Aux Bldg Supply Fans	Yes	None	Supply fans are outdoors, but fans and motors are generally unaffected by cold weather.	None	None	0-ONOP-103.2 calls for turning off both supply fans to help mitigate low temperature conditions in the Aux Bldg.	
52	PTN	0	060	5610-M-3060 Sh. 1	1	Fan	Filtered exhaust fans from radioactive lab	Yes	None	Fans are located indoors. Cold weather has little to no effect on a fan or its motor.	None	None		
53	PTN	0	060	5610-M-3060 Sh. 1	1	Motor Operated Damper	Aux Bldg exhaust fan motor operated dampers	Yes	Flow path for bldg heat removal and discharge to plant stack	No action required. Dampers are internal to the Aux Bldg.	None	None		
54	PTN	0	025	5610-M-3060 Sh. 1	1	Air Handling Unit	Laundry area AHU	Yes	Not required for power generation	Cold weather has little to no effect on a fan or its motor. Coils are direct expansion (DX), not subject to freezing.	None	None		
55	PTN	0	025	5610-M-3060 Sh. 1	1	Air Condensing Unit	Condenser for laundry area AHU	Yes	Not required for power generation	Motors and condensers are generally unaffected by cold weather. This unit is not required for power generation.	None	None	Condensing unit for the laundry area AHU is not shown on this P&ID. However, it is depicted on 5610-M-1519	
40	PTN	0	060	5610-M-3060 Sh. 3	1	Ducting	Electrical Eqpt Room supply and exhaust ductwork	Standby	Safety-related cooling system, required for temperature control in Electrical Eqpt Rm	Not affected by cold temperatures	None	None	Ducting is not susceptible to damage from freezing	
41	PTN	0	060	5610-M-3060 Sh. 3	1	Instr. Control / Protection	Temperature instrument/switches	Standby	Provides auto-start signal to safety-related Electrical Eqpt Rm AHUs. Includes Control Room annunciation	Located inside Electrical Eqpt Rm; not sensitive to cold temperatures	None	None		

42	PTN	0	060	5610-M-3060 Sh. 3	1	Air Handling Unit	Electrical Eqpt Room safety-related AHUs	Standby	Safety-related cooling system, required for temperature control in Electrical Eqpt Rm	Cold weather has little to no effect on a fan or its motor. Coils are direct expansion (DX), not subject to freezing. Units are located inside the Electrical Eqpt Rm.	None	None	Electrical Eqpt Rm safety-related AHUs do not include heating capability. Environment is assumed to be maintained above freezing by general measures taken by PTN for building interiors. The need for air conditioning in the Electrical Equipment Room during the postulated freeze event is unlikely.	
43	PTN	0	060	5610-M-3060 Sh. 3	1	Air Condensing Unit	Rooftop condensers for Electrical Eqpt Room safety-related AHUs	Standby	Safety-related cooling system, required for temperature control in Electrical Eqpt Rm	Motors and condensers are generally unaffected by cold weather.	None	None		
1	PTN	0	065	5610-M-3065, SH 1	1	piping	valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
2	PTN	0	065	5610-M-3065, SH 1	2	piping	PCV	Yes	flow path	pressure boundary integrity	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
3	PTN	0	065	5610-M-3065, SH 1	3	piping	PCV, valves	Yes	flow path	pressure boundary integrity	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
4	PTN	0	065	5610-M-3065, SH 1	4	piping	piping, valves	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
5	PTN	0	065	5610-M-3065, SH 1	5	Instr. Local	N2 Compressors, pressure switches	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
6	PTN	0	065	5610-M-3065, SH 1	6	piping	drain	No	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines, drain blow path exists in case of mositure	
7	PTN	0	065	5610-M-3065, SH 1	7	piping	piping, valves	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
8	PTN	0	065	5610-M-3065, SH 1	8	piping	pressure switches	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
9	PTN	0	065	5610-M-3065, SH 1	9	Instr. Control / Protection	pressure switches, volume chamber	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
10	PTN	0	065	5610-M-3065, SH 1	10	Instr. Control / Protection	N2 Compressor	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
11	PTN	0	065	5610-M-3065, SH 1	12	Instr. Control / Protection	pressure control valve	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
12	PTN	0	065	5610-M-3065, SH 1	13	Instr. Control / Protection	pressure indicators	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
13	PTN	0	065	5610-M-3065, SH 1	14	Instr. Control / Protection	pressure transmitters, indicators, relief valves	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
14	PTN	0	065	5610-M-3065, SH 1	15	Instr. Control / Protection	pressure control valve, indiccation	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
15	PTN	0	065	5610-M-3065, SH 1	16	Instr. Control / Protection	pressure control valve	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
16	PTN	0	065	5610-M-3065, SH 1	17	Instr. Control / Protection	pressure control valve	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
17	PTN	0	065	5610-M-3065, SH 1	18	Instr. Control / Protection	pressure control valve	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
18	PTN	0	065	5610-M-3065, SH 1	19	piping	piping, valves	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
19	PTN	0	065	5610-M-3065, SH 1	20	piping	piping, valves	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
20	PTN	0	065	5610-M-3065, SH 1	21	piping	relief valve	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
21	PTN	0	065	5610-M-3065, SH 1	22	piping	Valves	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
22	PTN	0	065	5610-M-3065, SH 1	23	piping	Valves	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
23	PTN	0	065	5610-M-3065, SH 1	24	piping	pressure regulating valve	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
24	PTN	0	065	5610-M-3065, SH 1	25	piping	PCV, valves	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
25	PTN	0	065	5610-M-3065, SH 1	26	Instr. Control / Protection	pressure switches	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
26	PTN	0	065	5610-M-3065, SH 1	27	Instr. Control / Protection	pressure switches	Yes	flow path	pressure boundary integrity	No	None	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
42	PTN	0	065	5610-M-3065, SH 3	1	Vents / Drains / Misc. Connections	piping, val;ves	Yes	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	
43	PTN	0	065	5610-M-3065, SH 3	2	Outdoor Tanks	bottles	Yes	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	
44	PTN	0	065	5610-M-3065, SH 3	3	Piping	piping, pressure indcators	Yes	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	

45	PTN	0	065	5610-M-3065, SH 3	4	Instr. Local	pressure indcators	Yes	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	
46	PTN	0	065	5610-M-3065, SH 3	5	Piping	header to Generators 3 and 4	Yes	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	
47	PTN	0	065	5610-M-3065, SH 3	6	Instr. Local	excess flkow valves, transmitters, indcators	Yes	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	
48	PTN	0	065	5610-M-3065, SH 3	7	Piping	valves	Yes	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	
49	PTN	0	065	5610-M-3065, SH 3	8	Vents / Drains / Misc. Connections	H2 Supply package	Standby	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	
50	PTN	0	065	5610-M-3065, SH 3	9	Piping	valves, relief valves	Yes	flow path	pressure boundary integrity, no moisture in line, as no dryers present	none	none	H2 gas is supplied mositure free	
1	PTN	0	FWS / 074	5610-M-3074, Sh 1	1	Piping	6", 8" & 10" above ground pipe	Standby	The Standby SG Feedwater system supports AFW during some scenarios. (DBD 5610-075-DB-001, section 4.1.5) TS 3.7.1.2 action 2 relies on Standby FW when AFW is inoperable	Support AFW capability	Protect	Check for insulation and location relative to heat source and wind block		
2	PTN	0	FWS / 074	5610-M-3074, Sh 1	1	Vents / Drains / Misc. Connections	small dia. Piping / tubing, instrumentation	Standby	maintains standby function of Feedwater	Support AFW capability	Protect	Insulate and heat trace		
3	PTN	0	FWS / 074	5610-M-3074, Sh 1	2	Piping	3" Standby pump recirculation piping	Standby	maintains standby function of Feedwater	Support AFW capability	Protect	Check for insulation and location relative to heat source and wind block		
4	PTN	0	FWS / 074	5610-M-3074, Sh 1	2	Vents / Drains / Misc. Connections		Standby	maintains standby function of Feedwater	Support AFW capability	Protect	Insulate and heat trace		
5	PTN	0	FWS / 074	5610-M-3074, Sh 1	3	Instr. Control / Protection	Diesel driven Standby Feedwater pump, fuel system, controls and instrumentation	Standby	maintains standby function of Feedwater	Support AFW capability	Protect	Construct temporary shelter with temp heat for expected extreme cold conditions. Walkdown necessary to evaluate		
7	PTN	0	FWS / 074	5610-M-3074, Sh 2	1	Piping	Large 6" to 10" piping and components	Yes	The Standby SG Feedwater system supports AFW during some scenarios. (DBD 5610-075-DB-001, section 4.1.5) TS 3.7.1.2 action 2 relies on Standby FW when AFW is inoperable	Support AFW capability	Protect	Check for insulation and location relative to heat source and wind block		
8	PTN	0	FWS / 074	5610-M-3074, Sh 2	1	Vents / Drains / Misc. Connections		Yes	maintains standby function of Feedwater	Support AFW capability	Protect	Insulate and heat trace		
9	PTN	0	FWS / 074	5610-M-3074, Sh 2	2	Vents / Drains / Misc. Connections	Tank level instrumentation	Yes	maintains standby function of Feedwater	Support AFW capability	Protect	Insulate and heat trace		
10	PTN	0	FWS / 074	5610-M-3074, Sh 2	3	Piping	Vendor Degasifier Skid	Standby	Support Demin. Water operation		Protect	Check for insulation and location relative to heat source and wind block, possible heat trace.		
11	PTN	0	FWS / 074	5610-M-3074, Sh 2	4	Piping	2" piping and below, Vent tank	Yes	Support Demin. Water tank operation,	Support AFW capability	Protect	Insulate and heat trace		
12	PTN	0	FWS / 074	5610-M-3074, Sh 2	5	Piping	Demineralized Water Degas Skid instrument panel	Standby	Support Demin. Water operation		Protect	Check for insulation and location relative to heat source and wind block, possible heat trace.		
13	PTN	0	FWS / 074	5610-M-3074, Sh 2	6	Piping	Demin Water Degas Skid	Standby	Support Demin. Water operation		Protect	Check for insulation and location relative to heat source and wind block, possible heat trace.		
6	PTN	0	FWS / 074	5610-M-3074, Sh 2	--	Outdoor Tanks	Memineralized Water Storage Tank	Yes	Tech Spec min. capacity 145,000 gal.	Support AFW capability	None	None	Large tank not susceptable to significant freeze in local cold weather conditions.	
14	PTN	0	FWS / 074	5610-M-3074, Sh 3	1	Piping	Nitrogen supply to DWST	Yes	Supports DWST and Condensate Storage		None	None	Dry Nitrogen	
1	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	1	Piping	4" & 3" Steam Piping downstream of start signal MOVs to AFW Pump Turbines	No	Tech Spec 3.7.1.2 requires 2 independent AFW trains including 3 steam supplies, 3 pumps and discharge flowpaths	Maintain AFW capability for decay heat removal	None	No protection Required	During normal operation, this piping is isolated and dry. Any residual water or minimal steam passby from the upstream MOVs in the line will be drained via the steam traps to the station drains. There will be no water that congregates in the line that could freeze and break the line. 0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
2	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	1	Vents / Drains / Misc. Connections	1/2", 3/8", 3/4" Vents	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	None	No protection Required	No residual water expected to gather and cause an adverse impact on the system.	
3	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	1	Instr. Annunciation / Indication	PIT, PoT	Yes	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	None	No protection Required	No residual water expected to gather and cause an adverse impact on the system.	
4	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	1	Vents / Drains / Misc. Connections	Flanges	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	None	No protection Required	No residual water expected to gather and cause an adverse impact on the system.	
5	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	1	Motor Operator Valve	MOVs upstream of Steam Turbines	No	Tech Spec 3.7.1.2	Maintain AFW capability for decay heat removal		Determine if MOV is susceptible to be adversely impacted by cold weather and if protection is required.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	

6	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	2	Piping	4" Drain Piping to Steam Traps	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	None	No protection Required	During normal operation, this piping is isolated and dry. Any residual water or minimal steam passby from the upstream MOVs in the line will be drained via the steam traps to the station drains. There will be no water that congregates in the line that could freeze and break the line. 0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
7	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	2	Vents / Drains / Misc. Connections	1" Drains	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Mitigate	Options: 1. Drain any residual water out of these lines at the start of a cold weather event. 2. If draining is not possible, recommend **heat trace/insulate** the drains to prevent freezing, which would adversely impact the AFW pressure boundary	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
8	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	3	Piping	2", 1/2", 3/8" Drain Piping to Steam Traps	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	None	No protection Required	During normal operation, this piping is isolated and dry. Any residual water or minimal steam passby from the upstream MOVs in the line will be drained via the steam traps to the station drains. There will be no water that congregates in the line that could freeze and break the line. 0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
9	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	3	Vents / Drains / Misc. Connections	1" Drains	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Mitigate	Options: 1. Drain any residual water out of these lines at the start of a cold weather event. 2. If draining is not possible, recommend **heat trace/insulate** the drains to prevent freezing, which would adversely impact the AFW pressure boundary	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
10	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	4	Piping	NNS Open Drain Piping from steam traps and MOVs (multiple sizes)	No	None	N/A	None	No Protection Required	NNS piping, open drains, no adverse impact on the AFW system if piping were to freeze	
11	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	5	Piping	1/2" bypass pipe, SR side	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	None	No protection Required	During normal operation, this piping is isolated and dry. Any residual water or minimal steam passby from the upstream MOVs in the line will be drained via the steam traps to the station drains. There will be no water that congregates in the line that could freeze and break the line. 0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
12	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	6	Piping	3/8" SR piping from MOVs	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	None	No protection Required	During normal operation, this piping is isolated and dry. Any residual water or minimal steam passby from the upstream MOVs in the line will be drained via this line. 0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
13	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	7	Piping	Packing leakoff from MOVs and Governor Valves	No	None	N/A	None	No Protection Required	NNS piping, open drains, no adverse impact on the AFW system if piping were to freeze	
14	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	8	Piping	SR 1/2" Piping from Steam Turbine	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	None	No protection Required	During normal operation, this piping is isolated and dry. Any residual water or minimal steam passby from the upstream MOVs in the line will be drained via this line. 0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
15	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	9	Piping	NNS downstream piping from steam turbine to atmosphere and drains and packing leakoff from MOVs	No	None	N/A	None	No Protection Required	NNS piping, open drains, no adverse impact on the AFW system if piping were to freeze	
16	PTN	0	AFWS / 075	5610-M-3075, Sh. 1	10	Piping	NNS drain piping from steam turbines	No	None	N/A	None	No Protection Required	NNS piping, open drains, no adverse impact on the AFW system if piping were to freeze	
17	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	1	Piping	8" Inlet Pipe	Standby	Tech Spec 3.7.1.2	Pipe full flow required for AFW to maintain functionality	Protect	Heat Trace & Insulate to prevent greater than 2% freezing for full AFW flow		
18	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	1	Vents / Drains / Misc. Connections	3/4" Vents	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
19	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	2	Piping	6" Inlet Pipe	Standby	Tech Spec 3.7.1.2	Pipe full flow required for AFW to maintain functionality	Protect	Heat Trace & Insulate to prevent greater than 2% freezing for full AFW flow		
20	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	2	Vents / Drains / Misc. Connections	1/2" Connections	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
21	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	2	Instr. Annunciation / Indication	PIT	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
22	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	2	Vents / Drains / Misc. Connections	Flange Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
23	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	3	Piping	4" Pipe	Standby	Tech Spec 3.7.1.2	Pipe full flow required for AFW to maintain functionality	Protect	Heat Trace & Insulate to prevent greater than 2% freezing for full AFW flow		
24	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	3	Instr. Annunciation / Indication	AFW Pump PIT	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
25	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	4	Piping	2.5" Pipe	Standby	Tech Spec 3.7.1.2	Pipe full flow required for AFW to maintain functionality	Protect	Heat Trace & Insulate to prevent greater than 2% freezing for full AFW flow		

26	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	5	Piping	6" Pipe	Standby	Tech Spec 3.7.1.2	Pipe full flow required for AFW to maintain functionality	Protect	Heat Trace & Insulate to prevent greater than 2% freezing for full AFW flow		
27	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	5	Vents / Drains / Misc. Connections	1" Connection off reducer	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
28	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	5	Vents / Drains / Misc. Connections	1/2" Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
29	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	5	Instr. Annunciation / Indication	PIT	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
30	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	5	Vents / Drains / Misc. Connections	4" BDB/FLEX Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Options: 1. 2" Insulation to prevent >25% freezing 2. Heat Trace and insulate		
31	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	6	Piping	3/4", 1", 1.5" Pipe	Standby	Tech Spec 3.7.1.2	Provide Lube Oil Cooling	Protect	Heat Trace & Insulate to prevent greater than 2% freezing for full lube oil cooling flow		
32	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	6	Vents / Drains / Misc. Connections	3/4" Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
33	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	6	Relief Valves	150 PSIG	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
34	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	6	Vents / Drains / Misc. Connections	1" Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
35	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	6	Heat Exchangers	Lube Oil Cooler	Standby	Tech Spec 3.7.1.2	Provide Lube Oil Cooling	Protect	Heat Trace & Insulate to prevent greater than 2% freezing for full lube oil cooling flow		
36	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	7	Piping	2" Pipe	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Options: 1. 4" Insulation to prevent >25% freezing 2. Heat Trace and insulate		
37	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	7	Vents / Drains / Misc. Connections	2" Flange Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Options: 1. 4" Insulation to prevent >25% freezing 2. Heat Trace and insulate		
38	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	8	Piping	1" Pipe	No	None	-	None	No Protection Required	Former cooling water loop for lube oil from Service Water. Not utilized anymore, so no adverse condition if piping fails.	
39	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	9	Piping	AFW Pump/Turbine Lube Oil Cooler Loop (Includes the lube oil reservoir, relief valve, local instruments, main oil pump, and connections).	No	Tech Spec 3.7.1.2	Maintain Lubricating Oil for the AFW Pump & Turbine	None	No protection Required	Existing Lube Oil Reservoir includes an immersion heater. When the temperature drops to 75F (+/-5F), a TS senses this and wil turn on the motor driven auxiliary oil pump (AOP)	V000126
40	PTN	0	AFWS / 075	5610-M-3075, Sh. 2	10	Piping	1" Pipe	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	Protect	Heat Trace & Insulate to prevent full freezing and potential pressure boundary breach.		
1	PTN	0	076	5610-M-3076	1	Outdoor Tanks	Chemical feed tanks Chemical addition tanks	No	Chemimical injection for pH control and O2 scavenging.	Intermittent operation required for chemistry control during power operation	Protect	Insulate tanks that will be intermittently used by Chemistry over a the 4 day event period. Evalute for need to heat trace based on tank configuration/location from walkdown.		
2	PTN	0	076	5610-M-3076	1	Piping	1" NPS to 3/8" tubing	No	Chemimical injection for pH control and O2 scavenging.	Intermittent operation required for chemistry control during power operation	Protect	Insulate and heat trace lines that will be intermittently used by Chemistry over the 4 day event.		
3	PTN	0	076	5610-M-3076	1	Vents / Drains / Misc. Connections	Various vents, drains, flexible hose connections	No	System pressure boundary	Maintain chemical injection pressure boundary intact	Protect	Insulate and heat trace lines that will be intermittently used by Chemistry over the 4 day event.		
4	PTN	0	076	5610-M-3076	1	Relief Valves	Chemical addition pump discharge relief valves	No	System pressure boundary	Maintain chemical injection pressure boundary intact	Protect	Insulate and heat trace relief valves for pumps that will be intermittently used by Chemistry over the 4 day event.		
5	PTN	0	076	5610-M-3076	1	instr. Local	Tank level sight glasses; Chemical feed pump discharge pressure gages	No	None	Local indication only	none	None		
25	PTN	0	TSC HVAC	5610-M-3095	1	Ducting	TSC Bldg supply and exhaust ductwork	Yes	Provide habitable environment for post-accident operations support	Not affected by cold temperatures	None	None		
26	PTN	0	TSC HVAC	5610-M-3095	1	Instruments - General	Local D/P gages, temperature switches, pressure test ports, radiation sensor	Yes	Provide habitable environment for post-accident operations support	Local indication or alarm only, not affected by cold temperatures; All located inside the TSC	None	None		
27	PTN	0	TSC HVAC	5610-M-3095	1	Filter Train	Prefilters, HEPA filters, carbon filters for TSC HVAC filter train	Standby	Provide habitable environment for post-accident operations support; normally not in service	Filter trains are not affected by cold weather; Located inside the TSC. Filter train contains moisture indicator and heating element for moisture control.	None	None		
28	PTN	0	TSC HVAC	5610-M-3095	1	Fan	TSC Filter unit fan	Standby	Provide habitable environment for post-accident operations support; normally not in service	Cold weather has little to no effect on a fan or its motor.	None	None		

29	PTN	0	TSC HVAC	5610-M-3095	1	Air Handling Unit	TSC AHU	Yes	Provide habitable environment for post-accident operations support	AHU uses direct expansion (DX) coil for cooling, not subject to freezing. AHU is located indoors.	None	None	TSC HVAC system does not include heating capability. TSC environment is assumed to be maintained above freezing by general cold-weather measures taken by PTN for building interiors.	
30	PTN	0	TSC HVAC	5610-M-3095	1	Air Condensing Unit	TSC AHU Condensing Unit	Yes	Provide habitable environment for post-accident operations support	Motors and condensers are generally unaffected by cold weather.	None	None		
31	PTN	0	TSC HVAC	5610-M-3095	1	Motor Operated Damper	TSC intake and filter train supply/exhaust/bypass/recirc motorized dampers	Standby	Provide habitable environment for post-accident operations support	No action required. Damper motors are internal to the TSC equipment room.	None	None		
2	PTN	0	SWS / 012	5610-M-3101 Sh. 1	1	Piping	1-1/2"-10-F Pipe	No	None	Pressure Boundary	None	None	No impact on the power generation or T.S No impact on the surrounding systems Suggestion : To avoid freezing and possible damage to service water piping, consider adding heat tracing and insulation or establishing a trickle flow through cracked open drain lines.	
3	PTN	0	TPCW / 008	5610-M-3101 Sh. 1	2	Piping	2&2-1/2" Pipe	No	None	Dead Leg	None	Consider isolating and draining as much of the unused piping as possible and heat trace and insulate dead leg to avoid freezing.	This TPCW line appears to be connected to TPCW pump suction.	
4	PTN	0	TPCW / 008	5610-M-3101 Sh. 1	3	Piping	2&2-1/2" Pipe	No	None	Dead Leg	None	Verify isolated segment is drained of water to avoid freezing and possible damage.	This TPCW line appears to be completely isolated	
1	PTN	0	BAS / 102	5610-M-3101 Sh. 1	--	all	all	No	None	None	None	None	Equipment is abandoned in place.	
5	PTN	0	BAS / 102	5610-M-3101 Sh. 2	--	Piping	Pipe	No	None	Pressure Boundary	None	None	The Self-Contained Breathing Apparatus Fill Station is not connected to any other systems and no impact to the surrounding equipment.	
27	PTN	0	065	5610-M-3965, SH 2	1	Piping	piping, valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
28	PTN	0	065	5610-M-3965, SH 2	2		piping, valves, pressure indications	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
29	PTN	0	065	5610-M-3965, SH 2	3		piping, Pressure control valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
30	PTN	0	065	5610-M-3965, SH 2	4		piping, Pressure control valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
31	PTN	0	065	5610-M-3965, SH 2	5		piping, Pressure control valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
32	PTN	0	065	5610-M-3965, SH 2	6		piping, valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
33	PTN	0	065	5610-M-3965, SH 2	7		piping, Pressure control valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
34	PTN	0	065	5610-M-3965, SH 2	8		piping, Pressure control valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
35	PTN	0	065	5610-M-3965, SH 2	9		piping, Pressure control valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
36	PTN	0	065	5610-M-3965, SH 2	10		piping, bottles	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
37	PTN	0	065	5610-M-3965, SH 2	11		piping, bottles	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
38	PTN	0	065	5610-M-3965, SH 2	12		piping, bottles	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
39	PTN	0	065	5610-M-3965, SH 2	13		valve	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
40	PTN	0	065	5610-M-3965, SH 2	14		piping, valves, pressure indications	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	
41	PTN	0	065	5610-M-3965, SH 2	15		piping, valves	Yes	flow path	pressure boundary integrity, moisture may be present in line	No	If freezing conditions occur, blow down drain lines	Gaseous system should not be a freeze concern, Unless there is moisture in the lines	

1	PTN	0	SSS / 032	5610-M-420-303 Sh. 1	ll Segment	Piping	All	Yes	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirement	Mitigate	Install temporary space heater(s) in the Cold Chemistry Lab, which is enclosed, as required to protect the Sampling Panels.	Sampling Panels for both Units located in the Cold Chemistry Lab on the SW corner of the Turbine Building, Ground Elevation (18').	
2	PTN	0	SSS / 032	5610-M-420-303 Sh. 2	ll Segment	Piping	All	Yes	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirement	Mitigate	Install temporary space heater(s) in the Cold Chemistry Lab, which is enclosed, as required to protect the Sampling Panels.	Sampling Panels for both Units located in the Cold Chemistry Lab on the SW corner of the Turbine Building, Ground Elevation (18').	
3	PTN	0	SSS / 032	5610-M-420-303 Sh. 3	All Segments except chillers and associated piping outside the Cold Chem Lab	Piping	All except chillers and associated piping outside the Cold Chem Lab	Yes	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirement	Mitigate	Install temporary space heater(s) in the Cold Chemistry Lab, which is enclosed, as required to protect the Sampling Panels.	Sampling Panels for both Units located in the Cold Chemistry Lab on the SW corner of the Turbine Building, Ground Elevation (18').	
4	PTN	0	SSS / 032	5610-M-420-303 Sh. 3	Chillers and associated piping outside the Cold Chem Lab	Piping	Chillers and associated piping outside the Cold Chem Lab	Yes	None	N/A	None	No protection required.		
1	PTN	3	IAS / 013	5613-M-013-1 Sh. 1 5613-M-013-1 Sh. 3	-		IA Electric Compressor Skid 3CM	Yes	No Safety function; however, it normally provides air to components that require instrument air. Nitrogen stations are the SR backup. Compressor only specified to 32F.	-	Protect	Consider implementing global strategy (such as tenting and/or space heaters) to protect the electric compressor skid.	Consider global strategy to protect either electric driven or diesel driven instrument air compressor skids from at least one unit. A single electric motor or diesel driven compressor from either unit is fully capable of providing 100% of the IA needs for both units. Therefore, global strategy does not need to be implemented for all four IA compressors.	5613-M-3013 Sh. 1
2	PTN	3	IAS / 013	5613-M-013-2 Sh. 1 5613-M-013-2 Sh. 4 5613-M-013-2 Sh. 6 5613-M-013-2 Sh. 7	-		IA Diesel Driven Compressor Skid 3CD	Yes	No Safety function; however, it normally provides air to components that require instrument air. Nitrogen stations are the SR backup. Compressor only specified to 32F.	-	Protect	Consider implementing global strategy (such as tenting and/or space heaters) to protect the diesel driven compressor skid.	Consider global strategy to protect either electric driven or diesel driven instrument air compressor skids from at least one unit. A single electric motor or diesel driven compressor from either unit is fully capable of providing 100% of the IA needs for both units. Therefore, global strategy does not need to be implemented for all four IA compressors.	5613-M-3013 Sh. 1
1	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Instrumentation - Local	PI-3-1468, -1469, -1470, -6900	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
2	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Instrumentation - Control / Protection	FE (FT)-3-6900	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	

3	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Instrumentation - Annunciation / Recorder / Indication	PS-3-1621, TS-3-4102, -4103, -4104, -4105	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
4	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Piping	3-20"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
5	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Piping	3-16"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
6	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Motors	Turbine Plant Cooling Water Pump Motors (A, B)	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	Swap Pumps and Trains Regularly	Prevent Component Failure from Insufficient Lubrication. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	
7	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Heat Exchangers	Turbine Cooling Water Heat Exchangers (3A, 3B)	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
8	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Relief Valves	RV-3-171A, -171B	No	Protect Turbine Cooling Water Heat Exchangers (3A, 3B)	Dead Ended Water Leg	Protect	Relief Valves are often located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Trapped water will cause valve to relieve avoiding freezing.	Dead Legs May Freeze and Burst.	

9	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	1	Vents / Drains / Misc. Connections	Small Bore Vents, Drains & Test Connections	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
10	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	2	Piping	3-8"-8-S	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Open 3-60-887, -888, -889, -890 periodically to allow flow through the branch lines.	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
11	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	2	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
12	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	3	Piping	3-2"-8-F	Standby	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
13	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	3	Piping	3-1"-8-F	Standby	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	

14	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	3	Outdoor Tanks	T.P.C.W. Additive Tank	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
15	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	3	Relief Valves	RV-3-1437	No	Protect T.P.C.W. Additive Tank	Dead Ended Water Leg	Protect	Relief Valves are often located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Trapped water will cause valve to relieve avoiding freezing.	Dead Legs May Freeze and Burst.	
16	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	4	Instrumentation - Annunciation / Recorder / Indication	LS-3-1527, -1528	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
17	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	4	Instrumentation - Local	FM-3-0540, LG-3-1422, -1423, -1424	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
18	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	4	Instrumentation - Control / Protection	LC-3-1530	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Control Function	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
19	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	4	Piping	3-2"-3-D, 3-2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Valves (3-60-004, -007, -086) shall either be opened periodically to permit flow through CV-3-1530 bypass, FM-3-0540 bypass, condensate addition bypass, respectively, or crack open to ensure trickle flow.	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
20	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	4	Piping	3-8"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Valve (3-60-021) shall either be opened periodically to permit flow through the T. P.C. W. Surge Tank drain or crack open to ensure trickle flow.	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.

21	PTN	3	TPCW / 008	5613-M-3008, Sh. 1	4	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
22	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	1	Instrumentation - Annunciation / Recorder / Indication	FE(FI)-3-1410	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
23	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	1	Piping	3-16"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
24	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	1	Piping	3-12"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
25	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	1	Piping	3-10"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
26	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	1	Piping	3-8"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	

27	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	1	Vents / Drains / Misc. Connections	Small Bore Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
28	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	2	Instrumentation - Local	PI-3-1475, -1476, -1477, -1478	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
29	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	2	Instrumentation - Local	FG-3-1406, -1415	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
30	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	2	Piping	3-2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
31	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	2	Piping	3-1 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
32	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	2	Heat Exchangers	Feedwater Pump Lube Oil Coolers	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
33	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	2	Strainers	YS-3-3425A, -B	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	Open Valves (3-60-741A, -741B) periodically to allow flow through the strainer drain lines. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
34	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	3	Piping	3-2"-8-F, 3-1 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	

35	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	3	Relief Valves	RV-3-6720	No	Protect Various Sample Coolers	Dead Ended Water Leg	Protect	Relief Valves are often located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Trapped water will cause valve to relieve avoiding freezing.	Dead Legs May Freeze and Burst.	
36	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	4	Instrumentation - Local	PI-3-1471, -1472, -1473, -1474,	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
37	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	4	Piping	3-10"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
38	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	4	Piping	3-2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
39	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	4	Valves	Bypass valves Around CV-3-2200	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Open Valve (3-60-116) periodically to allow flow through the bypass around valves (CV-3-2200).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
40	PTN	3	TPCW / 008	5613-M-3008, Sh. 2	4	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
41	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	1	Instrumentation - Local	FG-3-1416	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.

42	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	1	Piping	3-16"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
43	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	1	Piping	3-4"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
44	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	1	Piping	3-3"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
45	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	1	Piping	3-2 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
46	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	2	Instrumentation - Local	FE(FI-3-861, -862, PI-3-861, 862, 863, 864	Yes	FG-3-1410, -1407, -1411, -1405, -1409, -1408+I47:N47	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. Open Valve (3-60-874, -878) periodically to maintain flow through flow element bypasses.	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
47	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	2	Piping	3-2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
48	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	2	Heat Exchangers	EHC Heat Exchangers 3E01, 3E02	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.

49	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	2	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
50	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	3	Instrumentation - Local	PI-3-2016	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
51	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	3	Instrumentation - Local	FG-3-1410, -1407, -1411, -1405, -1409, -1408	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
52	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	3	Strainers	YS-3-3426	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	Open Valves (3-60-746) periodically to allow flow through the strainer drain line. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
53	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	3	Heat Exchangers	Heater Drain Pump 3A, 3B (Stuffing Box Cooler, Mechanical Seal Quenching, Motor Bearing Cooler)	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
54	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	3	Piping	3-2"-8-F, 3-1 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
55	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	4	Instrumentation - Local	PI-3-5023	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	

56	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	4	Piping	2", 1", 3/4", 1/2"	Yes	FE(FI)-3-1411, PI-3-1479+I56:N56	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
57	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	4	Heat Exchangers	Steam Generator A, B, C Blowdown Sample Coolers, LSC Steam Generator A, B, C, Feedwater Sample Coolers, Main Steal Sample Coolers, Steam Generator Wet Layup Pump A, B, C Seal Flush Cooler, Steam Generator Wet Layup Pump Sample Cooler, Steam Generator A, B, C to Sample Hood Sample Coolers	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F. Open Valves (3-60-704, -708) periodically to ensure flow through SPARE heat exchanger (SC-3-1429).	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
58	PTN	3	TPCW / 008	5613-M-3008, Sh. 3	4	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
59	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	1	Instrumentation - Local	FE(FI)-3-1411, PI-3-1479	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
60	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	1	Piping	3-16"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
61	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	1	Valves	Bypass valves Around CV-3-2203	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Open Valve (3-60-212) periodically to allow flow through the bypass around valves (CV-3-2203).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	

62	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	1	Vents / Drains / Misc. Connections	Small Bore Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
63	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	2	Instrumentation - Local	PX-3-1467, -1469, PI-3-1570, -1571	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
64	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	2	Instrumentation - Local	FG-3-1412, -1413	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
65	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	2	Piping	3-8"-8-F	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. Open Valves (3-60-262, -269) periodically to maintain flow through Air Side and Hydrogen Seal Oil Coolers	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
66	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	2	Piping	3-4"-8-F	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. Open Valves (3-60-262, -269) periodically to maintain flow through Air Side and Hydrogen Seal Oil Coolers	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
67	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	2	Piping	3-3"-8-F	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. Open Valves (3-60-262, -269) periodically to maintain flow through Air Side and Hydrogen Seal Oil Coolers	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
68	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	3	Instrumentation - Local	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
69	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	3	Piping	3-8"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	

70	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	3	Piping	3-6"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
71	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	3	Piping	3-3"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
72	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	3	Piping	3-2 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
73	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	3	Valves	Bypass valves Around Valves (3-60-221, -225, -235, -242, -249, -254)	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Open Valve (3-60-226, -222, -236, -243, -250, -255) periodically to allow flow through the bypass around valves (3-60-221, -225, -235, -242, -249, -254).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
74	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	3	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
75	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	4	Instrumentation - Local	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
76	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	4	Instrumentation - Local	FG-3-1425, -1426	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	

77	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	4	Piping	3-8"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
78	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	4	Heat Exchangers	Condensate Pump A, B, C Motor Coolers, Generator Hydrogen Cooler A, B, C, D	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
79	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	4	Valves	Bypass valves Around Throttle Valves	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Open Valves (3-60-189, -196, -203, -210) periodically to allow flow through the bypass around valves (3-60-188, -195, -202, -209, respectively).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
80	PTN	3	TPCW / 008	5613-M-3008, Sh. 4	4	Vents / Drains / Misc. Connections	Small Bore Vents	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
1	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Instrumentation - Local	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	Yes	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
2	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Instrumentation - Local	FG-3-1417, -1418, -1419, -1420	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance.	
3	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Piping	108", 90", 84"	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
4	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Piping	3-6"-7-L	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
5	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Motors	Circulating Wate Pump 3A1, 3A2, 3B1, 3B2 Motors	Yes	None	Maintain NSR Cooling and Plant Power Production	Mitigate	Swap Pumps and Trains Regularly	Prevent Component Failure from Insufficient Lubrication. During normal operation, water is circulated by more than one Circulating Water Pumps. During cold weather operation, pumps are secured. Swap pumps operating.	
6	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Motor Operators	MOV-3-1413, -1414, -1415, -1416	Yes	None	Maintain NSR Cooling and Plant Power Production	Mitigate	Enclose/Tent with Heat	Prevent Component Failure from Insufficient Lubrication	
7	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Heat Exchangers	North Condenser (3E7A), South Condenser (3E7B)	Yes	None	NSR Cooling Requirement	None	No Action Required	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance CW Temperature as Low as 50°F	

8	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	None	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. CW Temperature as Low as 50°F	
9	PTN	3	CWS / 010	5613-M-3010, Sh. 1	1	Vents / Drains / Misc. Connections	Pitot Tube Connections	No	None	Dead Ended Water Leg	Mitigate	Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. CW Temperature as Low as 50°F	
10	PTN	3	CWS / 010	5613-M-3010, Sh. 1	2	Piping	2"	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Ensure SV-3-1413 and -1414 cycle regularly to ensure flow through the piping.	
11	PTN	3	CWS / 010	5613-M-3010, Sh. 1	2	Vents / Drains / Misc. Connections	SRHS-3-001 Connection	No	None	Dead Ended Water Leg	Mitigate	Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. CW Temperature as Low as 50°F	
12	PTN	3	CWS / 010	5613-M-3010, Sh. 2	1	Instrumentation - Local	PI-3-1536, -1537, -1538, -1539, -1590,	Yes	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
13	PTN	3	CWS / 010	5613-M-3010, Sh. 2	1	Instrumentation - Annunciation / Recorder / Indication	PS-3-2036, -2037, -2038, -2039	Yes	Indication provided to CR and/or Plant Computer.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide CR Operators Plant Status	

14	PTN	3	CWS / 010	5613-M-3010, Sh. 2	1	Instrumentation - Control / Protection	PS-3-2040, -2041, -2042, 2043	Yes	Provides Controlling Function	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide Controlling Functionality	
15	PTN	3	CWS / 010	5613-M-3010, Sh. 2	1	Piping	3-8"-7-F, 3-6"-7-F, 3-4"-7-F	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
16	PTN	3	CWS / 010	5613-M-3010, Sh. 2	1	Piping	1" and Smaller Drain Piping around Moisture Separator	Standby	None	Dead Ended Water Leg	Mitigate	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Open Valve (3-50-1028) periodically to drain the Moistrure Separator drain piping.	
17	PTN	3	CWS / 010	5613-M-3010, Sh. 2	1	Vents / Drains / Misc. Connections	Small Bore Vents	No	None	Potentially Ice Block Vent	None	No Action Required	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance CW Temperature as Low as 50°F	
18	PTN	3	CWS / 010	5613-M-3010, Sh. 3	1	Instrumentation - Local	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	Yes	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
19	PTN	3	CWS / 010	5613-M-3010, Sh. 3	1	Instrumentation - Local	FI-3-1414, -1452, -1454, -1403	Yes	None	Local Indication	Mitigate	Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
20	PTN	3	CWS / 010	5613-M-3010, Sh. 3	1	Instrumentation - Control / Protection	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	Yes	Provides Controlling Function	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide Controlling Functionality	

21	PTN	3	CWS / 010	5613-M-3010, Sh. 3	1	Instrumentation - Annunciation / Recorder / Indication	PoS-3-1700, PS-3-2018	Yes	Indication provided to CR and/or Plant Computer.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide CR Operators Plant Status	
22	PTN	3	creen Wash / 01	5613-M-3011, Sh. 1	1	Instrumentation - Local	PI-3-202, -2021, -2022, -2023	Yes	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
23	PTN	3	creen Wash / 01	5613-M-3011, Sh. 1	1	Instrumentation - Control / Protection	PS-3-202, -2021, -2022, -2023	Yes	Provides Controlling Function	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide Controlling Functionality	
24	PTN	3	creen Wash / 01	5613-M-3011, Sh. 1	1	Piping	3"	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
25	PTN	3	creen Wash / 01	5613-M-3011, Sh. 1	1	Piping	1 1/2"	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Open Valves (3-50-142, -195, -206, -207) periodically to allow flow to the respective spargers and clear the 1 1/2" lines.	
26	PTN	3	creen Wash / 01	5613-M-3011, Sh. 1	1	Vents / Drains / Misc. Connections	1 1/2" Hose Connections	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Open Valves (3-50-148, -191, -197, -208) periodically to allow flow through the dead ended hose connections.	

1	PTN	3	IAS / 013	5613-M-3013, Sh. 1	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	0-ONOP-103.2 already addresses the following: • 3-40-2264, 3CA2 IA AFTERCOOLER DRAIN YS-3-1427 BLOWDOWN VALVE • 3-40-2261, 3CA1 IA AFTERCOOLER DRAIN YS-3-1426 BLOWDOWN VALVE • 3-40-2026, 3T10 IA RECEIVER TANK DRAIN YS-3-1423 BLOWDOWN VALVE • 3-40-2027, 3F37 MIST ELIMINATOR DRAIN YS-3-1422 BLOWDOWN VALVE • 3-40-2270, UNIT 3 IA 3CM DISCHARGE PIPING DRAIN YS-3-1428 BLOWDOWN • 3-40-2267, UNIT 3 IA DISCHARGE PIPING DRAIN YS-3-1435 BLOWDOWN VLV • 3-40-2312, UNIT 3 IA DISCH PIPING DRAIN YS-3-1431 STRAINER B/D VLV • IAS-3-047, UNIT 3 IA 3F5B PARTICULATE FILTER DRAIN VALVE • IAS-3-046, UNIT 3 IA 3F5A PARTICULATE FILTER DRAIN
9	PTN	3	IAS / 013	5613-M-3013, Sh. 10	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (40-1858) is periodically opened to drain the associated line. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)
10	PTN	3	IAS / 013	5613-M-3013, Sh. 11	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (40-1795) is periodically opened to drain the associated line. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)

11	PTN	3	IAS / 013	5613-M-3013, Sh. 12	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (3-40-389A) is periodically opened to drain the associated line. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)
2	PTN	3	IAS / 013	5613-M-3013, Sh. 2	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valve (3-40-2244) off Instrument Air Accumulator is periodically opened to drain the accumulator. Ensure Valve (3-40-186) off the IA Distribution Supply Inside Containment is periodically opened to drain the line. Ensure Valves (3-40-1513, -1514, -1515, -1516, -1517, -1518, -1519, -1520) off the Air Reserve Flasks (A, B, C, D, E, F, G, H) are periodically opened to drain the flasks. Ensure Valve (3-40-405D) of the IA Turbine Building Distribution supply is periodically opened to drain the line. Ensure Valves (3-40-429A, -429B) are periodically opened
3	PTN	3	IAS / 013	5613-M-3013, Sh. 3	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (3-40-460, -478, -489C, -359, -661, -417) are periodically opened to drain the associated line. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)
4	PTN	3	IAS / 013	5613-M-3013, Sh. 4	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (3-40-547, -489B) are periodically opened to drain the associated line. (This assumes all the Air Connections are above the branch piping centerlines)

5	PTN	3	IAS / 013	5613-M-3013, Sh. 5	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (3-40-627, -626, -653) are periodically opened to drain the associated line. (This assumes all the Air Connections are above the branch piping centerlines)
6	PTN	3	IAS / 013	5613-M-3013, Sh. 7	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	Majority of Piping on This P&ID is within Containment. The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (3-40-716A, -716B, -716C) are periodically opened to drain the associated Accumulator Tank (3175A, 3175B, 3175C). (This assumes all the Air Connections are above the branch piping centerlines)
7	PTN	3	IAS / 013	5613-M-3013, Sh. 8	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	Depending on the environmental conditions, the following may be specifically added to 0-ONOP-103.2: Valves 4-40-826 (Control Room) and 40-715 (Cable Spreading Room) to ensure dry IA in the Control Room. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)
8	PTN	3	IAS / 013	5613-M-3013, Sh. 9	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (40-1129, -1418) are periodically opened to drain the associated line. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)
1	PTN	3	CNDSR / 014	5613-M-3014 SH 1	1	Piping	Direct piping connections to Condenser 3B Misc pipe sizes from 1" to 18", and 30" and 72".	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
2	PTN	3	CNDSR / 014	5613-M-3014 SH 1	2	Piping	8", 10" piping Air Removal Header to Steam Jet Air Ejectors	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	

3	PTN	3	CNDSR / 014	5613-M-3014 SH 1	3	Piping	2" piping and control valves (air operated)	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	Protect	Ensure 2" piping and valves are insulated. This is likely on a lower level of the TB and so a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present. Condenser will be hot. Piping and control valves may be in a partially enclosed area that will be mitigated using global strategies.	5613-M-3014 SH 2, 5610-M-3074 SH 2
4	PTN	3	CNDSR / 014	5613-M-3014 SH 1	4	Piping	12" Steam Trap Drain Header, 3-12"-2-C	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
5	PTN	3	CNDSR / 014	5613-M-3014 SH 1	4	Piping	Individual steam trap drain connections to header. Misc piping 2", 1 1/2", 1", 3/4", 1/2"	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
6	PTN	3	CNDSR / 014	5613-M-3014 SH 1	4	Vents / Drains / Misc. Connections	4 capped pipe ends & 3 pipe studs with closed valves (3-30-991, 3-30-992, and 3-30-993)	No	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure capped and dead end pipe connections are insulated.	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
7	PTN	3	CNDSR / 014	5613-M-3014 SH 1	4	Piping	Isolated lines and drains upstream of 3-30-999 (line 3-1 1/2"-2-CM common header)	No	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure piping and any drains are insulated upto the first isolation valve (see pink circles on markup) This is likely on a lower level of the TB and so a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
8	PTN	3	CNDSR / 014	5613-M-3014 SH 1	5	Piping	3/4" and 1/2" instrument line piping	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure instrument line piping is insulated. If piping is located on a lower level of the TB and a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
9	PTN	3	CNDSR / 014	5613-M-3014 SH 1	5	Instr. Control / Protection	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure instruments are insulated. Normal fluid temp may preclude freezing with insulation. If piping is located on a lower level of the TB and a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
10	PTN	3	CNDSR / 014	5613-M-3014 SH 1	h Condens	Heat Exchangers	South Condenser 3B	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal fluid conditions adequate to prevent freezing.	None	None		
11	PTN	3	CNDSR / 014	5613-M-3014 SH 1	h Condens	Instr. Local	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	No	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
12	PTN	3	CNDSR / 014	5613-M-3014 SH 1	h Condens	Instr. Annunciation / Indication	Level Transmitter (LT) Condenser level with control room annunciation (high/low)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
13	PTN	3	CNDSR / 014	5613-M-3014 SH 1	h Condens	Instr. Local	Local level guage (x2)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
14	PTN	3	CNDSR / 014	5613-M-3014 SH 1	h Condens	Motor Operator Valve	Vent (screened open flange) with Motor Op Valve MOV-3-VAB1	Standby	None	Dead Leg	Protect	Ensure vent pipe and MOV are insulated or in close proximity to the condenser which would preclude freezing.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe and location of MOV in proximity to Condenser. Condenser will be hot. Include with global freeze evaluation for MOVs	
15	PTN	3	CNDSR / 014	5613-M-3014 SH 1	h Condens	Vents / Drains / Misc. Connections	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	No	None	Dead Leg	Protect	Ensure piping and end cap are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to Condenser. Condenser will be hot.	
16	PTN	3	CNDSR / 014	5613-M-3014 SH 2	1	Piping	Direct piping connections to Condenser 3A Misc pipe sizes from 1" to 18", and 30" and 72".	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
17	PTN	3	CNDSR / 014	5613-M-3014 SH 2	2	Piping	8", 10" piping Air Removal Header to Steam Jet Air Ejectors	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	

18	PTN	3	CNDSR / 014	5613-M-3014 SH 2	3	Piping	10" header, and 2" piping and control valves (air operated)	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	Protect	Ensure 2" piping and valves are insulated. This is likely on a lower level of the TB and so a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present. Condenser will be hot. Piping and control valves may be in a partially enclosed area that will be mitigated using global strategies.	5613-M-3014 SH 1, 5610-M-3074 SH 2
19	PTN	3	CNDSR / 014	5613-M-3014 SH 2	4	Piping	12" Steam Trap Drain Header, 3-12"-2-C	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
20	PTN	3	CNDSR / 014	5613-M-3014 SH 2	4	Piping	Individual steam trap drain connections to header. Misc 1/2" piping	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
21	PTN	3	CNDSR / 014	5613-M-3014 SH 2	5	Piping	3/4" and 1/2" instrument line piping	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure instrument line piping is insulated. If piping is located on a lower level of the TB and a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
22	PTN	3	CNDSR / 014	5613-M-3014 SH 2	5	Instr. Control / Protection	3 Pressure Indicating Transmitter (PIT) PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure instruments are insulated. Normal fluid temp may preclude freezing with insulation. If piping is located on a lower level of the TB and a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
23	PTN	3	CNDSR / 014	5613-M-3014 SH 2	h Condens	Heat Exchangers	North Condenser 3A	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal fluid conditions adequate to prevent freezing.	None	None		
24	PTN	3	CNDSR / 014	5613-M-3014 SH 2	h Condens	Instr. Local	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	No	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
25	PTN	3	CNDSR / 014	5613-M-3014 SH 2	h Condens	Instr. Control / Protection	Level Controler (LC) Condenser level control with signal input to condenser water makeup spray valves (suction from DWST)	Standby	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
26	PTN	3	CNDSR / 014	5613-M-3014 SH 2	h Condens	Instr. Local	Local level guage (x3)	Yes	None	Dead Leg	Protect	Ensure instrument, instrument lines, and drains are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
27	PTN	3	CNDSR / 014	5613-M-3014 SH 2	h Condens	Motor Operator Valve	Vent (screened open flange) with Motor Op Valve MOV-3-VAB	Standby	None	Dead Leg	Protect	Ensure vent pipe and MOV are insulated or in close proximity to the condenser which would preclude freezing.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe and location of MOV in proximity to Condenser. Condenser will be hot. Include with global freeze evaluation for MOVs	
28	PTN	3	CNDSR / 014	5613-M-3014 SH 2	h Condens	Vents / Drains / Misc. Connections	Capped piping 1 1/2" pipe (leak detect) (x8)	No	None	Dead Leg	Protect	Ensure piping and end cap are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to Condenser. Condenser will be hot.	
29	PTN	3	CNDSR / 014	5613-M-3014 SH 3	1	Piping	2", 1 1/2", 1" Piping Main steam supply to steam jet air ejectors.	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Steam piping will be hot.	
30	PTN	3	CNDSR / 014	5613-M-3014 SH 3	1	Instr. Local	Local Pressure indication (PI) 1/2" tubing and open root valve.	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and instrument in proximity to main line. Steam piping will be hot and flowing.	
31	PTN	3	CNDSR / 014	5613-M-3014 SH 3	1	Instr. Annunciation / Indication	Pressure Switch (PS) with control room annunciation. Local Pressure indication (PI) 1/2" tubing and open root valve.	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and instrument in proximity to main line. Steam piping will be hot and flowing.	
32	PTN	3	CNDSR / 014	5613-M-3014 SH 3	2	Piping	1" Piping Steam trap and drain for segment 1.	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam/condensate Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Drain piping will be hot.	

33	PTN	3	CNDSR / 014	5613-M-3014 SH 3	2	Strainers	Steam trap ST-3-1404; Wye Strainer YS-3-3412	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam/condensate Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Drain piping will be hot.	
34	PTN	3	CNDSR / 014	5613-M-3014 SH 3	2	Vents / Drains / Misc. Connections	1" Drain (Piping & valve)	No	None	Dead Leg	Protect	Ensure piping and drain valve are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to main 1" piping. Main piping will be hot.	
35	PTN	3	CNDSR / 014	5613-M-3014 SH 3	3	Piping	10", 8" piping Air Removal header from condensers A & B	Yes	Required for power operations; Maintain condenser vacuum.	Normal Air flow from condenser will prevent line from freezing.	None	None	Inspect during walkdown, insulation may already be present. Main piping will be hot.	
36	PTN	3	CNDSR / 014	5613-M-3014 SH 3	3	Vents / Drains / Misc. Connections	8" Vent/Vacuum breaker	No	Required for power operations; Condenser vacuum boundary	Dead Leg	Protect	Ensure piping and vacuum breaker valve are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to main 10" line. Main piping will be hot.	
37	PTN	3	CNDSR / 014	5613-M-3014 SH 3	3	Instr. Local	Local Pressure indication (PI) 1/4" tubing and open root valve; branch from 8" vacuum breaker line	Yes	Required for power operations; Condenser vacuum boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and instrument in proximity to main line. Main 10" header will be hot and flowing.	
38	PTN	3	CNDSR / 014	5613-M-3014 SH 3	3	Instr. Local	Local Pressure indication (PI) (x2) 1/2" tubing and open root valve; branch from 8" lines into SJAEs	Yes	Required for power operations; Condenser vacuum boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and instrument in proximity to main line. Main 10" header will be hot and flowing.	
39	PTN	3	CNDSR / 014	5613-M-3014 SH 3	4	Piping	3" piping SJAEs to Inner Condenser to SJAEs to After Condenser	Yes	Required for power operations; Maintain condenser vacuum.	Normal Air flow from condenser will prevent line from freezing.	None	None	Inspect during walkdown, insulation may already be present. Main piping will be hot.	
40	PTN	3	CNDSR / 014	5613-M-3014 SH 3	4	Relief Valves	1" relief valve (x2) pressure relief on first set of SJAEs	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main piping and SJAEs will be hot.	
41	PTN	3	CNDSR / 014	5613-M-3014 SH 3	5	Piping	24" piping Cooling water (condensate) to SJAE inner and after condensers	Yes	Required for power operations; Maintain condenser vacuum.	Normal flow of condensate will keep line from freezing	None	None	Inspect during walkdown, insulation may already be present. Main piping will be warm, SJAE condensers will be warm.	5610-M-3073 SH 2
42	PTN	3	CNDSR / 014	5613-M-3014 SH 3	6	Piping	24" piping Cooling water (condensate) from SJAE inner and after condensers	Yes	Required for power operations; Maintain condenser vacuum.	Normal flow of condensate will keep line from freezing	None	None	Inspect during walkdown, insulation may already be present. Main piping will be warm, SJAE condensers will be warm.	5610-M-3073 SH 2
43	PTN	3	CNDSR / 014	5613-M-3014 SH 3	7	Piping	1" Piping SJAE condenser drains	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Condenser and condensate drain will be warm.	None	None	Inspect during walkdown, insulation may already be present. Piping will be warm, SJAE condensers will be warm.	
44	PTN	3	CNDSR / 014	5613-M-3014 SH 3	7	Instr. Local	Local level gauge (x2) indicates liquid level in condenser drain line.	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, and instrument in proximity to main line. Piping will be warm, SJAE condensers will be warm.	
45	PTN	3	CNDSR / 014	5613-M-3014 SH 3	8	Piping	2", 3" piping SJAE condensers drain to North Condenser	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Condenser and condensate drain will be warm.	None	None	Inspect during walkdown, insulation may already be present. Piping will be warm, SJAE condensers will be warm. SJAEs and SJAE condensers are located on TB operating deck (exposed outside), majority of condeser drain however would be on TB mezzanine and ground floor with connection to condenser - global mitigating strategies may apply.	
46	PTN	3	CNDSR / 014	5613-M-3014 SH 3	8	Instr. Local	Local level gauge and 1/2" tubing indicates liquid level in condenser drain line.	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, and instrument in proximity to main line. Piping will be warm, SJAE condensers will be warm. SJAEs and SJAE condensers are located on TB operating deck (exposed outside), majority of condeser drain however would be on TB mezzanine and ground floor with connection to condenser - global mitigating strategies may apply.	
47	PTN	3	CNDSR / 014	5613-M-3014 SH 3	8	Vents / Drains / Misc. Connections	1/2" capped pipe (closed root valve) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	No	SJAE condenser drain pressure boundary	Dead Leg	Protect	Ensure isolated pipe and pipe ends, and isolation valves are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to main line. Main SJAE condenser drain piping will be warm, SJAE condensers will be warm.	

48	PTN	3	CNDSR / 014	5613-M-3014 SH 3	9	Piping	4" piping, misc insluating flanges SJAE condenser (air/steam side) discharge to Aux Building Ventilation	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Condenser and condensate drain will be warm.	None	None	Inspect during walkdown, insulation may already be present. Piping will be warm, SJAE condensers will be warm.	
49	PTN	3	CNDSR / 014	5613-M-3014 SH 3	9	Instr. Local	Local gauges and 3/8" tubing press differential (dPI) Flow indication (FI) Flow element (FE)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present.	
50	PTN	3	CNDSR / 014	5613-M-3014 SH 3	9	Instr. Local	Local flow indicator (FI)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. P&ID symbol indicates flow indicator is already heat traced. Verify during walkdown.	
51	PTN	3	CNDSR / 014	5613-M-3014 SH 3	9	Instr. Annunciation / Indication	Radiation detector (RD) with control room alarm/annunciation	Yes	Used to determine radiation levels in Aux Bldg exhaust ventilation.	Dead Leg	Protect	Ensure instrument is well insulated.	Inspect during walkdown, insulation may already be present. Instrument is installed in-line along the 4" piping.	
52	PTN	3	CNDSR / 014	5613-M-3014 SH 3	9	Vents / Drains / Misc. Connections	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 6), 1" drain (x2) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	No	None	Dead Leg	Protect	Ensure isolated pipe and pipe ends, and isolation valves are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to main line. Main 4" SJAE exhaust line expected to be warm.	
1	PTN	3	CS / 018	5613-M-3018, Sh. 1	-	Outdoor Tanks	Unit 3 CST	Yes	TS 3.7.1.3 - Cond Storage Tank min volume 210,000 gal. **Action:** Restore volume within 4 hrs, or attain HSB in 6 hrs.	Maintain aux feedwater injection capability after reactor trip for sufficient duration to achieve cold shutdown.	None	None	Preliminary analysis shows that postulated cold weather conditions will not induce freezing temperatures within the large volume of the CST, even without crediting heated influx of liquid inventory or the shielding effect of the concrete missile structure. Cold weather effects on lines and components attached to the CST are addressed in subsequent entries on this sheet.	
1	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Instrumentation - Local	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	Yes	None	Local Indication	Mitigate	Safety Related piping boundary As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. (UHS Temperature ~50°F Min.)	
2	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Instrumentation - Annunciation / Recorder / Indication	PS-3-1619, -1620, PI-3-1619, -1620, PT-3-1619, -1620	Yes	Indication provided to CR and/or Plant Computer.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide CR Operators Plant Status	

3	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Piping	Safety Related Piping 3-24"-13-L, 3-36"-13-L, 3-30"-13-L	Yes	T.S. 3.7.4 - At least two independent intake cooling water headers and three ICW Pumps shall be operable when in Modes 1 - 4. ACTION: a. With only two ICW pumps with independent power supplies OPERABLE, restore the inoperable ICW pump to OPERABLE status within 14 days or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. b. With only one ICW pump OPERABLE or with two ICW pumps OPERABLE, but not from independent power supplies, restore two pumps from independent power supplies to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	Maintain SR Cooling	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	
4	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Piping	Safety Related Piping 3-2"-12-L, 3-4"-12-L	Yes	T.S. 3.7.4 - At least two independent intake cooling water headers and three ICW Pumps shall be operable when in Modes 1 - 4. ACTION: a. With only two ICW pumps with independent power supplies OPERABLE, restore the inoperable ICW pump to OPERABLE status within 14 days or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. b. With only one ICW pump OPERABLE or with two ICW pumps OPERABLE, but not from independent power supplies, restore two pumps from independent power supplies to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	Maintain SR Cooling	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	
5	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Piping	Non-Safety Related Piping 3-24"-13-L, 3-36"-13-L, 3-30"-13-L	Yes	None	NSR Cooling Requirement - Cross-Connect	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	
6	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Piping	Non-Safety Related Piping 3-8"-13-L, 3-4"-13-L	Yes	None	NSR Cooling Requirement - Cross-Connect	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2
7	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Piping	Non-Safety Related Piping 3-2"-13-L	Yes	None	Capped Piping	Mitigate	Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2

8	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Motors	ICW Pump Motors (3A, 3B, 3C)	Yes	T.S. 3.7.4 - At least two independent intake cooling water headers and three ICW Pumps shall be operable when in Modes 1 - 4. ACTION: c. With only one intake cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours and in COLD SHUTDOWN within the following 30 hours. One, two, or three pumps are operated as required to support normal plant operating conditions. The A and B pumps are powered by 4160 volt buses backed up by each train's associated EDG. The C pump is powered by a swing 4160 volt SR bus which can be powered, through aligning the bus manually, by either the train A or train B EDG associated with the same unit. This pump is interlocked, such that, it starts on a loss of offsite power or safety injection signal, if the breaker for the A or B ICW pump	Maintain SR Cooling	Protect	Swap Pumps and Trains Regularly	Prevent Component Failure from Insufficient Lubrication Per UFSAR Section 6.2.4 (INSPECTIONS AND TESTS), "Idle intake cooling water and component cooling water pumps will be put in service periodically as part of the normal rotation of machinery use."	
9	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Cooling Towers and Intake Channel	Intake Canal	Yes	None	Maintain SR Cooling	Mitigate	Maintain Operation of ICW and CW Systems	Prevent Frazil Ice from Impacting Heat Transfer	
10	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Heat Exchangers	T. P. C. W. Heat Exchanger 3A, 3B	Yes	None	NSR Cooling Requirement	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
11	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Relief Valves	RV-3-128A, -128B	Yes	Protect Turbine Plant Cooling Water Heat Exchangers	Dead Ended Water Leg	Protect	Relief Valves are often located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Trapped water will cause valve to relieve avoiding freezing.	Dead Legs May Freeze and Burst.	
12	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Strainers	BS-3-1400, -1401	Yes	None	NSR Cooling Requirement Avoid Strainer Flow Obstruction	Mitigate	No Action Required as Long as Flow is Maintained.	Avoid Freezing Leading to Low Flow & Degraded Plant Performance 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2
13	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Valves	POV-3-4882, -4883 Bypasses	Yes	None	Dead Ended Bypass Water Leg	Mitigate	Open Valves (3-50-315 & 3-50-335) periodically to preclude ice buildup within the POC bypasses.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	0-ONOP-103.2 states, "CYCLE POV-*-4882 and POV-*-4883, ICW TO THE TPCW HEAT EXCHANGERS INLET ISOLATION VALVES, at least once per shift"
14	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Vents / Drains / Misc. Connections	BS-3-1400, -1401 Manual Drains	Yes	None	Dead Ended Strainer Drain Water Leg	Mitigate	Open Valves (3-50-316 & 3-50-336) periodically to preclude ice buildup within the Strainer Drains.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2

15	PTN	3	ICW / 019	5613-M-3019, Sh. 1	1	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	None	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
16	PTN	3	ICW / 019	5613-M-3019, Sh. 2	1	Instrumentation - Local	dPI-3-1402, -1403, FI-1407, -1408, -1409, PI-3-1519, -1520	Yes	None	Local Indication	Mitigate	Safety Related piping boundary As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. (UHS Temperature ~50°F Min.)	
17	PTN	3	ICW / 019	5613-M-3019, Sh. 2	1	Piping	Safety Related Piping 3-30"-13-L, 3-20"-13-L, 3-24"-13-L	Yes	T.S. 3.7.4 - At least two independent intake cooling water headers and three ICW Pumps shall be operable when in Modes 1 - 4. ACTION: a. With only two ICW pumps with independent power supplies OPERABLE, restore the inoperable ICW pump to OPERABLE status within 14 days or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. b. With only one ICW pump OPERABLE or with two ICW pumps OPERABLE, but not from independent power supplies, restore two pumps from independent power supplies to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	Maintain SR Cooling	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	
18	PTN	3	ICW / 019	5613-M-3019, Sh. 2	1	Piping	Chemical Injection Points	Yes	None	Dead Ended Bypass Water Leg	Mitigate	Open Valves (3-50-862, -863, -864, -865, -866 & 3-50-867) periodically to preclude ice buildup within the Chemical Injection Points.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	

19	PTN	3	ICW / 019	5613-M-3019, Sh. 2	1	Heat Exchangers	Component Cooling Water Heat Exchanger 3A, 3B	Yes	During the recirculation mode, the Component Cooling System is used to cool the recirculation fluid as it passes through the residual heat exchanger. (UFSAR Section 6.2.2) Since the heat is transferred from the component cooling water to the intake cooling water, the component cooling loop serves as an intermediate system between the reactor coolant and intake cooling water system. (UFSAR Section 9.3.2)	SR Cooling Requirement	Mitigate	No Action Required as Long as Flow is Maintained. One pump and three component cooling water heat exchangers are normally operated to provide cooling water for various components located in the auxiliary and containment buildings. (UFSAR Section 9.3.1)	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2
20	PTN	3	ICW / 019	5613-M-3019, Sh. 2	1	Strainers	3F228A, B	Yes	Per Note 6 of 5613-M-3019, sh. 2, "Filter Handwheel is restrained to maintain streainer in the "backwash" position."	SR Cooling Requirement Avoid Strainer Flow Obstruction	Mitigate	No Action Required as Long as Flow is Maintained. Strainer in "Backwash" ensure flow through the strainers.	Avoid Freezing Leading to Low Flow & Degraded Plant Performance	
21	PTN	3	ICW / 019	5613-M-3019, Sh. 2	1	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	None	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
22	PTN	3	ICW / 019	5613-M-3019, Sh. 2	1	Piping	3-4"-14-L, 3-8"-13-L	Yes	None	NSR Cooling Requirement - Supplemental ICW Strainer Flushing	Mitigate	Swap Trains Regularly Open Valves (3-50-346, -874, -872, -326) periodically to ensure flow through the supplemental line. (UHS Temperature ~50°F Min.)	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2
23	PTN	3	ICW / 019	5613-M-3019, Sh. 3	tire Drawing			No	None	None	None	None	Abandoned In Place	
24	PTN	3	ICW / 019	5613-M-3019, Sh. 4	tire Drawing			No	None	None	None	None	VOID	
7	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	1	Piping	4" Pipe	Yes	One line is normally in operation per UFSAR 9.6.2	-	None	No Protection Recommended	Loss of the PMUS will not cause a shutdown due to generation loss or a Tech Spec Action, therefore, protection is not required. FPL Operations to provide input if the PWST and PMUS will be required to be operable over a max 4 day period. If the system is continuously running (one train), would prevent freezing. 1" of insulation can be used to prevent >25% freezing in 4" standby pipe. 2" insulation required for 3" pipe	
9	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	2	Piping	3" Pipe	Yes	One line is normally in operation per UFSAR 9.6.2	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
10	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	2	Instr. Local	PI	Yes	-	Dead Leg	None	No Protection Recommended		
11	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	2	Instr. Control / Protection	PS	Yes	Controls Pump	Dead Leg	Protect	Heat Trace & 1" Insulation	Conservatively protect control function, although not required (see Segment 1, Piping)	
12	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	2	Instr. Annunciation / Indication	PS	Yes	Annunciator	Dead Leg	Protect	Heat Trace & 1" Insulation	Conservatively protect alarm function, although not required (see Segment 1, Piping)	
13	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	3	Piping	3/4" pipe	Yes	-	-	None	No Protection Recommended		
14	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	4	Piping	1.5" Pipe	No	-	-	None	No Protection Recommended		
15	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	5	Piping	3" Pipe	No	-	-	None	No Protection Recommended		
16	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	6	Piping	3" Pipe	No	-	-	None	No Protection Recommended		
17	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	7	Piping	1/4"-1" pipe	No	-	-	None	No Protection Recommended		
18	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	8	Piping	3"-1.5" pipe	No	-	-	None	No Protection Recommended		
19	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	9	Piping	3" Pipe	No	-	-	None	No Protection Recommended		
20	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	9	Vents / Drains / Misc. Connections	Connection	No	-	-	None	No Protection Recommended		
21	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	10	Piping	2.5" Pipe		-	-	None	No Protection Recommended		

22	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	11	Piping	3" Pipe	No	-	-	None	No Protection Recommended		
23	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	12	Piping	4" Pipe	No	-	-	None	No Protection Recommended		
24	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	13	Piping	2.5" Pipe	No	-	-	None	No Protection Recommended		
1	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	-	Outdoor Tanks	Primary Water Storage Tank (PWST)	No	Per UFSAR 9.6.2, PWST and the Primary Water Makeup System (PMUS) are not required for Safe Shutdown. However, they are used to provide makeup water to systems such as RCS and CVCS during normal plant operation.	-	None	No Protection Recommended	Based on the size of the tank, the contents will not freeze over a four day period.	
2	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	-	Vents / Drains / Misc. Connections	1" Connections	No	Tank Pressure Boundary	Dead Leg	None	No Protection Recommended		
3	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	-	Vents / Drains / Misc. Connections	3/4" Vent	No	Tank Pressure Boundary	Dead Leg	None	No Protection Recommended		
4	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	-	Vents / Drains / Misc. Connections	4" Drain	No	Tank Pressure Boundary	Dead Leg	None	No Protection Recommended		
5	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	-	Instr. Local	3" pipe to LI	Yes	Tank Pressure Boundary	Dead Leg	None	No Protection Recommended		
6	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	-	Instr. Control / Protection	3/4" pipe to LI & Sample Sink Piping	Yes	Tank Pressure Boundary and level control	Dead Leg	Protect	Heat Trace & 1" Insulation	Also has an annuciator function Recommended to protect since it has a control function.	
8	PTN	3	PMUS / 020	5613-M-3020, Sh. 1	-	Motors	Primary Water Pumps	Yes	One line is normally in operation per UFSAR 9.6.2	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
25	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	1	Piping	3" Pipe	Yes	PMUS is normally in operation per UFSAR 9.6.2. Providing makeup water for multiple systems and can be used to fill the CSTs	-	None	No Protection Recommended	Loss of the PMUS will not cause a shutdown due to generation loss or a Tech Spec Action, therefore, protection is not required. FPL Operations to provide input if the PWST and PMUS will be required to be operable over a max 4 day period. If the system is continuously running (one train), would prevent freezing. 2" insulation required for 3" pipe (prevent >25% freezing).	
26	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	2	Piping	2" Pipe	Yes	Makeup water to Radwaste Bldg	-	None	No Protection Recommended	Located in the CCW Pump Room. If protection was determined to be necessary, global startegy could be used for the CCW Pump Room, which has an open grating roof, but concrete walls.	
27	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	3	Piping	3" Pipe & PI	Yes	Makeup water to Radwaste Bldg	-	None	No Protection Recommended		
28	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	4	Piping	3" Pipe	Yes	PMUS to various systems (CCW, CVCS, WD, RCS, etc.)	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required Located in CCW Pump room, so global strategy could be used if protection is required.	
29	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	5	Piping	2" Pipe	No	None	-	None	No Protection Recommended	Located in the CCW Pump Room	
30	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	6	Piping	2" Pipe	No	None	-	None	No Protection Recommended		
31	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	7	Vents / Drains / Misc. Connections	Connections	No	None	-	None	No Protection Recommended		
32	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	8	Piping	3" Pipe	No	Makeup water to various systems. Also flow can be provided to the CSTs	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
33	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	9	Vents / Drains / Misc. Connections	Connections	No	None	-	None	No Protection Recommended		
34	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	10	Piping	3" Pipe	No	Makeup water to the CSTs	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
35	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	11	Piping	3" Pipe & FI	No	None	-	None	No Protection Recommended		
36	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	12	Piping	3" Pipe	No	Makeup water to various systems.	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
37	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	13	Piping	3" Pipe & 1" Pipe	No	Makeup water to various systems.	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required Located in CCW Pump room, so global strategy could be used if protection is required.	
38	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	14	Piping	Multiple pipe sizes, Lab Demin Water Tank, water to AB Vent Chillers, Control Room, and Lab. There is a	No	Makeup water to various systems.	-	None	No Protection Recommended		
39	PTN	3	PMUS / 020	5613-M-3020, Sh. 2	14	Instr. Control / Protection	LS for SOV control	Yes	Controls level in the Lab Demin Water Tank	-	Protect	Heat Trace & 1" Insulation	Conservatively protect all control instrumentation; however, loss of this function would have no generation risk for the site or require a TS Action.	
6	PTN	3	EDG HVAC / 108	5613-M-3022 Sh. 5	1	Radiator	EDG 3A cooling water radiator	Standby	TS 3/4.8.1 requires operable AC power sources, including EDGs. Cooling water required for EDG operation	With temporary heaters placed per 0-ONOP-103.2, radiators may still be susceptible to freezing due to location at exterior wall and possible in-flow of air through the exhaust louvers when EDGs are not running.	Protect	Ensure temporary heaters from 0-ONOP-103.2 are supplying sufficient heat to the location of the radiator. Consider temperature checks on the radiator tubing in addition the lube oil temperature checks already performed for 0-ONOP-103.2		

7	PTN	3	EDG HVAC / 108	5613-M-3022 Sh. 6	1	Radiator	EDG 3B cooling water radiator	Standby	TS 3/4.8.1 requires operable AC power sources, including EDGs. Cooling water required for EDG operation	With temporary heaters placed per 0-ONOP-103.2, radiators may still be susceptible to freezing due to location at exterior wall and possible in-flow of air through the exhaust louvers when EDGs are not running.	Protect	Ensure temporary heaters from 0-ONOP-103.2 are supplying sufficient heat to the location of the radiator. Consider temperature checks on the radiator tubing in addition the lube oil temperature checks already performed for 0-ONOP-103.2		
2	PTN	3	CCW / 030	5613-M-3030, Sh. 1	1	Piping	18" Pipe (Supply & Return)	Yes	Normally both trains of CCW (supply & return) are operating. There are only certain times for CCW pump testing that the headers are split, and TS Actions are entered, per UFSAR 9.3.2.	Maintain required flow	None	No recommended protection	In CCW Pump Room (See top Remark for this P&ID) CCW will normally be flowing through both trains of Supply and Discharge, and this will prevent freezing.	
3	PTN	3	CCW / 030	5613-M-3030, Sh. 1	1	Instr. Control / Protection	Rad Detection, FTs	Yes	CCW Pressure Boundary & Controls (Rad detection and flow indication)	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
4	PTN	3	CCW / 030	5613-M-3030, Sh. 1	1	Instr. Local	PI	Yes	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
5	PTN	3	CCW / 030	5613-M-3030, Sh. 1	1	Vents / Drains / Misc. Connections	18" connection	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	
6	PTN	3	CCW / 030	5613-M-3030, Sh. 1	1	Vents / Drains / Misc. Connections	10" connection	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	
7	PTN	3	CCW / 030	5613-M-3030, Sh. 1	1	Vents / Drains / Misc. Connections	3/4" Vents	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
8	PTN	3	CCW / 030	5613-M-3030, Sh. 1	2	Piping	16" Pipe (Pump & HX inlet and outlets)	Yes	UFSAR 9.3.2 - Normally 1 pump is operating with 2-3 Heat Exchangers. Therefore, some of this piping is expected to be stagnant while other portions will be flowing	Maintain required flow	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate - swap operating pumps and HXs on certain intervals to prevent freezing of any pipe 3. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	
9	PTN	3	CCW / 030	5613-M-3030, Sh. 1	2	Vents / Drains / Misc. Connections	2" Connection	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 4" Insulation to prevent >25% freezing 3. Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
10	PTN	3	CCW / 030	5613-M-3030, Sh. 1	2	Instr. Local	PI, IST	Yes	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
11	PTN	3	CCW / 030	5613-M-3030, Sh. 1	2	Vents / Drains / Misc. Connections	1", 3/4" Vents, Drains, Test Connections	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
12	PTN	3	CCW / 030	5613-M-3030, Sh. 1	2	Vents / Drains / Misc. Connections	16" Connections	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
13	PTN	3	CCW / 030	5613-M-3030, Sh. 1	2	Instr. Control / Protection	PI	Yes	CCW Pressure Boundary & PC to control pumps	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID) Also provides an annunciator function	
14	PTN	3	CCW / 030	5613-M-3030, Sh. 1	2	Heat Exchangers	CCW HXs	Yes	TS 3.7.2 - 2 of 3 HXs required to be operable **Action**: With less than 2 HXs operable, two need to be restored within 1 hour. CCW Pressure Boundary - normally 2-3 HXs are operating at a time.	Maintain required flow	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate - use all 3 HXs 3. Mitigate - swap operating HXs on certain intervals to prevent freezing of any 3. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	

15	PTN	3	CCW / 030	5613-M-3030, Sh. 1	3	Piping	14" Pipe	Yes	UFSAR 9.3.2 - Normally 1 pump is operating. Therefore, 2 of the pumps and piping are expected to be stagnant while 3rd is flowing	Maintain required flow	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate - swap operating pump on certain interval to prevent freezing of any pipe 3. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	
16	PTN	3	CCW / 030	5613-M-3030, Sh. 1	3	Piping	Pumps	Yes	UFSAR 9.3.2 - Normally 1 pump is operating. Therefore, 2 of the pumps and piping are expected to be stagnant while 3rd is flowing TS 3.7.2 - All 3 pumps required to be operable	Maintain required flow	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate - swap operating pump on certain interval to prevent freezing of any pipe 3. Protect - Insulate and/or heat trace as required to protect the pump.	In CCW Pump Room (See top Remark for this P&ID)	
17	PTN	3	CCW / 030	5613-M-3030, Sh. 1	3	Vents / Drains / Misc. Connections	Vents, Drains, Test Connections	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
18	PTN	3	CCW / 030	5613-M-3030, Sh. 1	3	Instr. Local	PI, IST	Yes	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
19	PTN	3	CCW / 030	5613-M-3030, Sh. 1	3	Motors	Pump Motors	Yes	TS 3.7.2 - All 3 pumps/motors required to be operable **Action:** With two operable pumps, inoperable pump need to be restored within 30 days. With 2 inoperable pumps, or requires action in 72 hours.	Maintain operable equipment		Determine if protection is needed to protect the motors. Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect in some capacity	In CCW Pump Room (See top Remark for this P&ID)	
20	PTN	3	CCW / 030	5613-M-3030, Sh. 1	4	Piping	12" Pipe	Yes	One train of this CCW piping is operating at a time, the other train is isolated	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate by swapping trains on certain intervals to allow flow is both trains to prevent freezing. 3. Protect - 1" Insulation to protect against >25% freezing.	In CCW Pump Room (See top Remark for this P&ID)	
21	PTN	3	CCW / 030	5613-M-3030, Sh. 1	5	Piping	12" Pipe	Yes	CCW flow to SFP, Seal Water, Non-Regen HXs and Charging pump oil coolers (single pipe). Flow is provided from either Train A or B.	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID) Continuous flow expected in this piping and will prevent freezing.	
22	PTN	3	CCW / 030	5613-M-3030, Sh. 1	6	Piping	1" Pipe	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
23	PTN	3	CCW / 030	5613-M-3030, Sh. 1	7	Piping	1" Pipe	No	None - isolated from SR CCW piping, break in this piping will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
24	PTN	3	CCW / 030	5613-M-3030, Sh. 1	7	Vents / Drains / Misc. Connections	1" Drain and connection	No	None - isolated from SR CCW piping, break in this piping will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
27	PTN	3	CCW / 030	5613-M-3030, Sh. 1	8	Piping	4" Pipe	Yes	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
28	PTN	3	CCW / 030	5613-M-3030, Sh. 1	9	Piping	3" Pipe	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 2" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
29	PTN	3	CCW / 030	5613-M-3030, Sh. 1	10	Piping	2" Pipe	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 4" Insulation 3. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
30	PTN	3	CCW / 030	5613-M-3030, Sh. 1	10	Instr. Local	PI	Yes	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
31	PTN	3	CCW / 030	5613-M-3030, Sh. 1	11	Piping	3" Pipe	No	None - isolated from SR CCW piping, break in this piping will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
32	PTN	3	CCW / 030	5613-M-3030, Sh. 1	12	Piping	1" Pipe	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
33	PTN	3	CCW / 030	5613-M-3030, Sh. 1	13	Piping	2" Pipe	Yes	CCW Pressure Boundary	-	Protect	Options: 1. Protect - 4" Insulation 3. Protect - Heat Trace & 1" Insulation	On Aux Bldg Roof	

34	PTN	3	CCW / 030	5613-M-3030, Sh. 1	13	Vents / Drains / Misc. Connections	Vacuum Breakers	Yes	CCW Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	On Aux Bldg Roof	
35	PTN	3	CCW / 030	5613-M-3030, Sh. 1	13	Vents / Drains / Misc. Connections	1/2" Vent	No	CCW Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	On Aux Bldg Roof	
36	PTN	3	CCW / 030	5613-M-3030, Sh. 1	13	Instr. Control / Protection	LT	Yes	CCW Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	On Aux Bldg Roof	
39	PTN	3	CCW / 030	5613-M-3030, Sh. 1	14	Piping	2" Pipe	Yes	One train of this CCW piping is operating at a time to provide cooling to the HHSI Pumps, and flow from the other train is isolated	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate by swapping trains on certain intervals to allow flow is both trains to prevent freezing. 3. Protect - 4" Insulation to protect against >25% freezing. 4. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
1	PTN	3	CCW / 030	5613-M-3030, Sh. 1	-		-		-	-		-	A majority of the CCW piping on this P&ID is located in the U3 CCW Pump Room, which has concrete walls but an open grating roof. It is recommended that a global strategy for the room is used. An example strategy is deploying tarps or equivalent during cold weather events over the grating to enclose the room and then temporary space heaters are deployed in the room to maintain a temperature above freezing. If a global strategy cannot be used, then individual piping and components will be required to be protected or mitigated as necessary. Piping located in the Auxiliary Building is assumed to be able to be protected by a global strategy (deployment of space heaters), and individuval protection/mitigation strategies are not necessary.	
25	PTN	3	CCW / 030	5613-M-3030, Sh. 1	-	Outdoor Tanks	Chem Pot Feeder	No	None - isolated from SR CCW piping, break in this tank will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
26	PTN	3	CCW / 030	5613-M-3030, Sh. 1	-	Vents / Drains / Misc. Connections	1" Vent	No	None - isolated from SR CCW piping, break in this piping will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
37	PTN	3	CCW / 030	5613-M-3030, Sh. 1	-	Outdoor Tanks	CCW Head Tank	Yes	CCW Pressure Boundary	-	None	No Protection Required	On Aux Bldg Roof	
38	PTN	3	CCW / 030	5613-M-3030, Sh. 1	-	Instr. Local	LI	Yes	CCW Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	On Aux Bldg Roof	
41	PTN	3	CCW / 030	5613-M-3030, Sh. 2	1	Piping	18" Pipe (Supply & Return)	Yes	Normally both trains of CCW (supply & return) are operating. There are only certain times for CCW pump testing that the headers are split, and TS Actions are entered, per UFSAR 9.3.2.	Maintain required flow	None	No recommended protection	In CCW Pump Room (See top Remark for this P&ID) CCW will normally be flowing through both trains of Supply and Discharge, and this will prevent freezing.	
42	PTN	3	CCW / 030	5613-M-3030, Sh. 2	1	Vents / Drains / Misc. Connections	Drains	No	CCW Pressure Boundary	-	Mitigate	Options (If in CCW Pump Room): 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	Walkdown - unclear if these 3 drains are in the CCW pump Room or Aux Bldg. (See top Remark for this P&ID)	
43	PTN	3	CCW / 030	5613-M-3030, Sh. 2	2	Piping	12" Pipe	Yes	CCW flow to SFP, Seal Water, Non-Regen HXs and Charging pump oil coolers (single pipe). Flow is provided from either Train A or B.	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID) Continuous flow expected in this piping and will prevent freezing.	
44	PTN	3	CCW / 030	5613-M-3030, Sh. 2	3	Piping	2" Pipe	Yes	One train of this CCW piping is operating at a time to provide cooling to the HHSI Pumps, and flow from the other train is isolated	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate by swapping trains on certain intervals to allow flow is both trains to prevent freezing. 3. Protect - 4" Insulation to protect against >25% freezing. 4. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
45	PTN	3	CCW / 030	5613-M-3030, Sh. 2	4	Piping	2" Pipe	Yes	One train of this CCW piping is operating at a time to provide cooling to the HHSI Pumps, and flow from the other train is isolated	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect HHSI Pump Room 2. Mitigate by swapping trains on certain intervals to allow flow is both trains to prevent freezing. 3. Protect - 4" Insulation to protect against >25% freezing. 4. Protect - Heat Trace & 1" Insulation	In HHSI Pump Room (See top Remark for this P&ID)	
46	PTN	3	CCW / 030	5613-M-3030, Sh. 2	5	Piping	1" Pipe	Yes	One train of this CCW piping is operating at a time to provide cooling to the HHSI Pumps, and flow from the other train is isolated	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect HHSI Pump Room 2. Mitigate by swapping trains on certain intervals to allow flow is both trains to prevent freezing. 3. Protect - Heat Trace & 1" Insulation	In HHSI Pump Room (See top Remark for this P&ID)	

47	PTN	3	CCW / 030	5613-M-3030, Sh. 2	6	Piping	1" Pipe	Yes	CCW Flow to HHSI Pumps	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID) Continuous flow expected in this piping and will prevent freezing. HHSI Pumps and Motors evaluated as part of 5613-M-3062, SH. 1	
40	PTN	3	CCW / 030	5613-M-3030, Sh. 2	-		-		-	-		-	A majority of the CCW piping on this P&ID is located in the U3 CCW Pump Room, which has concrete walls but an open grating roof. It is recommended that a global strategy for the room is used. An example strategy is deploying tarps or equivalent during cold weather events over the grating to enclose the room and then temporary space heaters are deployed in the room to maintain a temperature above freezing. If a global strategy cannot be used, then individual piping and components will be required to be protected or mitigated as necessary. Piping that is located in the HHSI Pump Room are fully enclosed, but has louvered doors that are open to the CCW Pumps Rooms and outside weather (no HVAC). It is recommended the louvcers are covered and space heaters installed in here to protect all piping, or individual piping and components will need protection. Piping located in the Auxiliary Building is assumed to be able to be protected by a global strategy (deployment of space heaters), and individuval protection/mitigation strategies are not necessary.	
48	PTN	3	CCW / 030	5613-M-3030, Sh. 3	-		-		-	-		-	All portions of this drawing are located in the Auxiliary Building (Sample Room, Boric Acid Evaporator Room, Pipe & Valve Room, PASS, Aux Bldg 10 ft, etc.). Auxiliary Building does not have heating; however, it is expected that a global strategy can be used (i.e., space heaters as needed), in order to prevent freezing/cold temperatures in these locations to allow for systems to continue operating.	
49	PTN	3	CCW / 030	5613-M-3030, Sh. 4	-		-		-	-		-	All portions of this drawing are located in the Auxiliary Building (Pipe & Valve Room, RHR HX Room) and Containment. Auxiliary Building does not have heating; however, it is expected that a global strategy can be used (i.e., space heaters as needed), in order to prevent freezing/cold temperatures in these locations to allow for systems to continue operating. Containment is expected to stay warm on its own.	
50	PTN	3	CCW / 030	5613-M-3030, Sh. 5	-		-		-	-		-	All portions of this drawing are located in the Auxiliary Building (Pipe & Valve Room) and Containment. Auxiliary Building does not have heating; however, it is expected that a global strategy can be used (i.e., space heaters as needed), in order to prevent freezing/cold temperatures in these locations to allow for systems to continue operating. Containment is expected to stay warm on its own.	
51	PTN	3	CCW / 030	5613-M-3030, Sh. 6	1	Piping	8" Pipe	No	CCW SR Pressure Boundary	-	None	No Protection Required	Per UFSAR 9.3.2, the Supplemental Cooling System (SCS) was installed to provide supplemental cooling to U3 or U4 Normal Containment Coolers to maintain normal Containment temperature within TS limits when Intake Cooling Water temperature is high. This piping is the Safety Related (SR) supplemental loop that provides cooling to Non-Nuclear Safety Related (NNS) chiller loops. The SCS cooling function is NNS, but the pressure boundary of the CCW is SR. There are already safety provisions in place to automatically isolate the SR piping on the roof of the AB if the pressure boundary is breached. In addition, during a winter event, this system is not expected to be required since it's only for high temperature in containment and high ICW temperature. Normally the SR portion of the loop that goes to the roof is isolated from the CCW system in the U4 Boric Acid Evaporation Room (4-792A&B per Sh. 3). If protection is required, 1" insulation is necessary to prevent >25% freezing.	
52	PTN	3	CCW / 030	5613-M-3030, Sh. 6	1	Heat Exchangers	E250	No	CCW SR Pressure Boundary	-	None	No Protection Required	See Segment 1, Piping for this P&ID. If protection was required, insulation and/or heat trace to be used to prevent >25% freezing.	
53	PTN	3	CCW / 030	5613-M-3030, Sh. 6	1	Motors	P254 Pump Motor	No	None	-	None	No Protection Required		
54	PTN	3	CCW / 030	5613-M-3030, Sh. 6	1	Piping	P254 Pump	No	CCW SR Pressure Boundary	-	None	No Protection Required	See Segment 1, Piping for this P&ID. If protection was required, insulation and/or heat trace to be used to prevent >25% freezing.	
55	PTN	3	CCW / 030	5613-M-3030, Sh. 6	1	Vents / Drains / Misc. Connections	3/4" Vents & Drains	No	CCW SR Pressure Boundary	Dead Leg	None	No Protection Required	See Segment 1, Piping for this P&ID. If protection was required, heat trace and 1" insulation to be used to prevent >25% freezing.	
56	PTN	3	CCW / 030	5613-M-3030, Sh. 6	1	Instr. Local	PI	Yes	CCW SR Pressure Boundary	Dead Leg	None	No Protection Required	See Segment 1, Piping for this P&ID. If protection was required, heat trace and 1" insulation to be used to prevent >25% freezing.	

57	PTN	3	CCW / 030	5613-M-3030, Sh. 6	2	Piping	4", 6", 8", 10" Piping, NNS SCS Pump Skid, SCS Chiller Skids, Vents & Drains	No	NNS SCS Supplemental Chiller Loop for U3	-	None	No Protection Required	Per UFSAR 9.3.2, the SCS was installed to provide supplemental cooling to U3 or U4 Normal Containment Coolers to maintain normal Containment temperature within TS limits when Intake Cooling Water temperature is high. The SCS cooling function is NNS. In addition, during a winter event, this system is not expected to be required since it's only for high temperature in containment and high ICW temperature. No protection required to prevent generation loss or TS Action.	
58	PTN	3	CCW / 030	5613-M-3030, Sh. 6	3	Piping	3" Pipe	No	NNS SCS Supplemental Chiller Loop for U3	-	None	No Protection Required	See Segment 2, Piping for this P&ID	
59	PTN	3	CCW / 030	5613-M-3030, Sh. 6	4	Piping	2" Pipe	No	NNS SCS Supplemental Chiller Loop for U3	-	None	No Protection Required	See Segment 2, Piping for this P&ID	
60	PTN	3	CCW / 030	5613-M-3030, Sh. 6	-		-		-	-		-	Portions of this drawing located in the Auxiliary Building. Auxiliary Building does not have heating; however, it is expected that a global strategy can be used (i.e., space heaters as needed), in order to prevent freezing/cold temperatures in these locations to allow for systems to continue operating.	
1	PTN	3	SS / 032	5613-M-3032, Sh. 1	1	Instrumentation - Local	FI-3-5116, -5117, -5118	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	
2	PTN	3	SS / 032	5613-M-3032, Sh. 1	1	Piping	All Piping and Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	
3	PTN	3	SS / 032	5613-M-3032, Sh. 1	1	Heat Exchangers	Steam Generator A, B, C To Sample Hood Sample Conditioner Blowdown (Inside Sampling Room) Steam Generator A, B, C Blowdown Sample Cooler (Outside Sampling Room in Turbine Building)	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	
4	PTN	3	SS / 032	5613-M-3032, Sh. 1	1	Motor Operators	MOV-3-1425, -1426, -1427	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Containment Isolation	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	Maximum distance from penetration 10'-0"

5	PTN	3	SS / 032	5613-M-3032, Sh. 1	1	Valves	3-20-536, -537, -538	No	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Bypass around FI-3-5116	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	
9	PTN	3	SS / 032	5613-M-3032, Sh. 2	1	Piping	All Piping and Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 311 Sample Station Mezzanine
10	PTN	3	SS / 032	5613-M-3032, Sh. 2	1	Heat Exchangers	SC-3-1432, -1433, -1434	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 311 Sample Station Mezzanine
11	PTN	3	SS / 032	5613-M-3032, Sh. 2	1	Vents / Drains / Misc. Connections	Small Bore Drains to Sample Sink	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Sampling System equipment is located inside the Turbine Building.	Room/Location 311 Sample Station Mezzanine
12	PTN	3	SS / 032	5613-M-3032, Sh. 3	1	Instrumentation - Local	PI-3-6751, -6752, -6753, -6754, PI-3-6745, -6746, -6747, -6748, LG-3433, -3434, -3435, -3436	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 318 (East Condensate Pit)

13	PTN	3	SS / 032	5613-M-3032, Sh. 3	1	Instrumentation - Control / Protection	LS-3-6745, -6746, -6747, -6748, PS-3-6745, -6746, -6747, -6748,	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Pump Control	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 318 (East Condensate Pit)
14	PTN	3	SS / 032	5613-M-3032, Sh. 3	1	Piping	All Piping and Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 318 (East Condensate Pit)
15	PTN	3	SS / 032	5613-M-3032, Sh. 3	1	Outdoor Tanks	Seal Buffer Tank (4 times)	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 318 (East Condensate Pit)
16	PTN	3	SS / 032	5613-M-3032, Sh. 3	1	Valves	PCV-3-615, -616, -617, -618	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Pressue and Flow Contro	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building. Bypass Valves (3-20-915, -916, -917, -918) should periodically be opened to preclude ice formation in the bypasses around PCV-3-615, -616, -617, -618, respectively.	Room/Location 318 (East Condensate Pit)
17	PTN	3	SS / 032	5613-M-3032, Sh. 3	1	Vents / Drains / Misc. Connections	Small Bore Vents and Drains	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Sampling System equipment is located inside the Turbine Building.	Room/Location 318 (East Condensate Pit)

18	PTN	3	SS / 032	5613-M-3032, Sh. 5	1	Piping	All Piping and Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 311 Sample Station Mezzanine
19	PTN	3	SS / 032	5613-M-3032, Sh. 5	1	Heat Exchangers	SC-3-1430, -1431	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 311 Sample Station Mezzanine
20	PTN	3	SS / 032	5613-M-3032, Sh. 6	1	Piping	All Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 321 South Main Condenser Area
21	PTN	3	SS / 032	5613-M-3032, Sh. 6	1	Heat Exchangers	SC-3-1437, -1438, -1439, -1440	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 321 South Main Condenser Area
22	PTN	3	SS / 032	5613-M-3032, Sh. 7	1	Piping	All Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 321 South Main Condenser Area
23	PTN	3	SS / 032	5613-M-3032, Sh. 7	1	Heat Exchangers	SC-3-1435, -1436	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 321 South Main Condenser Area

1	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	1	Piping	10" Pipe	No	Provides supplemental cooling to the SFP. There are two loops, both 100% capacity for normal operations	-	None	No Protection Required	Only a portion of the 10" pipe goes outside for one of the loop (that is noted on the P&ID). To protect against freezing, 1" of insulation would be required, or freezing could be mitigated by using the supplemental cooling loop to provide flow in the line and prevent freezing on a set interval.	
2	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	2	Piping	2" Pipe	No	Allows flow back to the RWST from the SFP Cooling System.	-	None	No Protection Required	It's unclear if this pipe is outside or not. Valve 3-817 is inside the SFP HX Rm and valve 3-817A is stated to be on the Cask Handling Facility West wall from NAMS (unclear if inside or outside). Check to see if physically outside on a walkdown. However, no protection should be required since it wouldn't cause a generation loss of a TS Action if the piping were to freeze or break.	
3	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	3	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	Could protect only up to Valve 3-805A and shut this valve, and the remainder of the pipe along with other segments (see below) would not require protection.	
6	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	4	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	See Segment 3...if valve 3-805A can be closed during cold weather, this segment does not require protection	
7	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	5	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	See Segment 3...if valve 3-805A can be closed during cold weather, this segment does not require protection	
8	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	6	Piping	3/4" Pipe to PI	Yes	RWST Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	See Segment 3...if valve 3-805A can be closed during cold weather, this segment does not require protection	
9	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	7	Piping	2" Pipe	No	None	-	None	No Protection Required	Based on the check valve and diaphragm valve at the safety class changes, a break in this line would not impact the RWST pressure boundary.	
10	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	8	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	See Segment 3...if valve 3-805A can be closed during cold weather, this segment does not require protection	
4	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	-	Motors	Refueling Water Purification Pump Motor	No	Operation of the pump	-	None	No Protection Required	Pump operation not critical to maintain generation or initiate a TS Action.	
5	PTN	3	SFPC / 033	5613-M-3033 Sh. 1	-	Piping	Refueling Water Purification Pump	No	RWST Pressure Boundary	-	Protect	Options: 1. Insulate and/or heat trace the pump (unclear based on pump size which is required) 2. Operate the pump on a interval basis to prevent freezing of water in the pump.	See Segment 3...if valve 3-805A can be closed during cold weather, this segment does not require protection	
11	PTN	3	SFPC / 033	5613-M-3033 Sh. 2	1	Piping	1.5" Pipe	No	None	-	None	No Protection Required		
12	PTN	3	SFPC / 033	5613-M-3033 Sh. 2	2	Piping	1.5" Pipe	No	None	-	None	No Protection Required		
17	PTN	3	034	5613-M-3034	1	Ducting	U3 SFP Bldg supply and exhaust ductwork	Yes	None	Not affected by cold temperatures	None	None	Ducting is not susceptible to damage from freezing	
18	PTN	3	034	5613-M-3034	1	Instruments - General	Local D/P gages	Yes	None	Not affected by cold temperatures, not required for power operation	None	None	No instruments contain water that is susceptible to freezing	
19	PTN	3	034	5613-M-3034	1	Instr. Control / Protection	U3 SFP SPING radiation detector	Yes	Input to SPDS/SAS	Not required for power operations (no longer in Tech Spec's); Procedures call for portable monitoring in the event the SPING monitors fail	None	None	Past CR's have noted condensation in the SPING filter housing when the SFP was particularly warm with high moisture content in the SFP ambient air. This was before the SPING was replaced.	
20	PTN	3	034	5613-M-3034	1	Filter Train	Prefilters and HEPA filters for U3 SFP fans	Yes	None	Filter trains are not affected by cold weather	None	None		
21	PTN	3	034	5613-M-3034	1	Filter Train	Prefilters and HEPA filters for U3 cask handling facility	No	None	Not required for power operation	None	None		
22	PTN	3	034	5613-M-3034	1	Fan	U3 SFP exhaust fan, new fuel and SFP hx room supply fans	Yes	None	Cold weather has little to no effect on a fan or its motor.	None	None		
23	PTN	3	034	5613-M-3034	1	Fan	U3 cask handling fan	No	None	Not required for power operation	None	None		
24	PTN	3	034	5613-M-3034	1	Motor Operated Damper	U3 SFP supply and exhaust dampers, SFP HX Rm exhaust damper, new fuel storage area exhaust damper	Yes	None	SFP supply dampers do not need to reposition for normal operation or accident conditions.	None		Supply dampers to SFP area are outside, so gearbox lubricant at reduced temperatures may impart additional resisting torque on the damper motors. Other dampers are internal to the SFP area.	
21	PTN	3	CVCS / 046	5613-M-3046 Sh. 1	-		-		-	-		-	Most piping on this drawing is abandoned, and all is located in the Gas Stripper Room in the Auxiliary Building	

22	PTN	3	CVCS / 046	5613-M-3046 Sh. 2	-		-		-	-		-	Most piping on this drawing is abandoned. Two pipes are not abandoned and it's not clear from NAMS where the pipes are located (valve IDs not in NAMS); however one connection is a gas pipe to the Waste Disposal System on 5610-M-3061 Sh. 12 this is NNS and the other goes to the sample system located in the Sample Room in the Auxiliary Building. Therefore, it is believed these pipes are in the Auxiliary Building. Even if they were subject to freezing, there would be no adverse effect on the site.	
1	PTN	3	CVCS / 047	5613-M-3047 Sh. 1	1	Piping	3" Pipe	No	None	-	None	No Protection Recommended	Located on AB Roof. Manual Operation to fill the Demineralizers from the Resin Fill Tank. Requires connection of flex hoses. Non-Nuclear Safety Related System	
2	PTN	3	CVCS / 047	5613-M-3047 Sh. 1	2	Piping	2" Pipe	No	None	-	None	No Protection Recommended	Located on AB Roof. Manual Operation to fill the Demineralizers or the Resin Fill Tank with Primary Water. Requires connection of flex hoses. Non-Nuclear Safety Related System	
3	PTN	3	CVCS / 047	5613-M-3047 Sh. 1	3	Piping	2" Pipe	No	None	-	None	No Protection Recommended	Located on AB Roof. Manual Operation to fill the Demineralizers or the Resin Fill Tank with Primary Water. Requires connection of flex hoses. Non-Nuclear Safety Related System	
4	PTN	3	CVCS / 047	5613-M-3047 Sh. 1	4	Piping	3" Pipe	No	None	-	None	No Protection Recommended	Located on AB Roof. Manual Operation to fill the Demineralizers from the Resin Fill Tank. Requires connection of flex hoses. Non-Nuclear Safety Related System	
5	PTN	3	CVCS / 047	5613-M-3047 Sh. 1	-		-		-	-		-	All piping, except as marked, is located in Containment or in the Auxiliary Building (P&V Room, Charging Pump Room, Monitor Tank Room, Reactor Coolant Filter Room). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building.	
8	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	1	Piping	4" Pipe	Yes	VCT to Charging Pumps (NNS)	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 1" Insulation to prevent >25% Freezing 3. Protect - Heat Trace & 1" Insulation for <2% feezing.	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
9	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	2	Vents / Drains / Misc. Connections	1" Drain	No	CVCS Boundary (NNS)	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
10	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	3	Vents / Drains / Misc. Connections	3/8" Drains	No	VCT Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
11	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	3	Instr. Control / Protection	LTs	Yes	Flow to/from the VCT	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
12	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	4	Piping	1" Pipe	Yes	Inlet to the VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
13	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	5	Piping	2" Pipe	Yes	Inlet to the VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 4" Insulation to prevent >25% Freezing 3. Protect - Heat Trace & 1" Insulation for <2% feezing.	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
14	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	6	Piping	2" Pipe	No	RV line and pipe from VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 4" Insulation to prevent >25% Freezing 3. Protect - Heat Trace & 1" Insulation for <2% feezing.	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
15	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	7	Piping	3/4" Pipe	No	VCT Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	

16	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	8	Piping	2" Pipe	No	RV Discharge from VCT	-	None	No protection required downstream of RV	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
17	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	9	Vents / Drains / Misc. Connections	1/4" Drain	No	VCT Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
18	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	9	Instr. Local	1/4" PI	Yes	VCT Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
19	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	10	Piping	3" Pipe	Yes	Inlet to the VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 2" Insulation to prevent >25% Freezing 3. Protect - Heat Trace & 1" Insulation for <2% feezing.	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
20	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	11	Piping	3/4" Pipe	Yes	Inlet to the VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
6	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	-		-		-	-		-	All piping, except as marked, is located in Containment or in the Auxiliary Building (P&V Room, Charging Pump Room, NSSS Sample Room, Boric Acid Tank Room, N-S Hallway). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building.	
7	PTN	3	CVCS / 047	5613-M-3047 Sh. 2	-	Outdoor Tanks	Volume Control Tank	Yes	Quality Related per NAMS. Used to provide flow to the Charging Pumps of the CVCS for injection to the RCS per UFSAR 9.2.1	CVCS protection	None	No protection required, tank and contents will not freeze.	The VCT is located on the roof of the Auxiliary Building; however, it is enclosed in a concrete enclosure to be protected from missiles. A global strategy is recommended for the enclosure for the VCT, like the Auxiliiary Building, where space heaters can be deployed as necessary.	
1	PTN	3	RHR / 050	5613-M-3050 Sh. 1	All		-		-	-	None	No protection recommended	All portions of this drawing are located inside the Auxiliary Building or Containment.	
1	PTN	3	053	5613-M-3053	1	Piping	Piping for containment penetrations for air systems (purge, ILRT pressure test connections, personnel & escape hatch & appurtenances)	No	None	Not required for power operation	None	None (Air penetrations are isolated for normal operation).		
2	PTN	3	053	5613-M-3053	1	Ducting	Containment purge ducting	No	None	Not required for power operation	None	None		
3	PTN	3	053	5613-M-3053	1	Filter Train	Purge roughing filters	No	None	Not required for power operation	None	None		
4	PTN	3	053	5613-M-3053	1	Fan	Containment purge supply and exhaust fans	No	None	Not required for power operation	None	None		
5	PTN	3	053	5613-M-3053	1	Motor Operated Damper	Motor operated purge supply and exhaust fan dampers	No	None	Not required for power operation	None	None		
6	PTN	3	053	5613-M-3053	1	Ventilation Dampers	Piston-operated purge supply and exhaust containment isolation dampers	No	Normally closed; closure capabiltiy required for TS 3/4.6.4	Purge not required for power generation; dampers already in position for containment isolation	None	None		
7	PTN	3	053	5613-M-3053	1	Instr. Annunciation / Indication	Remote valve position indication for containment purge isolation valves	Yes	Required for Control Room indication of containment isolation status	Purge isolation valves normally closed, expected to stay closed; position indication not affected by cold temperatures	None	None		
8	PTN	3	053	5613-M-3053	1	Instr. Local	Local pressure indication at personnel and escape hatch	Yes	None	Not required for power operation	None	None		
9	PTN	3	053	5613-M-3053	2	Piping	2" & 1/2" Instr Air Bleed Line	Yes	TS 3/4.6.1.4 -- Containment internal pressure to be maintained between -2 and +1 psig	None requried since Instr air bleed condensate drain line is located inside the Aux Bldg. See remarks.	None	None	IA bleed line is normally open to vent off instrument air leakage in containment to prevent excessive ambient pressure buildup. The bleed line passes from containment, through the Aux Bldg, then through the Aux Bldg roof to the purge exhaust duct. The condensate drain valve (3-11-018) is normally open to drain condensate from the bleed line. The condensate drain taps into the IA purge line within the Aux Bldg, so the exterior portion of the IA purge line would not contain liquid condensate that could be subject to freezing.	EC-277336, Sec. 2.1.1.2
10	PTN	3	053	5613-M-3053	2	Instr. Annunciation / Indication	Remote valve position indication for instrument air bleed	Yes	Required for control room indication of containment isolation status	Located inside Aux Bldg	None	None		

11	PTN	3	053	5613-M-3053	2	Vents / Drains / Misc. Connections	3/4" drain line (dead leg) on bleed line	No	None	Located inside Aux Bldg	None	None		
12	PTN	3	053	5613-M-3053	3	Fan	Cooling fans for high-temperature containment penetrations for main steam (MS), main feed (MF), and letdown.	Yes	Normally operating to provide cooling to containment penetrations over 150 °F; MS and MF penetration fans can be OOC for up to 7 days before repairs are required to be initiated; Letdown penetration fans, up to 30 days.	Allowable OOC time exceeds postulated 4-day freeze	None	None	Fans are normally operating; cold weather event is not expected to interrupt operation. No impact on operations even if fans are lost.	3-NOP-057 Sec 2.2, Step 5
13	PTN	3	053	5613-M-3053	3	Ducting	Supply to penetration cooling	Yes	None	Ductwork not affected by freezing temperatures	None	None		
14	PTN	3	053	5613-M-3053	3	Motor Operated Damper	Main steam penetrtion fan supply valve to west electrical penetration room	Yes	MS penetration fans can be OOC for up to 7 days before repairs are required to be initiated	Allowable OOC time exceeds postulated 4-day freeze	None	None	Cold weather is not expected to impact motorized damper operation.	
16	PTN	3	SIS / 062	5613-M-3062, Sh. 1	1	Piping	16" Pipe	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Provide flow path for ECCS.	Protect	Options: 1. 3" Insulation (<2% freezing), or 2. Heat Trace & 1" Insulation. Possible need to evaluate heat trace/insulation or possible enclose with heater if water in pipe needs to be maintained greater than 39F.	Full flow path (less than 2% freezing criteria) assumed to be required for Tech Specs; however, could evaluate if a lower flow is allowed. A portion of this pipe is in a trench to the Aux Bldg. Does the pipe need to be 39F or greater to comply with the Tech Spec? Not clear in the Tech Specs, and no temperature instrumentation on the piping.	
17	PTN	3	SIS / 062	5613-M-3062, Sh. 1	1	Motor Operator Valve	2 MOVs	No	Operable ECCS Flowpath	Provide ability to isolate RWT to go into Recirculation		Evaluate further if the MOVs require protection from cold weather (operating temperatures qualified to, internal heater, etc.) and determine a strategy if required.		
18	PTN	3	SIS / 062	5613-M-3062, Sh. 1	2	Piping	8" Pipe	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Provide flow path for ECCS.	Protect	Heat Trace & 1" Insulation. Possible need to evaluate heat trace/insulation or possible enclose with heater if water in pipe needs to be maintained greater than 39F.	Full flow path (less than 2% freezing criteria) assumed to be required for Tech Specs; however, could evaluate if a lower flow is allowed. A portion of this pipe is in a trench to the HHSI Pump Room. Does the pipe need to be 39F or greater to comply with the Tech Spec? Not clear in the Tech Specs, and no temperature instrumentation on the piping.	
19	PTN	3	SIS / 062	5613-M-3062, Sh. 1	2	Vents / Drains / Misc. Connections	3/4" Vent	No	RWST Pressure Boundary	Maintain pressure boundary for the piping, Dead Legs	Protect	Provide 1" insulation & heat tracing.	With no protection the piping will freeze and there is a potential the piping and/or valve could crack when water freezes. This will only be known once it begins to thaw. Conservatively recommend protecting to prevent potential system leakage.	
20	PTN	3	SIS / 062	5613-M-3062, Sh. 1	3	Piping	4" Pipe	No	T.S. 3.1.2.5 - Available RWST with solution temperature above 39F. **Action**: With the RWST inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	Maintain RWST pressure boundary and have a flow path for the CVCS.	Protect	Options: 1. 1" insulation on 4" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation Possible need to evaluate heat trace/insulation or possible enclose with heater if water in pipe needs to be maintained greater than 39F.	Full flow path (less than 2% freezing criteria) assumed to be required for Tech Specs; however, could evaluate if a lower flow is allowed. A portion of this pipe is in a trench to the Aux Bldg. Does the pipe need to be 39F or greater to comply with the Tech Spec? Not clear in the Tech Specs, and no temperature instrumentation on the piping.	
21	PTN	3	SIS / 062	5613-M-3062, Sh. 1	4	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation		
22	PTN	3	SIS / 062	5613-M-3062, Sh. 1	5	Piping	2" Pipe, connection to RO Silica Skid	No	None	-	None	No protection required.	Will not adversely affect the RWST if piping freezes or breaks	
23	PTN	3	SIS / 062	5613-M-3062, Sh. 1	5	Vents / Drains / Misc. Connections	1/2" Vent	No	None	-	None	No protection required.	Will not adversely affect the RWST if piping freezes or breaks	
24	PTN	3	SIS / 062	5613-M-3062, Sh. 1	6	Piping	6" Pipe	No	RWST Pressure Boundary	-	Protect	1" Insulation	Protects against >25% freezing in the pipe	
25	PTN	3	SIS / 062	5613-M-3062, Sh. 1	7	Piping	6" Pipe	No	CSP Full Flow Recirculation Line, Class B (SR) Piping	-	Protect	1" Insulation	Located on Aux Bldg Room per NAMS. Piping is normally isolated on both sides, so protection may not be required. If line is not utilized, a break or freeze of the line does not require a shutdown. Insulation size recommended to prevent >25% freezing since full flow is not required. Operator action needed to use the line.	
26	PTN	3	SIS / 062	5613-M-3062, Sh. 1	7	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Dead Leg	Protect	Heat Trace & 1" Insulation	See Segment 7, Piping for discussion of location and if protection is necessary.	
27	PTN	3	SIS / 062	5613-M-3062, Sh. 1	8	Piping	4" Pipe to RWST Drain Piping (NSR portion)	No	None	-	None	No protection required.	Will not adversely affect the RWST if piping freezes or breaks	
28	PTN	3	SIS / 062	5613-M-3062, Sh. 1	8	Vents / Drains / Misc. Connections	Piping to RO Silica Skid	No	None	-	None	No protection required.	Will not adversely affect the RWST if piping freezes or breaks	

29	PTN	3	SIS / 062	5613-M-3062, Sh. 1	9	Piping	2" Pipe	Yes	RWST Pressure Boundary & pipe to LT	Dead Leg	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation		
30	PTN	3	SIS / 062	5613-M-3062, Sh. 1	9	Instr. Control / Protection	LT	Yes	T.S. 3.5.4 - A minimum contained volume 320,000 gallons of borated water when in Modes 1-4 **ACTION:** With the refueling water tank inoperable, restore the tank to OPERABLE status within **1 hour** or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours. T.S. 3.1.2.5 has the same LCO and action.	Required to know level in the RWST. Dead Leg	Protect	Provide insulation (1") & heat tracing for the level instruments and piping.		
31	PTN	3	SIS / 062	5613-M-3062, Sh. 1	9	Vents / Drains / Misc. Connections	Test Connection	No	RWST Pressure Boundary	Dead Leg	Protect	Heat Trace & 1" Insulation		
32	PTN	3	SIS / 062	5613-M-3062, Sh. 1	9	Vents / Drains / Misc. Connections	3/8" Drain	No	RWST Pressure Boundary	Dead Leg	Protect	Heat Trace & 1" Insulation		
33	PTN	3	SIS / 062	5613-M-3062, Sh. 1	10	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation		
34	PTN	3	SIS / 062	5613-M-3062, Sh. 1	11	Piping	16" Pipe	Standby	TS 3.5.2.d - ECCS Flowpath to RHR and CS Pumps. **Action**: With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Operable ECCS	Protect	Options: 1. Use global heating strategy for the U3 CCW Pump Room to prevent freezing 2. 1" Insulation (no freezing >25%) 3. Heat Trace & 1" Insulation (no freezing or maintain temp in pipe >39F	Located in U3 CCW Pump Room, which is enclosed by concrete on the sides, but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
35	PTN	3	SIS / 062	5613-M-3062, Sh. 1	12		HHSI pumps suction and discharge flow paths, cross connects with U4 piping, recirculation and test lines	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Operable ECCS	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Insulation and/or Heat Trace individual piping and components.	Located in HHSI Pump Room, which is fully enclosed by concrete, but doors are louvered, there is no HVAC, and room is open to the CCW Pump Rooms, which is open to the environment. Recommend covering door louvers and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
36	PTN	3	SIS / 062	5613-M-3062, Sh. 1	13		HHSI Pumps and associated cooling	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Operable ECCS	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Insulation and/or Heat Trace individual piping and components.	Located in HHSI Pump Room, which is fully enclosed by concrete, but doors are louvered, there is no HVAC, and room is open to the CCW Pump Rooms, which is open to the environment. Recommend covering door louvers and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
37	PTN	3	SIS / 062	5613-M-3062, Sh. 1	14	Piping	3" Pipe	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Operable ECCS	Protect	Options: 1. Use global heating strategy for the U3 CCW Pump Room to prevent freezing 2. 2" Insulation (no freezing >25%) 3. Heat Trace & 1" Insulation (no freezing or maintain temp in pipe >39F	Located in U3 CCW Pump Room, which is enclosed by concrete on the sides, but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
38	PTN	3	SIS / 062	5613-M-3062, Sh. 1	15	Piping	3/4" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. Use global heating strategy for the U3 CCW Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Located in U3 CCW Pump Room, which is enclosed by concrete on the sides, but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	

39	PTN	3	SIS / 062	5613-M-3062, Sh. 1	16	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. Use global heating strategy for the U3 CCW Pump Room to prevent freezing 2. 4" Insulation (no freezing >25%) 3. Heat Trace & 1" Insulation (no freezing or maintain temp in pipe >39F	Located in U3 CCW Pump Room, which is enclosed by concrete on the sides, but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
40	PTN	3	SIS / 062	5613-M-3062, Sh. 1	16	Motor Operator Valve	2 MOVs	Standby	-	-		Evaluate further if the MOVs require protection from cold weather (operating temperatures qualified to, internal heater, etc.) and determine a strategy if required.	Located in U3 CCW Pump Room, which is enclosed by concrete on the sides, but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
11	PTN	3	SIS / 062	5613-M-3062, Sh. 1	-	Outdoor Tanks	Refueling Water Storage Tank (RWST)	Yes	T.S. 3.5.4 - Min Temp of 39F when in Modes 1-4 **ACTION**: With the refueling water tank inoperable, restore the tank to OPERABLE status within **1 hour** or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours. T.S. 3.1.2.5 has the same LCO and action.	Maintain ability for Emergency Core Cooling and Boration	Protect	Need to perform further evaluation if the min volume (320,000 gal) in the RWST will be lowered to 39F based on new temperature profile. If RWST could reach 39F, then some options include insulating, adding recirculation heater(s) as a temporary skid design/installation/operation, permanent immersion heater(s), etc.	Currently per 0-ONOP-103.2, the only action is to refer to T.S. 3.5.4 if temperature is dropping. Temperature can be measured by placing the RWST on recirculation via 3-NOP-033, but the procedure does not use this stratgey to consider raising the RWST temperature.	0-ONOP-103.2 3-NOP-033
12	PTN	3	SIS / 062	5613-M-3062, Sh. 1	-	Vents / Drains / Misc. Connections	Vents to atmosphere (unclear of size and it there is a loop seal via the P&ID)	No	Operable RWST	Allow for tank venting and prevent vacuum generation	Protect	Insulate vent to prevent vacuum forming in the tank when draining (thickness to be determined based on pipe size)		
13	PTN	3	SIS / 062	5613-M-3062, Sh. 1	-	Instr. Control / Protection	Piping to LT with associated test connection and drain	Yes	T.S. 3.5.4 - A minimum contained volume 320,000 gallons of borated water when in Modes 1-4 **ACTION:** With the refueling water tank inoperable, restore the tank to OPERABLE status within **1 hour** or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours. T.S. 3.1.2.5 has the same LCO and action.	Required to know level in the RWST. Dead Leg	Protect	Provide insulation (1") & heat tracing for the level instruments and piping.		
14	PTN	3	SIS / 062	5613-M-3062, Sh. 1	-	Vents / Drains / Misc. Connections	2" Pipe to 1" Drain and 3/8" connection to sample sink	No	RWST Pressure Boundary	Dead Leg	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	Protection only required through the safety boundary change of B to D, the remainder of the piping is not required to be protected. Downstream of the locked closed valve, the system can be opened to protect damage to piping and components.	
15	PTN	3	SIS / 062	5613-M-3062, Sh. 1	-	Vents / Drains / Misc. Connections	4" Pipe to 3/4" Drain	No	RWST Pressure Boundary	Dead Leg	Protect	Options: 1. 1" insulation on 4" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	Protection only required through the safety boundary change of B to D, the remainder of the piping is not required to be protected. Downstream of the locked closed valve, the system can be opened to protect damage to piping and components.	
6	PTN	3	SIS / 062	5613-M-3062, Sh. 2	1	Piping	4" Pipe	Standby	TS 3.5.2 - The following Emergency Core Cooling System (ECCS) equipment and flow paths shall be OPERABLE: Four Safety Injection (SI) pumps, each capable of being powered from its associated OPERABLE diesel generator, with discharge flow paths aligned to the RCS cold legs.	Maintain flowpath	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Located in HHSI Pump Room, which is fully enclosed by concrete, but doors are louvered, there is no HVAC, and room is open to the CCW Pump Rooms, which is open to the environment. Recommend covering door louvers and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
7	PTN	3	SIS / 062	5613-M-3062, Sh. 2	1	Instr. Control / Protection	PI	Yes	See Segment 1, Piping	Control	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	See Segment 1, Piping	
8	PTN	3	SIS / 062	5613-M-3062, Sh. 2	1	Instr. Control / Protection	FI	Yes	See Segment 1, Piping	Control	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	See Segment 1, Piping	
9	PTN	3	SIS / 062	5613-M-3062, Sh. 2	1	Vents / Drains / Misc. Connections	3/4" Drain	No	See Segment 1, Piping	Dead Leg	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	See Segment 1, Piping	
10	PTN	3	SIS / 062	5613-M-3062, Sh. 2	2	Piping	4" Pipe	Standby	TS 3.5.2 - The following Emergency Core Cooling System (ECCS) equipment and flow paths shall be OPERABLE: Four Safety Injection (SI) pumps, each capable of being powered from its associated OPERABLE diesel generator, with discharge flow paths aligned to the RCS cold legs.	Maintain flowpath	Protect	Options: 1. Use global heating strategy for the U3 CCW Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Located in U3 CCW Pump Room, which is enclosed by concrete on the sides, but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	

3	PTN	3	CS / 068	5613-M-3068, Sh. 1	1	Piping	6" Pipe	No	CSP Full Flow Recirculation Line, Class B (SR) Piping	-	Protect	1" Insulation	Located on Aux Bldg Room per NAMS. Piping is normally isolated on both sides, so protection may not be required. If line is not utilized, a break or freeze of the line does not require a shutdown. Insulation size recommended to prevent >25% freezing since full flow is not required. Operator action needed to use the line.	
4	PTN	3	CS / 068	5613-M-3068, Sh. 1	1	Instr. Local	Flow element	Yes	None	Dead Leg	Protect	Heat Trace & 1" Insulation	See Segment 1 piping for discussion of location and if protection is necessary.	
5	PTN	3	CS / 068	5613-M-3068, Sh. 1	1	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Dead Leg	Protect	Heat Trace & 1" Insulation	See Segment 1 piping for discussion of location and if protection is necessary.	
2	PTN	3	CS / 068	5613-M-3068, Sh. 1	All but 1		-		-	-	None	No protection recommended	All portions of this drawing, except Segment 1, are located inside the Auxiliary Building or Containment.	
1	PTN	3	070	5613-M-3070, Sh. 1 TB Ventilation, Load Center & SWGR Rooms Chilled Water System - Train A	1	Piping	Small-bore pipe, Air Handling Units. Equipment located on Ground Floor EL 18'-0" and EL 30'-0" LC/Switchgear Enclosure	Yes	Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken as noted to open doors and fans to provide cooling in the event of loss of A/C system.	N/A	Mitigate	Add Glycol to chillers for low temperature operation or provide operator action to open doors and provide fans to cool Load Center and Switchgear Rooms.	Chilled Water System not safety related and if rendered non-functional, operator action to open doors and start fan locally to provide once-through ventilation can provide adequate room cooling (UFSAR 9.16.3). Based on "Turkey Point Extreme Temperature Reassessment, March 2021", Chillers can trip off on Low Ambient Lockout (35.1 F). Load Center/Switchgear Enclosures are reinforced concrete Class I structures (UFSAR 5.3.2). The UFSAR design limit for equipment in the LC/Switchgear Rooms is 104 deg F. The administrative limit temperature alert is 95 deg F. Chiller alarm limits are 36 deg F, with glycol 12.6 deg F. Note that one chiller in a single train may provide adequate cooling for 7 days during emergency operations with operator action. (UFSAR 9.16)	UFSAR 9.16, UFSAR 5.3.2, Turkey Point Extreme Temperature Reassessment p.7
2	PTN	3	070	5613-M-3070, Sh. 1 TB Ventilation, Load Center & SWGR Rooms Chilled Water System - Train A	2	Piping	Small Bore Piping, Chillers, Pumps, transfer pump, Expansion tank. Turbine Building from outside LC/SWGR room up TB EL. 44'-6 1/4"	Yes	Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken as noted to open doors and fans to provide cooling in the event of loss of A/C system.	N/A	Mitigate	Add Glycol to chillers for low temperature operation or provide operator action to open doors and provide fans to cool Load Center and Switchgear Rooms.	Chilled Water System not safety related and if rendered non-functional, operator action to open doors and start fan locally to provide once-through ventilation can provide adequate room cooling (UFSAR 9.16.3). Based on "Turkey Point Extreme Temperature Reassessment, March 2021", Chillers can trip off on Low Ambient Lockout (35.1 F). Load Center/Switchgear Enclosures are reinforced concrete Class I structures (UFSAR 5.3.2). The UFSAR design limit for equipment in the LC/Switchgear Rooms is 104 deg F. The administrative limit temperature alert is 95 deg F. Chiller alarm limits are 36 deg F, with glycol 12.6 deg F. Note that one chiller in a single train may provide adequate cooling for 7 days during emergency operations with operator action. (UFSAR 9.16)	UFSAR 9.16, UFSAR 5.3.2, Turkey Point Extreme Temperature Reassessment p.7
3	PTN	3	070	5613-M-3070, Sh. 2 TB Ventilation, Load Center & SWGR Rooms Chilled Water System - Train B	1	Piping	Small-bore pipe, Air Handling Units. Equipment located on Ground Floor EL 18'-0" and EL 30'-0" LC/Switchgear Enclosure	Yes	Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken as noted to open doors and fans to provide cooling in the event of loss of A/C system.	N/A	Mitigate	Add Glycol to chillers for low temperature operation or provide operator action to open doors and provide fans to cool Load Center and Switchgear Rooms.	Chilled Water System not safety related and if rendered non-functional, operator action to open doors and start fan locally to provide once-through ventilation can provide adequate room cooling (UFSAR 9.16.3). Based on "Turkey Point Extreme Temperature Reassessment, March 2021", Chillers can trip off on Low Ambient Lockout (35.1 F). Load Center/Switchgear Enclosures are reinforced concrete Class I structures (UFSAR 5.3.2). The UFSAR design limit for equipment in the LC/Switchgear Rooms is 104 deg F. The administrative limit temperature alert is 95 deg F. Chiller alarm limits are 36 deg F, with glycol 12.6 deg F. Note that one chiller in a single train may provide adequate cooling for 7 days during emergency operations with operator action. (UFSAR 9.16)	UFSAR 9.16, UFSAR 5.3.2, Turkey Point Extreme Temperature Reassessment p.7
4	PTN	3	070	5613-M-3070, Sh. 2 TB Ventilation, Load Center & SWGR Rooms Chilled Water System - Train B	2	Piping	Small Bore Piping, Chillers, Pumps, transfer pump, Expansion tank. Turbine Building from outside LC/SWGR room up TB EL. 44'-6 1/4"	Yes	Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken as noted to open doors and fans to provide cooling in the event of loss of A/C system.	N/A	Mitigate	Add Glycol to chillers for low temperature operation or provide operator action to open doors and provide fans to cool Load Center and Switchgear Rooms.	Chilled Water System not safety related and if rendered non-functional, operator action to open doors and start fan locally to provide once-through ventilation can provide adequate room cooling (UFSAR 9.16.3). Based on "Turkey Point Extreme Temperature Reassessment, March 2021", Chillers can trip off on Low Ambient Lockout (35.1 F). Load Center/Switchgear Enclosures are reinforced concrete Class I structures (UFSAR 5.3.2). The UFSAR design limit for equipment in the LC/Switchgear Rooms is 104 deg F. The administrative limit temperature alert is 95 deg F. Chiller alarm limits are 36 deg F, with glycol 12.6 deg F. Note that one chiller in a single train may provide adequate cooling for 7 days during emergency operations with operator action. (UFSAR 9.16)	UFSAR 9.16, UFSAR 5.3.2, Turkey Point Extreme Temperature Reassessment p.7
1	PTN	3	MSS / 072	5613-M-3072 SH 1	1	Piping	26" main steam line (x3); 30" main steam header	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		

2	PTN	3	MSS / 072	5613-M-3072 SH 1	1	Instr. Control / Protection	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated. Continued implementation of Section 3.2, Step 6.E of Procedure 0-ONOP-103.2 applies.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
3	PTN	3	MSS / 072	5613-M-3072 SH 1	1	Instr. Control / Protection	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated. Continued implementation of Section 3.2, Step 6.E of Procedure 0-ONOP-103.2 applies.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
4	PTN	3	MSS / 072	5613-M-3072 SH 1	1	Motor Operator Valve	MSIV Bypass (2" MOV) (normaly closed; one per MSIV) Includes position switch	No	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Likely to be mounted in close proximity to MSIVs such that normal process flow will keep 2" line and MOV warm. Include with global freeze evaluation for MOVs	
5	PTN	3	MSS / 072	5613-M-3072 SH 1	1	Instr. Control / Protection	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated. Continued implementation of Section 3.2, Step 6.E of Procedure 0-ONOP-103.2 applies.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
6	PTN	3	MSS / 072	5613-M-3072 SH 1	1	Vents / Drains / Misc. Connections	capped pipe (x2, each MS line)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Likely to be mounted in close proximity to MS lines such that normal process flow will keep the capped line warm.	
7	PTN	3	MSS / 072	5613-M-3072 SH 1	2	Piping	6", 10", 14", 30" piping Main Steam Lines to atmos dump valves, and silencer	Standby	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. 6" portion upstream of atmos steam dump expected to be short. Main steam piping will be hot.	
8	PTN	3	MSS / 072	5613-M-3072 SH 1	3	Piping	14", 12", 10" piping	Standby	**TS 3.7.1.1 - All MS safety valves shall be operable (4hr LCO)** MS Safety valves must be available for passive plant cooldown following closures of MSIVs and/or seismic event.	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Branches to safety valves from MS piping are large piping. With MS process flow (hot), and large piping, MS safety valves are at low to no risk of freezing or failure.	
9	PTN	3	MSS / 072	5613-M-3072 SH 1	3	Relief Valves	MS Safety relief valves (x4 per steam line)	Standby	**TS 3.7.1.1 - All MS safety valves shall be operable (4hr LCO)** MS Safety valves must be available for passive plant cooldown following closures of MSIVs and/or seismic event.	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Branches to safety valves from MS piping are large piping. With MS process flow (hot), and large piping, MS safety valves are at low to no risk of freezing or failure.	
10	PTN	3	MSS / 072	5613-M-3072 SH 1	4	Piping	1/2" and 1 1/2" piping MSIV leakoff drain and steam trap (x1 per MSIV)	Yes	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)** Provides a drain path for collected condensate in the MSIV	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	Protect	Ensure 1/2" and 1 1/2" piping and steam trap are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping and MSIV will be hot.	
11	PTN	3	MSS / 072	5613-M-3072 SH 1	4	Strainers	1/2" steam trap (x1 per line)	Yes	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)** Class B pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	Protect	Ensure steam trap is insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping and MSIV will be hot.	

12	PTN	3	MSS / 072	5613-M-3072 SH 1	4	Piping	Steam trap bypass	No	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)** **Class B pressure boundary**	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	Protect	Ensure Steam trap bypass is insulated	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping and MSIV will be hot.	
13	PTN	3	MSS / 072	5613-M-3072 SH 1	4	Vents / Drains / Misc. Connections	Drain from 1/2" line (x1 per MSIV drain) 2 closed root valves.	No	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)** Provides a drain path for collected condensate in the MSIV	Dead Leg	Protect	Ensure drain is insulated	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping and MSIV will be hot.	
14	PTN	3	MSS / 072	5613-M-3072 SH 1	5	Piping	3" piping (x1 per main steam line)	Yes	**TS 3.7.1.2 - two independent AFW Trains, including 3 steam supply flowpaths, 3 pumps, and associated water discharge flowpaths shall be OPERABLE** steam supply to turbine driven AFW pump.	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Minimum steam flow through this 3" line, then 2" steam trap line to condenser keep line warm when Aux Feedwater steam supply valves are closed.	5613-M-3075 SH 1
15	PTN	3	MSS / 072	5613-M-3072 SH 1	6	Piping	30" main steam supply piping to turbine stop valves (x2)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		5613-M-3089 SH 1
16	PTN	3	MSS / 072	5613-M-3072 SH 1	6	Instr. Local	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated. Continued implementation of Section 3.2, Step 6.E of Procedure 0-ONOP-103.2 applies.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
17	PTN	3	MSS / 072	5613-M-3072 SH 1	7	Piping	24" and 8" main steam supply to Steam Dump Header and MSR reheaters (tubeside)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		5613-M-3072 SH 2
18	PTN	3	MSS / 072	5613-M-3072 SH 1	8	Piping	Size unknown - estimate 1" or 2" Tubine stop valve steam supply condensate drain.	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. Process fluid will be flowing and hot.	5613-M-3014 SH 1
19	PTN	3	MSS / 072	5613-M-3072 SH 1	8	Strainers	steam trap (x1 per line)	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. Process fluid will be flowing and hot.	
20	PTN	3	MSS / 072	5613-M-3072 SH 1	8	Piping	Size unknown - estimate 1" or 2" Steam trap bypass	No	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of pipe in proximity to active process line. Process fluid will be flowing and hot.	
21	PTN	3	MSS / 072	5613-M-3072 SH 1	8	Vents / Drains / Misc. Connections	Drains from steam traps and active line closed root valves.	No	Maintain Steam Boundary	Dead Leg	Protect	Ensure drains are insulated	Inspect during walkdown, insulation may already be present. Evaluate length of drain against dead leg freeze criteria. Process fluid will be flowing and hot.	
22	PTN	3	MSS / 072	5613-M-3072 SH 1	9	Piping	1" piping Drains from turbine stop valves - return to steam header	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. Process fluid will be flowing and hot.	5613-M-3089 SH 1
23	PTN	3	MSS / 072	5613-M-3072 SH 1	10	Piping	4" steam supply to Auxiliary Steam Header	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		5613-M-3084 SH 2
24	PTN	3	MSS / 072	5613-M-3072 SH 1	11	Piping	3/4" piping; 3/8" tubing Main steam to Secondary sample coolers (x3)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. However, small dia pipe/tube should be insulated	Protect	Ensure pipe and tubing are insulated. This is likely on a lower level of the TB and so a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Process fluid will be flowing and hot.	5613-M-3032 SH 2

25	PTN	3	MSS / 072	5613-M-3072 SH 1	11	Instr. Local	Temporary Instrument Port Pressure (PX) (1 per MS line) Closed root valve; 3/8" tubing Main steam to Secondary sample coolers (x3)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Process fluid will be flowing and hot.	
26	PTN	3	MSS / 072	5613-M-3072 SH 1	12	Piping	3/4" piping (x3) Main steam to Wet Layup System	No	None - not active during normal operation Main steam pressure boundary	Dead Leg	Protect	Insulate 3/4" piping that may be exposed to outdoor conditions.	MS supply to wet layup system is isolated during normal operation. Downsteam valves SGWL-3-024, -022, -028, -030, -046, and -048 are locked closed during normal operation. See Dwg 5613-N-3078 SH 1, Note 4.	5613-N-3078 SH 1, Note 4
27	PTN	3	MSS / 072	5613-M-3072 SH 2	1	Piping	24" Steam dump header	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		
28	PTN	3	MSS / 072	5613-M-3072 SH 2	2	Piping	10", 8" Main steam piping to MSRs (x4)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		
29	PTN	3	MSS / 072	5613-M-3072 SH 2	2	Instr. Local	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Main line will be flowing and hot.	
30	PTN	3	MSS / 072	5613-M-3072 SH 2	2	Instr. Local	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Main line will be flowing and hot.	
31	PTN	3	MSS / 072	5613-M-3072 SH 2	2	Motor Operator Valve	8" MOV primary steam inlet to MSRs. MOV-3-1431, -1432, -1433, -1434	Yes	None	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Include with global freeze evaluation for MOVs.	
32	PTN	3	MSS / 072	5613-M-3072 SH 2	2	Vents / Drains / Misc. Connections	3/4" vent one per MSR inlet	No	None	Dead Leg	Protect	Ensure vent and vent valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent piping and distance of valve to the active process line. Main line will be flowing and hot.	
33	PTN	3	MSS / 072	5613-M-3072 SH 2	3	Piping	8" piping "Timing Loop" (MOV bypass) Contains temperature control valve (MSR inlet) one per MSR	No	None	Stagnant line, connected to flowing steam line.	Mitigate	Consider cycling the control valve periodically (once per 24 hours) to keep line warm [2% freeze criteria].	Inspect during walkdown, insulation may already be present. Main line will be flowing and hot.	
34	PTN	3	MSS / 072	5613-M-3072 SH 2	3	Vents / Drains / Misc. Connections	3/4" Drain one per timing loop	No	None	Dead Leg	Protect	Ensure drain and drain valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of drain piping and distance of valve to the active process line. Main line likely to be warm with intermitent operation and connection to main steam line to MSR.	
35	PTN	3	MSS / 072	5613-M-3072 SH 2	4	Piping	1" piping "purge loop" (MOV bypass) Contains air operated control valve (MSR inlet) one per MSR	No	None	Stagnant line, connected to flowing steam line.	Mitigate	Given small diameter of pipe (1") ensure line is insulated. Consider cycling the control valve periodically (every 4-6 hours) to keep line warm [2% freeze criteria].	Inspect during walkdown, insulation may already be present. Main line will be flowing and hot.	
36	PTN	3	MSS / 072	5613-M-3072 SH 2	5	Piping	4" piping (x2) (MSR B to A supply crosstie, MSR D to C supply crosstie) 1/2" piping with steam traps (x10)	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Process fluid will be flowing and hot.	
37	PTN	3	MSS / 072	5613-M-3072 SH 2	5	Strainers	Steam trap branches from main supply lines (x10)	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing.	None	Ensure each steam trap bypass (isolated) is insulated to prevent freezing. Insulate drain connection from each steam trap.	Inspect during walkdown, insulation may already be present. Evaluate length of drain piping and distance of valve to the active process line. Process fluid will be flowing and hot.	

38	PTN	3	MSS / 072	5613-M-3072 SH 2	5	Instr. Local	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Main line will be flowing and hot.	
39	PTN	3	MSS / 072	5613-M-3072 SH 2	5	Vents / Drains / Misc. Connections	misc drains upstream of steam traps	No	None	Dead Leg	Protect	Ensure drain and drain valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of drain piping and distance of valve to the active process line. Main line likely to be warm with steam flow.	
40	PTN	3	MSS / 072	5613-M-3072 SH 2	6	Piping	12", 10", 18" Piping Includes 10" hydraulic steam dump valves. Steam dump header to steam dump valves, and discharge to condensers (x4)	Standby	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Steam dump valves closed during normal operation, but minimum steam flow through dump valve leakoffs keep line warm and prevent freezing. Expect that steam dump lines are already insulated and in lower levels of the TB (partially enclosed.	
41	PTN	3	MSS / 072	5613-M-3072 SH 2	6	Vents / Drains / Misc. Connections	3/4" Drain (upstream of CV-3-2827)	No	Maintain Steam Boundary	Dead Leg	Protect	Ensure drain and drain valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of drain piping and distance of valve to the active process line. Main line likely to be warm with steam flow.	
42	PTN	3	MSS / 072	5613-M-3072 SH 2	7	Piping	Size unknown - estimate 1" or 2" Valve leakoff drain lines from steam dump valves to main condenser.	Yes	None	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Steam dump valves closed during normal operation, but minimum steam flow through dump valve leakoffs keep line warm and prevent freezing. Expect that steam dump lines are already insulated and in lower levels of the TB (partially enclosed.	
43	PTN	3	MSS / 072	5613-M-3072 SH 2	8	Piping	Hydraulic oil lines for steam dump valve actuator.	Standby	None	Hydraulic oil likely has very low (below 0°F) freezing point. Freezing of valve hydraulics unlikely.	None	None	Inspect during walkdown for exposure of hydraulic lines to extreme outdoor conditions., likely in lower level of TB (partially enclosed), and close to condensers. Steam dump valve opening time is not critical to plant operation or safety function. No concern if hydraulic fluid is slightly more viscous because of low outdoor temperatures.	
44	PTN	3	MSS / 072	5613-M-3072 SH 2	R A, B, C, ar	Heat Exchangers	MSR A, B, C, and D	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, expect MSR is fully insulated. MSR will be hot, and no susceptible to freezing.	
45	PTN	3	MSS / 072	5613-M-3072 SH 2	R A, B, C, ar	Instr. Control / Protection	Temperature Element (TE), temperature measurement is used as input into temperature control valve on "timing loop" (MSR steam inlet)	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure temperature element is insulated.	Inspect during walkdown, expect MSR is fully insulated. Ensure temperature element is insulated. MSR will be hot, and no susceptible to freezing.	
46	PTN	3	MSS / 072	5613-M-3072 SH 3	1	Piping	1" instrument air piping, and MSIV valve hold open components	Standby	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)**	Instrument air lines will not freeze/fail	None	None	No components on this drawing are susceptible to moisture accumulation and freezing. Inst Air lines (dry air) MSIV body and valve stem - warm due to flowing steam.	
1	PTN	3	COND / 073	5613-M-3073, Sh. 1	1	Piping	20" & 30" condensate suction Piping, pumps A, B, C	Yes	Required for power generation	Normally flowing	None	None		
2	PTN	3	COND / 073	5613-M-3073, Sh. 1	1	Vents / Drains / Misc. Connections	manual vent, drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
3	PTN	3	COND / 073	5613-M-3073, Sh. 1	1	Instr. Local	suction pressure gages	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
4	PTN	3	COND / 073	5613-M-3073, Sh. 1	1	Relief Valves	relief valve	No	N/A	None	None	None		
5	PTN	3	COND / 073	5613-M-3073, Sh. 1	2	Piping	1" & 1/2" condensate recirc to pump seals	Yes	Required for power generation	Normally flowing	None	None		
6	PTN	3	COND / 073	5613-M-3073, Sh. 1	2	Vents / Drains / Misc. Connections	manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
7	PTN	3	COND / 073	5613-M-3073, Sh. 1	2	Strainers	condensate pump seal supply strainers	Yes	Required for power generation	None	None	None	Normally flowing	
8	PTN	3	COND / 073	5613-M-3073, Sh. 1	2	Instr. Local	condensate pump seal supply pressure gages	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
9	PTN	3	COND / 073	5613-M-3073, Sh. 1	3	Piping	18", 20" & 24" condensate discharge piping,	Yes	Required for power generation	None	None	None: lines normally flowing		
10	PTN	3	COND / 073	5613-M-3073, Sh. 1	3	Instr. Annunciation / Indication	Condensate Pumps discharge line flow transmitter / indication	Yes	Required for power generation	Condensate flow control and annunciation in control room	Protect	Insulate and heat trace flow transmitter sensing lines		

11	PTN	3	COND / 073	5613-M-3073, Sh. 1	3	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
12	PTN	3	COND / 073	5613-M-3073, Sh. 1	3	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
13	PTN	3	COND / 073	5613-M-3073, Sh. 1	3	Vents / Drains / Misc. Connections	bypass/warmup valves around main isolation gate valves (x3)	No	N/A	A break at the bypass valves could compromise operating condensate header	Protect	Insulate and heat trace Alternative: routing through warm regions of the TB or proximity of isolation valve to flowing condensate header may preclude freezing		
14	PTN	3	COND / 073	5613-M-3073, Sh. 1	3	Instr. Local	local condensate pump discharge pressure instruments	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
15	PTN	3	COND / 073	5613-M-3073, Sh. 1	4	Piping	2" condensate pump casing vent return to hotwell	Yes	N/A	Normally flowing	None	None		
16	PTN	3	COND / 073	5613-M-3073, Sh. 1	5	Piping	10" condensate pump recirc lines upstream of normally closed isolation	No	N/A	Break in these legs could compromise operating condensate header (upstream side of isolation valve) or condenser vacuum (downstream side)	Protect	Insulate, 2" Alternative: location in warm regions of the TB may preclude the need to protect	Condensate lines are likely insulated already	
17	PTN	3	COND / 073	5613-M-3073, Sh. 1	5	Instr. Annunciation / Indication	Condensate Pumps recirc. line flow transmitter / indication	Standby	N/A	Dead Leg	Protect	Insulate and heat trace.		
18	PTN	3	COND / 073	5613-M-3073, Sh. 1	5	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
19	PTN	3	COND / 073	5613-M-3073, Sh. 1	5	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
20	PTN	3	COND / 073	5613-M-3073, Sh. 1	6	Piping	1/2" & 1/4" condensate header sample lines	No	N/A	Breaks in these legs could compromise operating condensate header and preclude sampling capability	Protect	Insulate and heat trace Alternative 1: location in warm regions of the TB may preclude the need to protect Alternative 2: maintain trickle flow to sampling panel		
21	PTN	3	COND / 073	5613-M-3073, Sh. 1	6	Instr. Local	local condensate discharge sample line pressure instruments	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
22	PTN	3	COND / 073	5613-M-3073, Sh. 1	7	Piping	1" condensate pump seal supply from condensate header	Yes	Required for power generation	None	None	None: lines normally flowing		
23	PTN	3	COND / 073	5613-M-3073, Sh. 1	8	Piping	1/4", 1/2", & 1" hotwell sample pumps seal supply from condensate storage & condensate header	No	N/A	Break in this dead leg could compromise operating condensate header, CST inventory, and preclude sample pump operation.	Protect	Insulate and heat trace Alternative: routing through warm regions of the TB may preclude the need to heat trace		
24	PTN	3	COND / 073	5613-M-3073, Sh. 1	9	Piping	2" LP turbine steam exhaust hood spray	No	N/A	Breaks in this line could compromise operating condensate header or condenser vacuum.	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
25	PTN	3	COND / 073	5613-M-3073, Sh. 1	10	Piping	3/8" & 1/2" loop seal fill line	No	N/A	Breaks in this line could compromise operating condensate header or condenser vacuum.	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
26	PTN	3	COND / 073	5613-M-3073, Sh. 2	1	Piping	24" condensate line from the main condensate header to the LP heaters	Yes	Required for power generation	Normally flowing	None	None		
27	PTN	3	COND / 073	5613-M-3073, Sh. 2	1	Vents / Drains / Misc. Connections	manual vent, drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
28	PTN	3	COND / 073	5613-M-3073, Sh. 2	1	Instr. Local	temperature & pressure gages	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
29	PTN	3	COND / 073	5613-M-3073, Sh. 2	1	Instr. Annunciation / Indication	Condensate line flow transmitter / indication	Yes	Required for power generation	Condensate flow control and annunciation in control room	Protect	Insulate and heat trace flow transmitter sensing lines		
30	PTN	3	COND / 073	5613-M-3073, Sh. 2	2	Piping	16" condensate line from heater drains to LP heaters bypass and FW pump discharge	Yes	Required for power generation	Normally flowing	None	None		

31	PTN	3	COND / 073	5613-M-3073, Sh. 2	3	Piping	14" condensate bypass line to LP heaters bypass and FW pump discharge	No	N/A	Breaks in this line could compromise operating condensate header or condenser vacuum.	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
32	PTN	3	COND / 073	5613-M-3073, Sh. 2	3	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
33	PTN	3	COND / 073	5613-M-3073, Sh. 2	4	Piping	2" condensate line for surge tank makeup	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
34	PTN	3	COND / 073	5613-M-3073, Sh. 2	5	Piping	2" condensate line to desuperheater valve (abandoned) and chem. Addition	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
35	PTN	3	COND / 073	5613-M-3073, Sh. 2	6	Piping	1/2" condensate line from CST	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
36	PTN	3	COND / 073	5613-M-3073, Sh. 2	7	Piping	6" wet layup line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
37	PTN	3	COND / 073	5613-M-3073, Sh. 2	8	Piping	4" condensate line to discharge canal	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate	Entire line is outside the TB. A portion of the line is buried.	
38	PTN	3	COND / 073	5613-M-3073, Sh. 2	8	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.	Entire line is outside the TB.	
39	PTN	3	COND / 073	5613-M-3073, Sh. 2	9	Piping	4" condensate line to heater drain pump suction	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
40	PTN	3	COND / 073	5613-M-3073, Sh. 2	10	Piping	14" condensate line through the gland steam condenser	Yes	Required for power generation	Normally flowing	None	None		
41	PTN	3	COND / 073	5613-M-3073, Sh. 2	10	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
42	PTN	3	COND / 073	5613-M-3073, Sh. 2	11	Piping	6" & 18" condensate line to DWST	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
43	PTN	3	COND / 073	5613-M-3073, Sh. 2	11	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
44	PTN	3	COND / 073	5613-M-3073, Sh. 2	11	Instr. Local	pressure gage	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
45	PTN	3	COND / 073	5613-M-3073, Sh. 2	12	Piping	4" condensate line to FW pump seals	Yes	Required for power generation	Normally flowing	None	None		
46	PTN	3	COND / 073	5613-M-3073, Sh. 2	13	Piping	10" condensate line to condenser	Yes	Required for power generation	Normally flowing	None	None		
47	PTN	3	COND / 073	5613-M-3073, Sh. 2	13	Instr. Annunciation / Indication	Condensate line flow transmitter / indication	Yes	Required for power generation	Condensate flow control and annunciation in control room	Protect	Insulate and heat trace flow transmitter sensing lines		
48	PTN	3	COND / 073	5613-M-3073, Sh. 2	13	Piping	8" control valve bypass	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
49	PTN	3	COND / 073	5613-M-3073, Sh. 2	14	Piping	1/2" chemical injection line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
50	PTN	3	COND / 073	5613-M-3073, Sh. 2	15	Piping	1/2" chemical injection line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
51	PTN	3	COND / 073	5613-M-3073, Sh. 2	16	Piping	18"SJAE condenser bypass line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace Alternative: location in warm regions of the TB may preclude the need to insulate		
2	PTN	3	COND / 073	5613-M-3074, Sh. 2	1	Piping	8" & 10" AFW pumps supply	Yes	TS 3.7.1.3 - Cond Storage Tank min volume 210,000 gal. **Action:** Restore volume within 4 hrs, or attain HSB in 6 hrs.	Break in this line could compromise CST inventory and diminish AFW pump supply.	Protect	Insulate, 2" Alternative: location in warm regions of the TB may preclude the need to protect	Condensate lines are likely insulated already	

3	PTN	3	COND / 073	5613-M-3074, Sh. 2	1	Vents / Drains / Misc. Connections	manual vent	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
52	PTN	3	COND / 073	5613-M-3073, Sh. 3	1	Piping	24" main condensate header upstream of feed heaters	Yes	Required for power generation	None	None	None: lines normally flowing		
4	PTN	3	COND / 073	5613-M-3073, Sh. 3	2	Piping	4" & 10" condensate transfer pump suction	Standby	Required for power generation	Ensure availability of routine makeup water for power operation	Protect	Insulate and heat trace		
5	PTN	3	COND / 073	5613-M-3073, Sh. 3	2	Vents / Drains / Misc. Connections	Condensate Transfer pump vent	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
6	PTN	3	COND / 073	5613-M-3073, Sh. 3	2	Tank	chemical addition tank	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
53	PTN	3	COND / 073	5613-M-3073, Sh. 3	2	Piping	18" condensate through LP heaters 1A, 2A, 3A, 4A, 5A	Yes	Required for power generation	Normally flowing	None	None		
54	PTN	3	COND / 073	5613-M-3073, Sh. 3	2	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
55	PTN	3	COND / 073	5613-M-3073, Sh. 3	2	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
56	PTN	3	COND / 073	5613-M-3073, Sh. 3	2	Vents / Drains / Misc. Connections	Pressure test connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
57	PTN	3	COND / 073	5613-M-3073, Sh. 3	2	Relief Valves	LP heater condensate side relief valves	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.	Relief valve not required at power	
7	PTN	3	COND / 073	5613-M-3073, Sh. 3	3	Piping	6" condensate transfer pump discharge piping	Standby	Required for power generation	Ensure availability of routine makeup water for power operation	Protect	Insulate and heat trace		
8	PTN	3	COND / 073	5613-M-3073, Sh. 3	3	Instr. Local	Condensate Transfer pump discharge pressure PI	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
9	PTN	3	COND / 073	5613-M-3073, Sh. 3	3	Piping	6" crosstie with Unit 4 condensate transfer	No	N/A	Dead Leg	Protect	Insulate and heat trace.	Line normally isolated from header.	
58	PTN	3	COND / 073	5613-M-3073, Sh. 3	3	Piping	18" condensate through LP heaters 1B, 2B, 3B, 4B, 5B	Yes	Required for power generation	Normally flowing	None	None		
59	PTN	3	COND / 073	5613-M-3073, Sh. 3	3	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
60	PTN	3	COND / 073	5613-M-3073, Sh. 3	3	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
61	PTN	3	COND / 073	5613-M-3073, Sh. 3	3	Vents / Drains / Misc. Connections	Pressure test connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
62	PTN	3	COND / 073	5613-M-3073, Sh. 3	3	Relief Valves	LP heater condensate side relief valves	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.	Relief valve not required at power	
10	PTN	3	COND / 073	5613-M-3073, Sh. 3	4	Piping	1" condensate pump seal supply from condensate header	Yes	Required for power generation	None	None	None: lines normally flowing		
63	PTN	3	COND / 073	5613-M-3073, Sh. 3	4	Piping	14" FWH 1A, 1B, 2A, 2B bypass	No	N/A	Break in this line could compromise main condensate supply line	Mitigate	Insulate, 1" Alternative: routing through warm regions of the TB may preclude the need to insulate	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
11	PTN	3	COND / 073	5613-M-3073, Sh. 3	5	Piping	10" condensate reject to DWST	Standby	Required for power generation	Ensure availability of routine water storage for power operation	Protect	Insulate and heat trace		
64	PTN	3	COND / 073	5613-M-3073, Sh. 3	5	Piping	2" and 3" connection to wet layup system (condensate side of isolation)	No	N/A	Break in this leg could compromise operating condensate header	Protect	Insulate and heat trace, up through first isolation valve Alternative: routing through warm regions of the TB may preclude the need to insulate		
12	PTN	3	COND / 073	5613-M-3073, Sh. 3	6	Piping	3" condensate recovery return	Standby	Required for power generation	Ensure availability of routine water storage for power operation	Protect	Insulate and heat trace		
65	PTN	3	COND / 073	5613-M-3073, Sh. 3	6	Piping	14" bypass lines around LP htrs 3A, 3B, 4A, 4B, 5A, and 5B	No	N/A	Break in these leg could compromise operating feedwater header	Protect	Insulate, 1" (see remarks) Alternative: routing through warm regions of the TB or proximity of isolation valve to flowing condensate header may preclude freezing	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
66	PTN	3	COND / 073	5613-M-3073, Sh. 3	6	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		

67	PTN	3	COND / 073	5613-M-3073, Sh. 3	6	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
13	PTN	3	COND / 073	5613-M-3073, Sh. 3	7	Piping	6" condensate return	Standby	Required for power generation	Ensure availability of routine water storage for power operation	Protect	Insulate and heat trace		
68	PTN	3	COND / 073	5613-M-3073, Sh. 3	7	Piping	12" and 16" heater drain tank pump discharge line	Yes	Required for power generation	Normally flowing	None	None		
14	PTN	3	COND / 073	5613-M-3073, Sh. 3	8	Piping	2" surge tank supply and EDG cooling water makeup	No	N/A	Dead Leg	Protect	Insulate and heat trace.	Line normally isolated from header.	
15	PTN	3	COND / 073	5613-M-3073, Sh. 3	8	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
16	PTN	3	COND / 073	5613-M-3073, Sh. 3	9	Piping	1/2"condensate system supply	No	N/A	Dead Leg	Protect	Insulate and heat trace.	Line normally isolated from header.	
17	PTN	3	COND / 073	5613-M-3073, Sh. 3	10	Piping	2" alternate surge tank supply and EDG cooling water makeup from Unit 4	Standby	Required for power generation	Ensure availability of CST supply from Unit 4	Protect	Insulate and heat trace		
18	PTN	3	COND / 073	5613-M-3073, Sh. 3	11	Piping	4" & 6" supply to chemical feed and wet layup	No	N/A	Break in this dead leg could compromise CST inventory.	Protect	Insulate and heat trace		
19	PTN	3	COND / 073	5613-M-3073, Sh. 3	12	Piping	6" primary water makeup supply to CST	Yes	N/A	Break in this dead leg could compromise CST inventory.	Protect	Insulate and heat trace		
20	PTN	3	COND / 073	5613-M-3073, Sh. 3	12	Instr. Local	flow indicator	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
21	PTN	3	COND / 073	5613-M-3073, Sh. 3	13	Piping	4" flow indicator and control valve bypass line	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
22	PTN	3	COND / 073	5613-M-3073, Sh. 3	14	Piping	2 1/2" AFW Pump recirc line	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
23	PTN	3	COND / 073	5613-M-3073, Sh. 3	15	Piping	2" and 8" CST overflow line to drain	Yes	Required for power generation	None	None	None: lines normally empty		
24	PTN	3	COND / 073	5613-M-3073, Sh. 3	16	Piping	4" CST drain	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
25	PTN	3	COND / 073	5613-M-3073, Sh. 3	16	Piping	1/2" Flex connection	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
26	PTN	3	COND / 073	5613-M-3073, Sh. 3	17	Instr. Control / Protection	CST level switch for CST makeup CV	Yes	TS 3.7.1.3 - Cond Storage Tank min volume 210,000 gal. **Action:** Restore volume within 4 hrs, or attain HSB in 6 hrs.	Maintain aux feedwater injection capability after reactor trip for sufficient duration to achieve cold shutdown.	Protect	Insulate / Heat trace.		
27	PTN	3	COND / 073	5613-M-3073, Sh. 3	17	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
28	PTN	3	COND / 073	5613-M-3073, Sh. 3	17	Piping	1" level switch piping	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
29	PTN	3	COND / 073	5613-M-3073, Sh. 3	18	Instr. Annunciation / Indication	CST level transmitter / indication	Yes	TS 3.7.1.3 - Cond Storage Tank min volume 210,000 gal. **Action:** Restore volume within 4 hrs, or attain HSB in 6 hrs.	Maintain aux feedwater injection capability after reactor trip for sufficient duration to achieve cold shutdown.	Protect	Insulate / Heat trace.		
30	PTN	3	COND / 073	5613-M-3073, Sh. 3	18	Vents / Drains / Misc. Connections	manual vents, drains and test connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
31	PTN	3	COND / 073	5613-M-3073, Sh. 3	18	Piping	3/8", 1", & 3" level transmitter piping	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
32	PTN	3	COND / 073	5613-M-3073, Sh. 3	19	Piping	6" condensate supply to feedwater system	No	N/A	Breaks in this line could compromise operating feedwater header .	Protect	Insulate and heat trace	Line normally isolated from header.	
1	PTN	3	FWS / 074	5613-M-3074, Sh. 1	1	Piping	14" & 20" FW pump suction line	Yes	Required for power generation	Normally flowing	None	None		
2	PTN	3	FWS / 074	5613-M-3074, Sh. 1	1	Instr. Local	Feed pump suction local pressure gages	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		

3	PTN	3	FWS / 074	5613-M-3074, Sh. 1	1	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
4	PTN	3	FWS / 074	5613-M-3074, Sh. 1	1	Instr. Control / Protection	Feedwater suction line pressure transmitters	Yes	Required for power generation	Feedwater suction pressure signal to DCS	Protect	Insulate and heat trace pressure transmitter sensing line		
5	PTN	3	FWS / 074	5613-M-3074, Sh. 1	1	Instr. Control / Protection	Feedwater suction line flow transmitters	Yes	Required for power generation	Feedwater suction flow signal to ADC	Protect	insulate and heat trace flow transmitter sensing lines		
6	PTN	3	FWS / 074	5613-M-3074, Sh. 1	2	Piping	18" FW pump discharge	Yes	Required for power generation	Normally flowing	None	None		
7	PTN	3	FWS / 074	5613-M-3074, Sh. 1	2	Instr. Control / Protection	Feed pump discharge pressure transmitter to recirc. CV	Yes	N/A	Feedwater discharge pressure signal to ADC	Protect	Insulate and heat trace.		
8	PTN	3	FWS / 074	5613-M-3074, Sh. 1	2	Motor Operator Valve	Feed pump discharge isolation MOVs	Yes	Close on SIAS	Normally open with process fluid flowing	None	None	Include with global freeze evaluation for MOVs	
9	PTN	3	FWS / 074	5613-M-3074, Sh. 1	2	Piping	14" FW pump discharge crosstie	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
10	PTN	3	FWS / 074	5613-M-3074, Sh. 1	3	Piping	8" FW recirc line back to FW pump suction	Standby	N/A	Break in this leg could compromise operating feedwater header	Protect	Insulate, 1" (see remarks)	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
11	PTN	3	FWS / 074	5613-M-3074, Sh. 1	3	Instr. Control / Protection	Recirc line flow transmitter	Standby	N/A	Feedwater recirc. flow signal to ADC	Protect	insulate and heat trace flow transmitters		
12	PTN	3	FWS / 074	5613-M-3074, Sh. 1	3	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
13	PTN	3	FWS / 074	5613-M-3074, Sh. 1	4	Piping	6" & 8" FW recirc line back to condenser	Standby	N/A	Break in this leg could compromise operating feedwater line or condenser vacuum	Protect	Insulate, 1" (see remarks) Alternative: Pipe geometry may result in this line being normally drained of liquid.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
14	PTN	3	FWS / 074	5613-M-3074, Sh. 1	4	Instr. Control / Protection	Recirc line flow transmitter	Standby	N/A	Feedwater recirc. flow signal to ADC	Protect	insulate and heat trace flow transmitters		
15	PTN	3	FWS / 074	5613-M-3074, Sh. 1	4	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
16	PTN	3	FWS / 074	5613-M-3074, Sh. 1	4	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
17	PTN	3	FWS / 074	5613-M-3074, Sh. 1	5	Piping	14" line from heater drain system	No	N/A	Break in this leg could compromise operating feedwater line	Protect	Insulate, 1" (see remarks)	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
18	PTN	3	FWS / 074	5613-M-3074, Sh. 2	1	Piping	18" & 24" FW pump discharge to HP FWH	Yes	Required for power generation	Normally flowing	None	None	All FW pump lube oil lines assumed to be impervious to freezing effects.	
19	PTN	3	FWS / 074	5613-M-3074, Sh. 2	1	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
20	PTN	3	FWS / 074	5613-M-3074, Sh. 2	1	Vents / Drains / Misc. Connections	Bypass/warmup valves around FWH 3-way valves	No	N/A	A break at the bypass valves could compromise operating FW header	Protect	Insulate and heat trace		
21	PTN	3	FWS / 074	5613-M-3074, Sh. 2	1	Instr. Local	Pressure & temperature indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
22	PTN	3	FWS / 074	5613-M-3074, Sh. 2	2	Piping	18" & 24" feedwater bypass around HP heaters 6A/6B	No	N/A	Break in this leg could compromise operating feedwater header	Protect	Insulate, 1"	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
23	PTN	3	FWS / 074	5613-M-3074, Sh. 2	3	Piping	FW pump lube oil cooler cooling water	Yes	Required for power generation	Normally flowing	None	None		
24	PTN	3	FWS / 074	5613-M-3074, Sh. 2	4	Piping	12" branch line off main FW header	No	N/A	Break in this leg could compromise operating feedwater header	Protect	Insulate and heat trace		
25	PTN	3	FWS / 074	5613-M-3074, Sh. 2	4	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
26	PTN	3	FWS / 074	5613-M-3074, Sh. 2	5	Piping	10" line to the condenser	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
27	PTN	3	FWS / 074	5613-M-3074, Sh. 2	6	Piping	10" line to the condenser	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
28	PTN	3	FWS / 074	5613-M-3074, Sh. 2	7	Piping	6" line to wet layup	No	N/A	Dead Leg	Protect	Insulate and heat trace.		

29	PTN	3	FWS / 074	5613-M-3074, Sh. 2	8	Piping	10" line to circ water and the discharge canal	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
30	PTN	3	FWS / 074	5613-M-3074, Sh. 2	8	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
31	PTN	3	FWS / 074	5613-M-3074, Sh. 2	9	Piping	4" FW pump seal water return	Yes	N/A	Normally flowing	None	None		
32	PTN	3	FWS / 074	5613-M-3074, Sh. 2	9	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
33	PTN	3	FWS / 074	5613-M-3074, Sh. 2	9	Instr. Local	Temperature indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
34	PTN	3	FWS / 074	5613-M-3074, Sh. 2	9	Tank	FW Pump seal water tank	Yes	N/A	Normally flowing	None	None		
35	PTN	3	FWS / 074	5613-M-3074, Sh. 2	10	Piping	2", 3" & 4" FW pump seal water supply	Yes	N/A	Normally flowing	None	None		
36	PTN	3	FWS / 074	5613-M-3074, Sh. 2	10	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
37	PTN	3	FWS / 074	5613-M-3074, Sh. 2	10	Instr. Local	Pressure & diff. pressure indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
38	PTN	3	FWS / 074	5613-M-3074, Sh. 2	11	Piping	2" & 3" FW pump seal water return to heater drain tank	Yes	N/A	Normally flowing	None	None		
39	PTN	3	FWS / 074	5613-M-3074, Sh. 2	11	Instr. Local	Pressure & temperature indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
40	PTN	3	FWS / 074	5613-M-3074, Sh. 2	11	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
41	PTN	3	FWS / 074	5613-M-3074, Sh. 2	11	Piping	3" CV bypass line	No	N/A	Break in this leg could compromise FW pump operation	Protect	Insulate and heat trace.		
42	PTN	3	FWS / 074	5613-M-3074, Sh. 2	12	Piping	3" FW pump seal water crosstie line	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
43	PTN	3	FWS / 074	5613-M-3074, Sh. 2	13	Piping	3" & 4" seal water tank level control line to the condenserFW pump seal water crosstie line	Yes	N/A	Normally flowing	None	None		
44	PTN	3	FWS / 074	5613-M-3074, Sh. 2	13	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
45	PTN	3	FWS / 074	5613-M-3074, Sh. 3	1	Piping	14" & 24" FW headers, including feed reg valves, LEFM and feed isolation valves	Yes	Required for power generation	Normally flowing	None	None		
46	PTN	3	FWS / 074	5613-M-3074, Sh. 3	1	Motor Operator Valve	motor-operated FRV isolation valve	No	N/A - not required to reposition for normal or accident	Remains open	None	None		
47	PTN	3	FWS / 074	5613-M-3074, Sh. 3	1	Instr. Control / Protection	LEFM pressure transmitters	Yes	Required for power generation	Ensure LEFM input to continuous calorimetric analysis	Protect	insulate and heat trace LEFM pressure transmitter sensing lines		
48	PTN	3	FWS / 074	5613-M-3074, Sh. 3	1	Instr. Control / Protection	Venturi flow transmitters	Yes	N/A	backup to LEFM, input to DCS	Protect	insulate and heat trace venturi flow transmitters		
49	PTN	3	FWS / 074	5613-M-3074, Sh. 3	1	Instr. Annunciation / Indication	Feed header pressure control room indication	Yes	N/A	Preserve control room feedwater pressure indication	Protect	Insulate and heat trace pressure transmitter sensing lines		
50	PTN	3	FWS / 074	5613-M-3074, Sh. 3	2	Piping	6" line from condensate transfer pumps	No	N/A	A break in this line could compromise operating FW header	Protect	Insulate and heat trace		
51	PTN	3	FWS / 074	5613-M-3074, Sh. 3	3	Piping	6" FW motor-operated FRV bypass	No	N/A	Break in this leg could compromise operating feedwater header	Protect	Insulate and heat trace	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
52	PTN	3	FWS / 074	5613-M-3074, Sh. 3	4	Piping	4" AFW piping connected to main feed headers	Standby	T.S. 3.7.1.2 - All 3 AFW pumps and two independent flow paths to remain operable. **Action:** Allowable time to restore varies by equipment inoperable: -Restore to both flow paths within 72 hrs. -Restore to one flow path within 2 hrs. -Restore single steam driven pump: 4 hrs.	Maintain aux feedwater injection capability after reactor trip for sensible and decay heat removal to achieve cold shutdown.	Protect	Insulate / Heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
53	PTN	3	FWS / 074	5613-M-3074, Sh. 3	5	Piping	1/2" Piping (hydrazine injection)	Yes	N/A	Normally flowing	None	None		
54	PTN	3	FWS / 074	5613-M-3074, Sh. 3	6	Piping	2" line to/from wet layup	No	N/A	A break at the bypass valves could compromise operating FW header	Protect	Insulate and heat trace		

55	PTN	3	FWS / 074	5613-M-3074, Sh. 4	1	Piping	6" blowdown piping	Yes	Required for power generation	Normally flowing	None	None		
56	PTN	3	FWS / 074	5613-M-3074, Sh. 4	1	Vents / Drains / Misc. Connections	3/4" test connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
57	PTN	3	FWS / 074	5613-M-3074, Sh. 4	1	Vents / Drains / Misc. Connections	3/4" manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
58	PTN	3	FWS / 074	5613-M-3074, Sh. 4	1	Instr. Control / Protection	Flow transmitters	Yes	N/A	Blowdown flow signal to ADC	Protect	Insulate and heat trace.		
59	PTN	3	FWS / 074	5613-M-3074, Sh. 4	1	Instr. Local	Temperature indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
60	PTN	3	FWS / 074	5613-M-3074, Sh. 4	1	Piping	3/4" & 2" CV bypass line	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
61	PTN	3	FWS / 074	5613-M-3074, Sh. 4	2	Tank	7250 gal. SG Blowdown Tank	Yes	N/A	Normally flowing, maintained at >350 F	None	None		
62	PTN	3	FWS / 074	5613-M-3074, Sh. 4	2	Piping	6", 8" & 14" Blowdown Tank relief lines	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
63	PTN	3	FWS / 074	5613-M-3074, Sh. 4	2	Piping	8" & 10" Blowdown Tank relief valve discharge lines	No	N/A	Open to drain	None	None		
64	PTN	3	FWS / 074	5613-M-3074, Sh. 4	2	Instr. Control / Protection	Blowdown Tank level instrumentation lines	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
65	PTN	3	FWS / 074	5613-M-3074, Sh. 4	3	Piping	6", 8", & 10" SG Blowdown Tank discharge line	Yes	N/A	Normally flowing	None	None		
66	PTN	3	FWS / 074	5613-M-3074, Sh. 4	3	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
67	PTN	3	FWS / 074	5613-M-3074, Sh. 4	3	Piping	6" isolated abandoned HX line	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
68	PTN	3	FWS / 074	5613-M-3074, Sh. 4	3	Vents / Drains / Misc. Connections	Relief Valve	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
69	PTN	3	FWS / 074	5613-M-3074, Sh. 4	3	Piping	10" isolated blind flanged line	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
70	PTN	3	FWS / 074	5613-M-3074, Sh. 4	3	Instr. Local	Flow transmitter	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
71	PTN	3	FWS / 074	5613-M-3074, Sh. 4	4	Piping	1 1/2" & 2" blowdown tank steam discharge to the condenser	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
72	PTN	3	FWS / 074	5613-M-3074, Sh. 4	4	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
73	PTN	3	FWS / 074	5613-M-3074, Sh. 4	4	Piping	3/4" strainer bypass	No	N/A	Dead Leg	None	Insulate and heat trace.		
74	PTN	3	FWS / 074	5613-M-3074, Sh. 4	5	Piping	12", 16", & 20" blowdown tank steam discharge to extraction steam	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
75	PTN	3	FWS / 074	5613-M-3074, Sh. 4	5	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
76	PTN	3	FWS / 074	5613-M-3074, Sh. 4	6	Piping	1" SG Blowdown sample system return	Yes	N/A	Normally flowing	None	None		
77	PTN	3	FWS / 074	5613-M-3074, Sh. 4	7	Piping	2 1/2" waste holdup tank connection	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
78	PTN	3	FWS / 074	5613-M-3074, Sh. 4	8	Piping	2" wet layup line	No	N/A	Dead Leg	None	Insulate and heat trace.		
79	PTN	3	FWS / 074	5613-M-3074, Sh. 4	9	Piping	20" Blowdown Tank exhaust to atmosphere	No	N/A	Line is void of water due to open drain	None	None		
1	PTN	3	FWS / 074	5613-M-3074, Sh. 5	1	Instr. Control / Protection	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	Yes	Required for power generation	Ensure LEFM input to continuous calorimetric analysis	Protect	Heat Trace and Insulate LEFM insturment transmitter sensing lines.		
2	PTN	3	FWS / 074	5613-M-3074, Sh. 5	2	Instr. Control / Protection	Air and instrument electrical lines for FW Regulating Valve Positioners	Yes	Required for power generation	Ensure required air for FCV positioning	None	No Protection Recommended	No protection required for the FW Reg Vlv Positioners - fully controlled by instrument air and instrument electrical, which is not subject to freezing or adverse impact by cold weather.	
1	PTN	3	AFWS / 075	5613-M-3075 Sh 1	1	Piping	3" steam piping up to AFW pump start signal MOV	Yes	Tech Spec 3.7.1.2 requires 2 independent AFW trains including 3 steam supplies, 3 pumps and discharge flowpaths	Maintain AFW capability for decay heat removal	none	check insulated, piping maintained in standby, should provide sufficient heat, verifiy via walkdown	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	

2	PTN	3	AFWS / 075	5613-M-3075 Sh 1	1	Vents / Drains / Misc. Connections	3/4" Test Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
3	PTN	3	AFWS / 075	5613-M-3075 Sh 1	1	Motor Operator Valve	MOVS from Main Steam to Steam Turbines, normally closed	No	Tech Spec 3.7.1.2	Maintain AFW capability for decay heat removal		Determine if MOV is susceptible to be adversely impacted by cold weather and if protection is required.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
4	PTN	3	AFWS / 075	5613-m-3075 Sh 1	2	Piping	2", 1/2" steam drain trap piping	Yes	Tech Spec 3.7.1.2	Maintain AFW capability for decay heat removal	none	check insulated, piping maintained in standby, should provide sufficient heat, verifiy via walkdown	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
5	PTN	3	AFWS / 075	5613-m-3075 Sh 1	2	Vents / Drains / Misc. Connections	1" connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
6	PTN	3	AFWS / 075	5613-m-3075 Sh 1	3	Piping	manual drain trap piping, 1/2"	Yes	Tech Spec 3.7.1.2	manually operated line, during normal system operation, extended length of line may be subject to freezing	Mitigate	Check insulation, check routing. May be candidate for operator blowdown or trickle flow.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
7	PTN	3	AFWS / 075	5613-m-3075 Sh 1	4	Piping	4" steam piping, downstream of start signal MOV to AFW pump turbines	No	Tech Spec 3.7.1.2	Maintain AFW capability for decay heat removal	protect	Check if insuled and routing. Determine how much residual water can be held in the piping, if that would be subject to freezing. If already insulated and minimal amount of water could freeze in line, no additional protection required.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
8	PTN	3	AFWS / 075	5613-m-3075 Sh 1	4	Vents / Drains / Misc. Connections	3/4" and 1/2" connections	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Check if insuled and routing. Determine how much residual water can be held in the piping, if that would be subject to freezing. If already insulated and minimal amount of water could freeze in line, no additional protection required.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
9	PTN	3	AFWS / 075	5613-m-3075 Sh 1	5	Piping	1/2" steam drain trap downstream piping	Yes	None	-	none	No protection required, NNS piping		
10	PTN	3	AFWS / 075	5613-m-3075 Sh 1	6	Piping	1/2" bypass pipe, SR side	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
11	PTN	3	AFWS / 075	5613-m-3075 Sh 1	7	Piping	1/2" bypass pipe, NNS side	No	None	-	none	No protection required, NNS piping		
12	PTN	3	AFWS / 075	5613-m-3075 Sh 1	8	Piping	4" & 6" piping from aux steam, NNS	No	None	-	none	No protection required, NNS piping		
13	PTN	3	AFWS / 075	5613-M-3075 Sh 2	1	Piping	4" and 6" AFW piping, up to control valve	No	Tech Spec 3.7.1.2 requires 2 independent AFW trains including 3 steam supplies, 3 pumps and discharge flowpaths	maintain AFW capability for decay heat removal	protect	Possible insulate / heat trace to maintain full flow (<2% freezing), depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
14	PTN	3	AFWS / 075	5613-M-3075 Sh 2	1	Vents / Drains / Misc. Connections	3/4" Vent & 1" Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
15	PTN	3	AFWS / 075	5613-M-3075 Sh 2	2	Piping	4" AFW piping, downstream control valve	No	Tech Spec 3.7.1.2	maintain AFW capability for decay heat removal	protect	Possible insulate / heat trace to maintain full flow, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
16	PTN	3	AFWS / 075	5613-M-3075 Sh 2	3	Piping	1/2" and 3/8" tubing for air / N2 for AFW control valve positioner	No	Tech Spec 3.7.1.2		none	Air/N2 not susceptable to freezing.	N2 and air tubing for control of AFW flow. N2 and air not susceptable to freezing.	
17	PTN	3	AFWS / 075	5613-M-3075 Sh 2	4	Instr. Control / Protection	1/2" tubing for AFW flow element / transmitter	No	Tech Spec 3.7.1.2	maintain AFW capability for decay heat removal	protect	Possible insulate / heat trace, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
18	PTN	3	AFWS / 075	5613-M-3075 Sh 3	1	Piping	N2 tubing and instrumentation	No			None	N2 not susceptable to freezing.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
1	PTN	3	SGWLU / 078	5613-M-3078, Sh. 1	1	Piping	1" Pipe up to normally closed valve SGWL-3-001	No	Primary Makeup Water System Pressure Boundary (NNS)	Dead leg	None	No Protection Required	No adverse impact on unit operation or required TS action for break in this pipe	
2	PTN	3	SGWLU / 078	5613-M-3078, Sh. 1	2	Piping	2" Pipe up to locked closed valves during normal operation SGWL-3-011, -031, -049	No	FW System Pressure Boundary (SR)	Dead leg	Protect	Options: 1. 4" Insulation to prevent >25% freezing for the piping 2. Heat Trace & Insulate		
3	PTN	3	SGWLU / 078	5613-M-3078, Sh. 1	3	Piping	1" Pipe up to normally closed valve SGWL-3-006	No	Nitrogen line (NNS)	Dead leg	None	No Protection Required	Air line, not subject to freezing	
4	PTN	3	SGWLU / 078	5613-M-3078, Sh. 1	4	Piping	2" Pipe up to locked closed valves during normal operation SGWL-3-007, -025, -042	No	FW System Pressure Boundary (SR)	Dead leg	Protect	Options: 1. 4" Insulation to prevent >25% freezing for the piping 2. Heat Trace & Insulate		
5	PTN	3	SGWLU / 078	5613-M-3078, Sh. 1	5	Piping	3/4" Pipe to SGWL-3-022, -028, -046	No	FW System Pressure Boundary (SR)	Dead leg	Protect	Heat Trace & Insulate		
6	PTN	3	SGWLU / 078	5613-M-3078, Sh. 1	6	Piping	IA to PICs		IA Pressure Boundary	Dead leg	None	No Protection Required	Air line, not subject to freezing	
7	PTN	3	SGWLU / 078	5613-M-3078, Sh. 1	-		-		-	-		-	The SG Wet Layup System is used during RFO conditions only. Equipment is isolated during normal operation via closed valves and spectacle flanges. Segments connected to other systems up to isolation points are evaluated, but everything inside the isolation points for the SGWL System are not evaluated.	

1	PTN	3	080	5613-M-3080 SH 1	1	Piping	3" piping from gland seal condenser drain	Yes	None	Not required for Power operation; no safety function	None	None	Gland steam condenser and condenser receiver are located on ground floor of TB (partially enclosed). A break in this line should not effect power operation, since the condensate collected is ultimately dumped to waste drains.	
2	PTN	3	080	5613-M-3080 SH 1	2	Piping	1" piping from LP Turbine South gland seal exhaust drain loop seals.	Yes	None	Not required for Power operation; no safety function	None	None	Gland steam condenser and condenser receiver are located on ground floor of TB (partially enclosed). A break in this line should not effect power operation, since the condensate collected is ultimately dumped to waste drains.	
3	PTN	3	080	5613-M-3080 SH 1	3	Piping	2", 3" piping, check valve, reducer Gland Steam Condenser Drain Pump (Gland Steam Condenser Receiver to Condensate Recovery Tank)	Standby	None	Not required for Power operation; no safety function	None	None	Gland steam condenser and condenser receiver are located on ground floor of TB (partially enclosed). A break in this line should not effect power operation, since the condensate collected is ultimately dumped to waste drains.	
4	PTN	3	080	5613-M-3080 SH 1	3	Instr. Control / Protection	Level switches for Gland Steam Condenser Drain Pump Start/stop control of pump and control room annunciation (high level).	Standby	Transfer gland steam condensate to larger condensate recovery tank.	Dead Leg	Protect	Suggest insulating level switches and instrument tubing. Alternate option would be take actions to enclose and heat the general area.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria.	
5	PTN	3	080	5613-M-3080 SH 1	4	Piping	3" overflow piping from condensate recovery tank	Standby	None	Not required for Power operation; no safety function	None	None	Gland steam condenser and condenser receiver are located on ground floor of TB (partially enclosed). A break in this line should not effect power operation, since the condensate collected is ultimately dumped to waste drains.	
6	PTN	3	080	5613-M-3080 SH 1	5	Piping	4", 6" piping Condenser Pit Sump	Standby	None	Ground floor of TB (partially enclosed)	Mitigate	Recommend evaluate as part of general approach for TB ground floor. Possible mitigating action is further enclose area and add space heaters.	Condenser sump pit located on ground floor of TB, and partially enclosed. Evaluate as part of overall approach for the TB ground floor.	
7	PTN	3	080	5613-M-3080 SH 1	5	Vents / Drains / Misc. Connections	1" vent	No	None	Dead Leg	Mitigate	Recommend evaluate as part of general approach for TB ground floor. Possible mitigating action is further enclose area and add space heaters.	Condenser sump pit located on ground floor of TB, and partially enclosed. Evaluate as part of overall approach for the TB ground floor.	
8	PTN	3	080	5613-M-3080 SH 1	5	Instr. Control / Protection	Level switch for condenser pit sump pump with control room annunciation and alarm (high)	Yes	None	Dead Leg	Mitigate	Recommend evaluate as part of general approach for TB ground floor. Possible mitigating action is further enclose area and add space heaters.	Condenser sump pit located on ground floor of TB, and partially enclosed. Evaluate as part of overall approach for the TB ground floor.	
9	PTN	3	080	5613-M-3080 SH 1	sate Recov	Outdoor Tanks	Condensate Recovery Tank	Yes	None	Process fluid is likely warm. Tank has no safety function.	None	None	The Condensate Recovery Tank is located outside between the Diesel Generator Buildling and RX buildling (more exposed to extreme cold). The tank does not have a safety function or power operation function. It holds gland steam condensate which is then drained to waste drains.	
10	PTN	3	080	5613-M-3080 SH 1	sate Recov	Instr. Local	Local level gauge	Yes	None	Tank has no safety function	None	None	Freezing or failure of the level gauge may cause condnesate in tank to spill. No consequence on power generation on loss of tank. Recommend evaluating potential flooding consequenses/risks based on surrounding area and size of tank (# of gal).	
11	PTN	3	080	5613-M-3080 SH 1	sate Recov	Vents / Drains / Misc. Connections	4" vents (x2)	Yes	None	Tank has no safety function	None	None	Freezing failure of the vents would have no consequence.	
1	PTN	3	081	5613-M-3081 SH 1	1	Piping	4" Piping from MSR 25B to RHTR Drain Tk 3A (Vent) [3-4"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
2	PTN	3	081	5613-M-3081 SH 1	1	Vents / Drains / Misc. Connections	1/2" Vent; capped pipe	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Inspect during walkdown. Configuration/location of vent is unknown. Expected to be short runs of pipe and potentially insulated already. Main piping will be hot.	
3	PTN	3	081	5613-M-3081 SH 1	2	Piping	12" and 8" Piping to RHTR Drain Tk 3A (Drain) [3-12"-2-C, 3-8"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		

4	PTN	3	081	5613-M-3081 SH 1	2	Vents / Drains / Misc. Connections	Test Connection (PX) and 1/2 piping	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm on system side of isolation valve. Configuration/location components is unknown. Inspect during walkdown to determine if actions are required.	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	
5	PTN	3	081	5613-M-3081 SH 1	3	Piping	3" and 4" piping from MSR 25B to 6A FW HTR [4"-5CM, 3"-4CM] Includes manual throttled valve 3-30-1130	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
6	PTN	3	081	5613-M-3081 SH 1	3	Instr. Local	PI & associated 3/4" pipe & Valve	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
7	PTN	3	081	5613-M-3081 SH 1	3	Vents / Drains / Misc. Connections	1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
8	PTN	3	081	5613-M-3081 SH 1	3	Vents / Drains / Misc. Connections	3/4" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
9	PTN	3	081	5613-M-3081 SH 1	3	Vents / Drains / Misc. Connections	(4) Blind flanged sections	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
10	PTN	3	081	5613-M-3081 SH 1	4	Piping	1" piping/ reducers - bypass Valve 3-30-1130	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. The line is exposed to warm system flow on both sides of closed valve; Configuration/location of is unknown. Inspect during walkdown to determine if actions are required.	Inspect during walkdown. Configuration/location is unknown. Expected to be short runs of pipe and potentially insulated already. Main piping will be hot.	
11	PTN	3	081	5613-M-3081 SH 1	5	Piping	3" piping to 3B Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Not used in normal operation. Chain operated isolation valve.	
12	PTN	3	081	5613-M-3081 SH 1	5	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
13	PTN	3	081	5613-M-3081 SH 1	5	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally open to condenser side up to isolation valve. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
14	PTN	3	081	5613-M-3081 SH 1	6	Piping	8" piping to Ext Steam/ 6A FW HTR [8"-5CM]	Yes	FW Heater Drain system flowpath to 6A HW HTR	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
15	PTN	3	081	5613-M-3081 SH 1	6	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
16	PTN	3	081	5613-M-3081 SH 1	7	Piping	8" Piping from MSDT 3B Shell Side Drain Tank to HTR Drain Tk 3A [3-8"-5-CM]	Yes	Flowpath to 3A HTR Drain Tank	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
17	PTN	3	081	5613-M-3081 SH 1	7	Piping	Control Valve CV-3-1503A	Yes	Control Shell Side drain tank flow to maintain HDT level (with CV-3-1503B)	Pressure Boundary/ Flow Control	None	None. Normal operation will keep valve body/ piping warm and well above freezing.		

18	PTN	3	081	5613-M-3081 SH 1	7	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1503A	Yes	CV-3-1503A control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
19	PTN	3	081	5613-M-3081 SH 1	7	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
20	PTN	3	081	5613-M-3081 SH 1	8	Piping	1/2" pipe - 1/4 SS Tubing to Sample System	Yes	Provide required sampling flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Insulate and heat trace as appropriate.	Uninsulated and non heat-traced tubing may freeze/ dead legs may burst.	
21	PTN	3	081	5613-M-3081 SH 1	8	Vents / Drains / Misc. Connections	Test Connection (PX) and associated piping (3/8")	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Insulate and heat trace as appropriate.	Uninsulated and non heat-traced tubing may freeze/ dead legs may burst.	
22	PTN	3	081	5613-M-3081 SH 1	9	Piping	10" piping	Yes	Flowpath to 3B Condenser	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
23	PTN	3	081	5613-M-3081 SH 1	9	Piping	Control Valve CV-3-1503B	Yes	Control Shell Side drain tank flow to maintain HDT level (with CV-3-1503A)	Pressure Boundary/ Flow Control	None	None. Normal operation will keep valve body/ piping warm and well above freezing.		
24	PTN	3	081	5613-M-3081 SH 1	9	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1503B	Yes	CV-3-1503B control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
25	PTN	3	081	5613-M-3081 SH 1	9	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
26	PTN	3	081	5613-M-3081 SH 1	10	Piping	8" Pipe to 3B Condenser [3-8"-5-D] [Bypass CV-3-1503B]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
27	PTN	3	081	5613-M-3081 SH 1	10	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
28	PTN	3	081	5613-M-3081 SH 1	11	Piping	10" Piping from Drain Tks outlet control valves [CV-3-1503B, -1523B) to 3B Condenser	Yes	Flowpath to 3B Condenser	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
29	PTN	3	081	5613-M-3081 SH 1	12	Instr. Control / Protection	Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
30	PTN	3	081	5613-M-3081 SH 1	12	Vents / Drains / Misc. Connections	1" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. (shown as inside MSR on P&ID) Inspect during walkdown to determine if actions are required.	Location/configuration unclear.	
31	PTN	3	081	5613-M-3081 SH 1	12	Vents / Drains / Misc. Connections	1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Location/configuration unclear.	
32	PTN	3	081	5613-M-3081 SH 1	13	Piping	4" Piping from MSR 25A to RHTR Drain Tk 3A (Vent) [3-4"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
33	PTN	3	081	5613-M-3081 SH 1	13	Vents / Drains / Misc. Connections	1/2" Vent; capped pipe	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Inspect during walkdown. Configuration/location of vent is unknown. Expected to be short runs of pipe and potentially insulated already. Main piping will be hot.	

34	PTN	3	081	5613-M-3081 SH 1	14	Piping	12" and 8" Piping to RHTR Drain Tk 3A (Drain) [3-12"-2-C, 3-8"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
35	PTN	3	081	5613-M-3081 SH 1	14	Vents / Drains / Misc. Connections	Test Connection (PX) and 1/2 piping	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm on system side of isolation valve. Configuration/location components is unknown. Inspect during walkdown to determine if actions are required.	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	
36	PTN	3	081	5613-M-3081 SH 1	15	Piping	3" and 4" piping from MSR 25A to 6A FW HTR [4"-5CM, 3"-4CM] Includes manual throttled valve 3-30-1130	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
37	PTN	3	081	5613-M-3081 SH 1	15	Instr. Local	PI & associated 3/4" pipe & Valve	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
38	PTN	3	081	5613-M-3081 SH 1	15	Vents / Drains / Misc. Connections	1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
39	PTN	3	081	5613-M-3081 SH 1	15	Vents / Drains / Misc. Connections	3/4" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
40	PTN	3	081	5613-M-3081 SH 1	15	Vents / Drains / Misc. Connections	(4) Blind flanged sections	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
41	PTN	3	081	5613-M-3081 SH 1	16	Piping	1" piping/ reducers - bypass Valve 3-30-1130	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. The line is exposed to warm system flow on both sides of closed valve; Configuration/location of is unknown. Inspect during walkdown to determine if actions are required.	Inspect during walkdown. Configuration/location is unknown. Expected to be short runs of pipe and potentially insulated already. Main piping will be hot.	
42	PTN	3	081	5613-M-3081 SH 1	17	Piping	3" piping to 3B Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Not used in normal operation.	
43	PTN	3	081	5613-M-3081 SH 1	17	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
44	PTN	3	081	5613-M-3081 SH 1	17	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally open to condenser side up to isolation valve. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
45	PTN	3	081	5613-M-3081 SH 1	18	Piping	8" & 10" Piping from MSDT 3A Shell Side Drain Tank to HTR Drain Tk 3A [3-8"-5-CM, 3-10"-5-CM]	Yes	Flowpath to 3A HTR Drain Tank	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
46	PTN	3	081	5613-M-3081 SH 1	18	Piping	Control Valve CV-3-1523A	Yes	Control Shell Side drain tank flow to maintain HDT level (with CV-3-1523B)	Pressure Boundary/ Flow Control	None	None. Normal operation will keep valve body/ piping warm and well above freezing.		
47	PTN	3	081	5613-M-3081 SH 1	18	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1523A	Yes	CV-3-1523A control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	

48	PTN	3	081	5613-M-3081 SH 1	18	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
49	PTN	3	081	5613-M-3081 SH 1	19	Piping	1/2" pipe - 1/4 SS Tubing to Sample System	Yes	Provide required sampling flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Insulate and heat trace as appropriate.	Uninsulated and non heat-traced tubing may freeze/ dead legs may burst.	
50	PTN	3	081	5613-M-3081 SH 1	19	Vents / Drains / Misc. Connections	Test Connection (PX) and associated piping (3/8")	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Insulate and heat trace as appropriate.	Uninsulated and non heat-traced tubing may freeze/ dead legs may burst.	
51	PTN	3	081	5613-M-3081 SH 1	20	Piping	10" piping	Standby	Flowpath to 3B Condenser	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
52	PTN	3	081	5613-M-3081 SH 1	20	Piping	Control Valve CV-3-1523B	Yes	Control Shell Side drain tank flow to maintain HDT level (with CV-3-1523A)	Pressure Boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
53	PTN	3	081	5613-M-3081 SH 1	20	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1523B	Yes	CV-3-1523B control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
54	PTN	3	081	5613-M-3081 SH 1	20	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
55	PTN	3	081	5613-M-3081 SH 1	21	Piping	8" Pipe to 3B Condenser [3-8"-5-D] [Bypass CV-3-1523B]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
56	PTN	3	081	5613-M-3081 SH 1	21	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
57	PTN	3	081	5613-M-3081 SH 1	22	Piping	10" Piping from Drain Tks outlet control valve [CV-3-1523B) to 3B Condenser	No	Flowpath to 3B Condenser	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Pipe is open to condenser and piping from CV-3-1503B, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
58	PTN	3	081	5613-M-3081 SH 1	23	Instr. Control / Protection	Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
59	PTN	3	081	5613-M-3081 SH 1	23	Vents / Drains / Misc. Connections	1" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. (shown as inside MSR on P&ID) Inspect during walkdown to determine if actions are required.	Location/configuration unclear. Loss of integrity of drain/vent may impact level controls.	
60	PTN	3	081	5613-M-3081 SH 1	23	Vents / Drains / Misc. Connections	1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Location/configuration unclear. Loss of integrity of drain/vent may impact level controls.	

61	PTN	3	081	5613-M-3081 SH 2	1	Piping	2" vent RHTR Drain Tank 3A to ES system/ FW HTR 6A [3-2"-2-C]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve (which is not shown on this P&ID) Piping should be insulated. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
62	PTN	3	081	5613-M-3081 SH 2	2	Piping	8" & 4" Drains/Vents from MSRs A/B to RHTR Drain Tank 3A [3-8"-2-C, 3-4"-2-C]	Yes	FW Heater Drain system flowpath	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
63	PTN	3	081	5613-M-3081 SH 2	3	Instr. Control / Protection	RHTR Drain Tank 3A Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
64	PTN	3	081	5613-M-3081 SH 2	3	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
65	PTN	3	081	5613-M-3081 SH 2	4	Piping	10" piping from RHTR Drain Tank 3A to 6A FW HTR [3-10"-2-C, 3-10-2-CM, 3-10"-5-D]	Yes	None	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
66	PTN	3	081	5613-M-3081 SH 2	4	Piping	Control valve CV-3-1505	Yes	Controls flow from RHTR Drain Tank to maintain FW HTR 6A level	Pressure Boundary/ Flow Control	None	None. Normal operation should keep valve body/ piping warm and well above freezing.		
67	PTN	3	081	5613-M-3081 SH 2	4	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1505	Yes	CV-3-1505 Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
68	PTN	3	081	5613-M-3081 SH 2	4	Instr. Annunciation / Indication	Flow indication and associated valves, 1/2" tubing. [FE/FI 3-5120] [3-1/2"-2-C]	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
69	PTN	3	081	5613-M-3081 SH 2	4	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
70	PTN	3	081	5613-M-3081 SH 2	4	Vents / Drains / Misc. Connections	3/4" vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
71	PTN	3	081	5613-M-3081 SH 2	4	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
72	PTN	3	081	5613-M-3081 SH 2	5	Piping	10" piping/ bypass FE-3-5120 [3-10"-2-C]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
73	PTN	3	081	5613-M-3081 SH 2	5	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
74	PTN	3	081	5613-M-3081 SH 2	6	Piping	8" piping/ bypass CV-3-1505 [3-8"-2-C, 3-8"-5-E]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained/vented.		

75	PTN	3	081	5613-M-3081 SH 2	6	Vents / Drains / Misc. Connections	3/4"drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Potential deadleg based on installed configuration.	
76	PTN	3	081	5613-M-3081 SH 2	7	Piping	10" piping to 3B Condenser [3-10"-2-6, 3-10"-10-5-E]	Standby	FW Heater Drain system flowpath; divert RHTR tank drains to 3B Condenser if 6A FW HTR level is high.	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
77	PTN	3	081	5613-M-3081 SH 2	7	Piping	Control valve CV-3-1515	Yes	Control flow - divert to 3B condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
78	PTN	3	081	5613-M-3081 SH 2	7	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1515	Yes	CV-3-1515 control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
79	PTN	3	081	5613-M-3081 SH 2	7	Vents / Drains / Misc. Connections	3/4"drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
80	PTN	3	081	5613-M-3081 SH 2	7	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
81	PTN	3	081	5613-M-3081 SH 2	8	Piping	8" piping/ bypass CV-3-1515 [3-8"-2-C, 3-8"-5-E]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
82	PTN	3	081	5613-M-3081 SH 2	8	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
83	PTN	3	081	5613-M-3081 SH 2	9	Piping	2" vent RHTR Drain Tank 3B to ES system/ FW HTR 6B [3-2"-2-C]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve (which is not shown on this P&ID) Piping should be insulated. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
84	PTN	3	081	5613-M-3081 SH 2	10	Piping	8" & 4" Drains/Vents from MSRs C/D to RHTR Drain Tank 3B [3-8"-2-C, 3-4"-2-C]	Yes	FW Heater Drain system flowpath	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
85	PTN	3	081	5613-M-3081 SH 2	11	Instr. Control / Protection	RHTR Drain Tank 3B Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
86	PTN	3	081	5613-M-3081 SH 2	11	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
87	PTN	3	081	5613-M-3081 SH 2	12	Piping	10" piping from RHTR Drain Tank 3B to 6B FW HTR [3-10"-2-C, 3-10-2-CM, 3-10"-5-D]	Yes	None	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
88	PTN	3	081	5613-M-3081 SH 2	12	Piping	Control valve CV-3-1506	Yes	Controls flow from RHTR Drain Tank to maintain FW HTR 6B level	Pressure Boundary/ Flow Control	None	None. Normal operation should keep valve body/ piping warm and well above freezing.		

89	PTN	3	081	5613-M-3081 SH 2	12	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1506	Yes	CV-3-1506 Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
90	PTN	3	081	5613-M-3081 SH 2	12	Instr. Annunciation / Indication	Flow indication and associated valves, 1/2" tubing. [FE/FI 3-5121] [3-1/2"-2-C]	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
91	PTN	3	081	5613-M-3081 SH 2	12	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
92	PTN	3	081	5613-M-3081 SH 2	12	Vents / Drains / Misc. Connections	3/4" vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
93	PTN	3	081	5613-M-3081 SH 2	12	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
94	PTN	3	081	5613-M-3081 SH 2	13	Piping	10" piping/ bypass FE-3-5121 [3-10"-2-C]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
95	PTN	3	081	5613-M-3081 SH 2	13	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
96	PTN	3	081	5613-M-3081 SH 2	14	Piping	8" piping/ bypass CV-3-1505 [3-8"-2-C, 3-8"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained/vented.		
97	PTN	3	081	5613-M-3081 SH 2	14	Vents / Drains / Misc. Connections	3/4"drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Potential deadleg based on installed configuration.	
98	PTN	3	081	5613-M-3081 SH 2	15	Piping	10" piping to 3B Condenser [3-10"-2-C, 3-10"-5-E]	Standby	FW Heater Drain system flowpath; divert RHTR tank drains to 3B Condenser if 6B FW HTR level is high.	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
99	PTN	3	081	5613-M-3081 SH 2	15	Piping	Control valve CV-3-1516	Yes	Control flow - divert to 3B condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
100	PTN	3	081	5613-M-3081 SH 2	15	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1516	Yes	CV-3-1516 control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
101	PTN	3	081	5613-M-3081 SH 2	15	Vents / Drains / Misc. Connections	3/4"drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

102	PTN	3	081	5613-M-3081 SH 2	15	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
103	PTN	3	081	5613-M-3081 SH 2	16	Piping	8" piping/ bypass CV-3-1516 [3-8"-2-C, 3-8"-5-E]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
104	PTN	3	081	5613-M-3081 SH 2	16	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
109	PTN	3	081	5613-M-3081 SH 3	1	Instr. Control / Protection	6A FW HTR Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
110	PTN	3	081	5613-M-3081 SH 3	1	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
111	PTN	3	081	5613-M-3081 SH 3	2	Piping	10" piping from RHTR Drain Tank 3A to 6A FW HTR [3-10"-5-D]	Yes	FW Drain system flowpath	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
112	PTN	3	081	5613-M-3081 SH 3	3	Piping	1" Piping from 6A FW HTR to 3B Condenser [3-1"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components is unknown. Confirm expected flow and temperatures in system and determine is actions are required.		
113	PTN	3	081	5613-M-3081 SH 3	3	Piping	1" piping - bypass Orifice	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required.		
114	PTN	3	081	5613-M-3081 SH 3	4	Piping	1" and 1 1/2" piping from 6A FW HTR to 3B Condenser [3-1"-5-E, 3-1 1/2"-5-E]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components is unknown. Confirm expected flow and temperatures in system and determine is actions are required.		
115	PTN	3	081	5613-M-3081 SH 3	5	Piping	14" and 10" piping from 6A FW HTR to 5A FW HTR [3-14"-5-D, 3-10"-5-D]	Yes	None	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
116	PTN	3	081	5613-M-3081 SH 3	5	Piping	Control valve CV-3-1517A	Yes	Flowpath from 6A to 5A FW HTR	Pressure boundary/ Flow Control	None	None. Normal operation should keep valve body/ piping warm and well above freezing.	Valve Fails Open	
117	PTN	3	081	5613-M-3081 SH 3	5	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1517A	Yes	CV-3-1517A Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
118	PTN	3	081	5613-M-3081 SH 3	5	Vents / Drains / Misc. Connections	1/2" and 1" connections; Various test connections [PX, TX, FX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
119	PTN	3	081	5613-M-3081 SH 3	5	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

120	PTN	3	081	5613-M-3081 SH 3	6	Piping	8" piping/ bypass CV-3-1517A [3-8"-2-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg. Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained/vented.		
121	PTN	3	081	5613-M-3081 SH 3	6	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Potential deadleg based on installed configuration.	
122	PTN	3	081	5613-M-3081 SH 3	7	Piping	10" piping from 6A FW HTR to 3A Condenser [3-10"-5-D, 3-10"-5-E]	Standby	FW Heater Drain system flowpath; divert 6A FW HTR drain to 3A Condenser based on HTR level	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
123	PTN	3	081	5613-M-3081 SH 3	7	Piping	Control valve CV-3-1517B	Yes	Control flow - divert to 3A condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
124	PTN	3	081	5613-M-3081 SH 3	7	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1517B	Yes	CV-3-1517B control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
125	PTN	3	081	5613-M-3081 SH 3	7	Vents / Drains / Misc. Connections	3/4" drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
126	PTN	3	081	5613-M-3081 SH 3	7	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
127	PTN	3	081	5613-M-3081 SH 3	8	Piping	8" piping/ bypass CV-3-1517B [3-8"-5-E]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
128	PTN	3	081	5613-M-3081 SH 3	8	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
131	PTN	3	081	5613-M-3081 SH 3	9	Instr. Control / Protection	5A FW HTR Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
132	PTN	3	081	5613-M-3081 SH 3	9	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
133	PTN	3	081	5613-M-3081 SH 3	10	Piping	1" & 1 1/2" pipe - vent from 5A FW HTR shell to 3B condenser [3-1"-5-D, 3-1 1/2"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components is unknown. Confirm expected flow and temperatures in system and determine is actions are required.		

134	PTN	3	081	5613-M-3081 SH 3	11	Piping	1" pipe - Bypass flow orifice	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required.		
135	PTN	3	081	5613-M-3081 SH 3	12	Piping	10" piping - Vent line from 5A FW HTR to HTR Drain Tanks [3-10"-5-D, 3-10"-5-E]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
136	PTN	3	081	5613-M-3081 SH 3	13	Piping	24" & 16" piping - Drain from 5A FW HTR to HTR Drain Tanks [3-24"-5-D, 3-16"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
137	PTN	3	081	5613-M-3081 SH 3	13	Vents / Drains / Misc. Connections	Test connections [TX, PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
138	PTN	3	081	5613-M-3081 SH 3	14	Piping	3" piping for SWLU connection to 5A FW HTR drain line 3-3"-5-D	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evaluate configuration for dead-leg potential, determine if actions are required.		
143	PTN	3	081	5613-M-3081 SH 3	15	Instr. Control / Protection	6B FW HTR Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
144	PTN	3	081	5613-M-3081 SH 3	15	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
145	PTN	3	081	5613-M-3081 SH 3	16	Piping	10" piping from RHTR Drain Tank 3B to 6B FW HTR [3-10"-5-D]	Yes	FW Drain system flowpath	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
146	PTN	3	081	5613-M-3081 SH 3	17	Piping	1" Piping from 6B FW HTR to 3B Condenser [3-1"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components is unknown. Confirm expected flow and temperatures in system and determine is actions are required.		
147	PTN	3	081	5613-M-3081 SH 3	17	Piping	1" piping - bypass Orifice	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required.		
148	PTN	3	081	5613-M-3081 SH 3	18	Piping	14" and 10" piping from 6B FW HTR to 5B FW HTR [3-14"-5-D, 3-10"-5-D]	Yes	None	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
149	PTN	3	081	5613-M-3081 SH 3	18	Piping	Control valve CV-3-1518A	Yes	Flowpath from 6B to 5B FW HTR	Pressure boundary/ Flow Control	None	None. Normal operation should keep valve body/ piping warm and well above freezing.	Valve Fails Open	
150	PTN	3	081	5613-M-3081 SH 3	18	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1517A8	Yes	CV-3-1518A Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
151	PTN	3	081	5613-M-3081 SH 3	18	Vents / Drains / Misc. Connections	1/2" and 1" connections; Various test connections [PX, TX, FX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
152	PTN	3	081	5613-M-3081 SH 3	18	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

153	PTN	3	081	5613-M-3081 SH 3	19	Piping	8" piping/ bypass CV-3-1518A [3-8"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg. Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained/vented.		
154	PTN	3	081	5613-M-3081 SH 3	19	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Potential deadleg based on installed configuration.	
155	PTN	3	081	5613-M-3081 SH 3	20	Piping	10" piping from 6B FW HTR to 3B Condenser [3-10"-5-D, 3-10"-5-E]	Standby	FW Heater Drain system flowpath; divert 6B FW HTR drain to 3B Condenser based on HTR level	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
156	PTN	3	081	5613-M-3081 SH 3	20	Piping	Control valve CV-3-1518B	Yes	Control flow - divert to 3A condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
157	PTN	3	081	5613-M-3081 SH 3	20	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1518B	Yes	CV-3-1518B control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
158	PTN	3	081	5613-M-3081 SH 3	20	Vents / Drains / Misc. Connections	3/4" drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
159	PTN	3	081	5613-M-3081 SH 3	20	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
160	PTN	3	081	5613-M-3081 SH 3	21	Piping	8" piping/ bypass CV-3-1518B [3-8"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
161	PTN	3	081	5613-M-3081 SH 3	21	Vents / Drains / Misc. Connections	3/4" Drain/connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
164	PTN	3	081	5613-M-3081 SH 3	22	Instr. Control / Protection	5B FW HTR Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
165	PTN	3	081	5613-M-3081 SH 3	22	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
166	PTN	3	081	5613-M-3081 SH 3	23	Piping	1" & 1 1/2" pipe - vent from 5B FW HTR shell to 3B condenser [3-1"-5-D, 3-1 1/2"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components is unknown. Confirm expected flow and temperatures in system and determine is actions are required.		

167	PTN	3	081	5613-M-3081 SH 3	24	Piping	1" pipe - Bypass flow orifice	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required.		
168	PTN	3	081	5613-M-3081 SH 3	25	Piping	10" piping - Vent line from 5A FW HTR to HTR Drain TBnks [3-10"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
169	PTN	3	081	5613-M-3081 SH 3	26	Piping	24" & 16" piping - Drain from 5B FW HTR to HTR Drain Tanks [3-24"-5-D, 3-16"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
170	PTN	3	081	5613-M-3081 SH 3	26	Vents / Drains / Misc. Connections	Test connections [TX, PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
171	PTN	3	081	5613-M-3081 SH 3	27	Piping	3" piping for SWLU connection to 5B FW HTR drain line 3-3"-5-D	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evaluate configuration for dead-leg potential, determine if actions are required.		
129	PTN	3	081	5613-M-3081 SH 3	5A FW HTR	Heat Exchangers	5A FW HTR	Yes	Secondary system flowpath/ required for 100% power	N/A	None	None. Normal System flow will keep tank well above freezing.		
130	PTN	3	081	5613-M-3081 SH 3	5A FW HTR	Relief Valves	5A FWHTR Tank Relief Valve RV-3-3422	Standby	Overpressure relief for FW HTR	Pressure boundary/ Tank pressure relief	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
162	PTN	3	081	5613-M-3081 SH 3	5B FW HTR	Heat Exchangers	5B FW HTR	Yes	Secondary system flowpath/ required for 100% power	N/A	None	None. Normal System flow will keep tank well above freezing.		
163	PTN	3	081	5613-M-3081 SH 3	5B FW HTR	Relief Valves	5B FWHTR Tank Relief Valve RV-3-3423	Standby	Overpressure relief for FW HTR	Pressure boundary/ Tank pressure relief	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
105	PTN	3	081	5613-M-3081 SH 3	6A FW HTR	Heat Exchangers	6A FW HTR	Yes	Secondary system flowpath/ required for 100% power	N/A	None	None. Normal System flow will keep tank well above freezing.		
106	PTN	3	081	5613-M-3081 SH 3	6A FW HTR	Vents / Drains / Misc. Connections	6A FWHTR 1 1/2" drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
107	PTN	3	081	5613-M-3081 SH 3	6A FW HTR	Vents / Drains / Misc. Connections	Capped pipe stub on 6A FW HTR	No	None	Pressure boundary	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
108	PTN	3	081	5613-M-3081 SH 3	6A FW HTR	Relief Valves	6A FWHTR Tank Relief Valve RV-3-3424	Standby	Overpressure relief for FW HTR	Pressure boundary/ Tank pressure relief	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
139	PTN	3	081	5613-M-3081 SH 3	6B FW HTR	Heat Exchangers	6B FW HTR	Yes	Secondary system flowpath/ required for 100% power	N/A	None	None. Normal System flow will keep tank well above freezing.		
140	PTN	3	081	5613-M-3081 SH 3	6B FW HTR	Vents / Drains / Misc. Connections	6B FWHTR 1 1/2" tank drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
141	PTN	3	081	5613-M-3081 SH 3	6B FW HTR	Vents / Drains / Misc. Connections	Capped pipe stub on 6B FW HTR	No	None	Pressure boundary	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
142	PTN	3	081	5613-M-3081 SH 3	6B FW HTR	Relief Valves	6B FWHTR Tank Relief Valve RV-3-3425	Standby	Overpressure relief for FW HTR	Pressure boundary/ Tank pressure relief	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

172	PTN	3	081	5613-M-3081 SH 4	1	Piping	10" piping to 3A HDT from MSR A Drain [3-10"-5-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
173	PTN	3	081	5613-M-3081 SH 4	2	Piping	8" piping to 3A HDT from MSR B Drain [3-8"-5-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
174	PTN	3	081	5613-M-3081 SH 4	3	Piping	16" piping from 5A FW HTR Drain to 3A HDT [3-16"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
175	PTN	3	081	5613-M-3081 SH 4	4	Piping	Piping from Seal Water to 3A HDT	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.	Assume 3" (ref. P&ID 5613-M-3074 Sh 2)	
176	PTN	3	081	5613-M-3081 SH 4	5	Piping	6", 16", 24" piping from 5A FW HTR and Seal Water to 3A HDT [3-6"-5-D, 3-16"-5-D, 3-24"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
177	PTN	3	081	5613-M-3081 SH 4	5	Vents / Drains / Misc. Connections	3/4" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
178	PTN	3	081	5613-M-3081 SH 4	5	Vents / Drains / Misc. Connections	Welded pipe caps (2 of them)	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Configuration unclear from P&ID.	
179	PTN	3	081	5613-M-3081 SH 4	6	Piping	10" piping from 5A FW HTR vent to 3B HDT [3-10"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
180	PTN	3	081	5613-M-3081 SH 4	6	Vents / Drains / Misc. Connections	Connection (size not marked)	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Closed valve 3-30-593	
181	PTN	3	081	5613-M-3081 SH 4	7	Piping	10" piping from 5A FW HTR vent to 3B HDT [3-10"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
182	PTN	3	081	5613-M-3081 SH 4	7	Vents / Drains / Misc. Connections	Connection (size not marked)	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Closed valve 3-30-591	
183	PTN	3	081	5613-M-3081 SH 4	8	Piping	12" cross-connect piping 5A/5B FW HTR to 3A/3B HDT [3-12"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
184	PTN	3	081	5613-M-3081 SH 4	9	Instr. Control / Protection	3A HDT Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
185	PTN	3	081	5613-M-3081 SH 4	9	Vents / Drains / Misc. Connections	1" and 1/2" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
186	PTN	3	081	5613-M-3081 SH 4	10	Instr. Control / Protection	3B HDT Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
187	PTN	3	081	5613-M-3081 SH 4	10	Vents / Drains / Misc. Connections	1" and 1/2" Vents and drains, test connection [PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
188	PTN	3	081	5613-M-3081 SH 4	11	Vents / Drains / Misc. Connections	3B HDT capped connections	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
189	PTN	3	081	5613-M-3081 SH 4	12	Piping	10" piping to 3B HDT from MSR C Drain [3-10"-5-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
190	PTN	3	081	5613-M-3081 SH 4	13	Piping	8" piping to 3B HDT from MSR D Drain [3-8"-5-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
191	PTN	3	081	5613-M-3081 SH 4	14	Piping	16" piping from 5B FW HTR Drain to 3B HDT [3-16"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
192	PTN	3	081	5613-M-3081 SH 4	15	Piping	Piping from Seal Water to 3B HDT	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.	Assume 3" (ref. P&ID 5613-M-3074 Sh 2)	
193	PTN	3	081	5613-M-3081 SH 4	16	Piping	6", 16", 24" piping from 5B FW HTR and Seal Water to 3B HDT [3-6"-5-D, 3-16"-5-D, 3-24"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		

194	PTN	3	081	5613-M-3081 SH 4	16	Vents / Drains / Misc. Connections	3/4" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
195	PTN	3	081	5613-M-3081 SH 4	16	Vents / Drains / Misc. Connections	Welded pipe caps (2 of them)	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Configuration unclear from P&ID.	
196	PTN	3	081	5613-M-3081 SH 4	17	Piping	14", 16", and 18" pipe from HDTs to HDPumps A and B [3-14"-5-D, 3-16"-5-D, 3-18"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
197	PTN	3	081	5613-M-3081 SH 4	17	Instr. Local	Local Pressure Indicator PI-3-6695	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
198	PTN	3	081	5613-M-3081 SH 4	17	Vents / Drains / Misc. Connections	Various test connections	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
199	PTN	3	081	5613-M-3081 SH 4	17	Vents / Drains / Misc. Connections	1" drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
200	PTN	3	081	5613-M-3081 SH 4	18	Piping	12" piping from HDT 3A/3B to 3B condenser [3-12"-5-D, 3-12"-5-CM]	No	Flowpath from HDTs to 3B condenser (assume on HD pump trip)	Pressure boundary/ Flow Control	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve (w HDT upsteam and open to Condenser on the other). However, configuration/location of components is unknown. Inspect during walkdown to determine if actions are required and whether dead leg sections of pipe is a concern.		
201	PTN	3	081	5613-M-3081 SH 4	18	Piping	Control valve CV-3-1510B	Standby	Flowpath from HDTs to 3B condenser	Pressure boundary/ Flow Control	None	Inspect during walkdown. Normal operation should keep the valve warm (w HDT on one side and condenser on the other). However, configuration/location of components is unknown. Inspect during walkdown to determine if actions are required and whether dead leg sections of pipe is a concern.	Valve Normally closed; Fails Open	
202	PTN	3	081	5613-M-3081 SH 4	18	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1510B	Standby	CV-3-1510B Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.		
203	PTN	3	081	5613-M-3081 SH 4	18	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
204	PTN	3	081	5613-M-3081 SH 4	19	Piping	10" piping from HDT 3A/3B to 3B condenser/ bypass control valve CN-3-1510B [3-10"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. (unlikely a concern for 10" piping) if appropriate, ensure pipe section is drained.		
205	PTN	3	081	5613-M-3081 SH 4	19	Vents / Drains / Misc. Connections	Connection (size not marked)	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
206	PTN	3	081	5613-M-3081 SH 4	20	Piping	4" piping from Main Condensate Header to HD Pump suction header	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve (w HD header upsteam and to Condensate systen on the other). However, configuration/location of components is unknown. Inspect during walkdown to determine if actions are required and whether dead leg sections of pipe is a concern.		

207	PTN	3	081	5613-M-3081 SH 4	20	Piping	Control valve CV-3-1900	Standby	None	Pressure boundary/ Flow Control	Protect	Inspect during walkdown. Normal operation should keep the valve warm (w HD header on one side and condensate system on the other). However, configuration/location of components is unknown. Inspect during walkdown to determine if actions are required and whether dead leg sections of pipe is a concern.	Valve normally closed; fails closed	
208	PTN	3	081	5613-M-3081 SH 4	20	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1900	Standby	CV-3-1900 Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.		
209	PTN	3	081	5613-M-3081 SH 4	20	Vents / Drains / Misc. Connections	3/4" drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
210	PTN	3	081	5613-M-3081 SH 4	21	Piping	3" piping from Condensate Header to HD pump suction header - Bypass control valve CN-3-1900 [3-3"-3-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
211	PTN	3	081	5613-M-3081 SH 4	21	Vents / Drains / Misc. Connections	[3-3"-5-CM]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
212	PTN	3	081	5613-M-3081 SH 4	22	Piping	3" piping to SWLU connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evaluate configuration for dead-leg potential, determine if actions are required.		
213	PTN	3	081	5613-M-3081 SH 4	23	Piping	1" piping; HD Pump vent to 3A HDT [3-1"-5-D]	Yes	Vent for HD pump	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/ routing of piping is unknown. Potentially a long run of 1" pipe. Inspect during walkdown to determine if actions are required.	Discuss with operations to determine the amount of flow these vents see.	
214	PTN	3	081	5613-M-3081 SH 4	24	Piping	1/2" to 1/4" SS tubing from A HD Pump discharge to sample system	Yes	Monitoring, sampling, and secondary system	Local Sampling Requirement, pressure boundry	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.	Unclear whether flow is continuous or drawn as needed from sample sink	
215	PTN	3	081	5613-M-3081 SH 4	24	Instr. Local	Local Pressure Indicator PI-3-1437	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
216	PTN	3	081	5613-M-3081 SH 4	24	Vents / Drains / Misc. Connections	Test connection [PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
217	PTN	3	081	5613-M-3081 SH 4	25	Piping	1/2" to 1/4" SS tubing from B HD Pump discharge to sample system	Yes	Monitoring, sampling, and secondary system	Local Sampling Requirement, pressure boundry	Protect	Insulate and Heat Trace Ensure Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.	Unclear whether flow is continuous or drawn as needed from sample sink	
218	PTN	3	081	5613-M-3081 SH 4	25	Instr. Local	Local Pressure Indicator PI-3-1438	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		

219	PTN	3	081	5613-M-3081 SH 4	25	Vents / Drains / Misc. Connections	Test connection [PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
220	PTN	3	081	5613-M-3081 SH 4	26	Piping	3" piping from HD Pump Discharge to 3B HDT - Recirc piping [3-3"-3-D, 3-3"-3-CM, 3-4"-3-CM, 3-4"-3-D]	Yes	Heater Drain pump recirc flowpath	Required for HD pump operation/ pressure boundary	Protect	Inspect during walkdown. Assuming continuous recirc flow, normal operation should keep piping and components warm and well above freezing. Discuss normal flowrate with operations. Confirm that piping is insulated.	Confirm with operations that recirc is continuous flow.	
221	PTN	3	081	5613-M-3081 SH 4	27	Piping	12" and 16" HD Pump A and B Discharge piping [3-12"-3-D, 3-16"-3-D, 3-16"-3-CM, 3-16"-3-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
222	PTN	3	081	5613-M-3081 SH 4	27	Piping	Control valve CV-3-1510A	Yes	Heater Drain system flowpath	Pressure boundary/ Flow Control	None	None. Normal operation should keep piping and components warm and well above freezing.	Valve normally open; fails open	
223	PTN	3	081	5613-M-3081 SH 4	27	Instr. Control / Protection	Instrument air tubing/ controller for CV-3-1510A	Standby	CV-3-1510A Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.		
224	PTN	3	081	5613-M-3081 SH 4	27	Vents / Drains / Misc. Connections	Test connection [PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
225	PTN	3	081	5613-M-3081 SH 4	27	Vents / Drains / Misc. Connections	Vents and drains (2 of each)	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Vents/drains are exposed to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
226	PTN	3	081	5613-M-3081 SH 4	28	Piping	3/4" piping - bypass HD pump A/B discharge check valves	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate/possible, ensure pipe section is drained.		
227	PTN	3	081	5613-M-3081 SH 4	29	Instr. Annunciation / Indication	Piping/ Tubing/ valves associated with FIT-3-1404	Yes	Flow indication/ transmitter	Flow indication/ pressure boundary	Protect	Insulate and Heat Trace Ensure Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.		
228	PTN	3	081	5613-M-3081 SH 4	29	Vents / Drains / Misc. Connections	Test points associated with FIT-3-1404	No	None	Pressure boundary/ system integrity	Protect	Insulate and Heat Trace Ensure Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.		
229	PTN	3	081	5613-M-3081 SH 4	30	Piping	12" piping from A/B HD Pumps to FW PP suction/ bypass control valve CN-3-1510A [3-12"-3-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. (unlikely a concern for 12" piping) if appropriate, ensure pipe section is drained.		
230	PTN	3	081	5613-M-3081 SH 4	30	Vents / Drains / Misc. Connections	Connection (size not marked)	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
231	PTN	3	081	5613-M-3081 SH 4	31	Instr. Control / Protection	Flex tubing installed to either side of CV-3-1510A; HD pump interlock	Yes	HD pump interlock	Pressure boundary/ Pump interlock function	Protect	Configuration is unknown. Insulate and Heat Trace to ensure Tubing Above Freezing. Walkdown to confirm location.		
242	PTN	3	081	5613-M-3081 Sh. 5	1	Piping	2" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		

243	PTN	3	081	5613-M-3081 Sh. 5	2	Piping	2.5" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
244	PTN	3	081	5613-M-3081 Sh. 5	3	Piping	6" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
245	PTN	3	081	5613-M-3081 Sh. 5	3	Instr. Local	PX & FX	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
246	PTN	3	081	5613-M-3081 Sh. 5	3	Vents / Drains / Misc. Connections	1" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
247	PTN	3	081	5613-M-3081 Sh. 5	3	Vents / Drains / Misc. Connections	6" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the flange. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
248	PTN	3	081	5613-M-3081 Sh. 5	4	Piping	3" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
249	PTN	3	081	5613-M-3081 Sh. 5	5	Piping	4" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
250	PTN	3	081	5613-M-3081 Sh. 5	6	Piping	6" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
251	PTN	3	081	5613-M-3081 Sh. 5	6	Vents / Drains / Misc. Connections	6" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
252	PTN	3	081	5613-M-3081 Sh. 5	7	Piping	3" Pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 2" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
253	PTN	3	081	5613-M-3081 Sh. 5	7	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
254	PTN	3	081	5613-M-3081 Sh. 5	8	Piping	4" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		

255	PTN	3	081	5613-M-3081 Sh. 5	8	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
266	PTN	3	081	5613-M-3081 Sh. 5	9	Piping	8" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
267	PTN	3	081	5613-M-3081 Sh. 5	9	Instr. Local	PX & FX	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
268	PTN	3	081	5613-M-3081 Sh. 5	9	Vents / Drains / Misc. Connections	1" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
269	PTN	3	081	5613-M-3081 Sh. 5	9	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
270	PTN	3	081	5613-M-3081 Sh. 5	9	Vents / Drains / Misc. Connections	8" Flange	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the flange. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
271	PTN	3	081	5613-M-3081 Sh. 5	10	Piping	6" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
272	PTN	3	081	5613-M-3081 Sh. 5	11	Piping	1.5" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required.		
273	PTN	3	081	5613-M-3081 Sh. 5	12	Piping	8" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
274	PTN	3	081	5613-M-3081 Sh. 5	12	Vents / Drains / Misc. Connections	8" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
275	PTN	3	081	5613-M-3081 Sh. 5	13	Piping	6" Pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		

276	PTN	3	081	5613-M-3081 Sh. 5	13	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
277	PTN	3	081	5613-M-3081 Sh. 5	14	Piping	6" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
278	PTN	3	081	5613-M-3081 Sh. 5	14	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
279	PTN	3	081	5613-M-3081 Sh. 5	15	Piping	1.5" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
280	PTN	3	081	5613-M-3081 Sh. 5	16	Piping	1.5" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require heat trace to prevent freezing.		
281	PTN	3	081	5613-M-3081 Sh. 5	17	Piping	2" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
282	PTN	3	081	5613-M-3081 Sh. 5	18	Piping	1" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
283	PTN	3	081	5613-M-3081 Sh. 5	19	Piping	1" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require heat trace to prevent freezing.		
284	PTN	3	081	5613-M-3081 Sh. 5	20	Piping	1.5" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
235	PTN	3	081	5613-M-3081 Sh. 5	21	Piping	1.5" Instrument Piping	Yes	Piping to all of the Instruments associated with Heatert Drains for the FWHs	Pressure boundary/ system integrity/ deadleg/instrument loop	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
236	PTN	3	081	5613-M-3081 Sh. 5	21	Instr. Local	LG	Yes	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
237	PTN	3	081	5613-M-3081 Sh. 5	21	Instr. Annunciation / Indication	LS	Yes	CR Annunciator	Pressure boundary/ system integrity/ deadleg/instrument alarm	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
238	PTN	3	081	5613-M-3081 Sh. 5	21	Instr. Control / Protection	LS & LC	Yes	Control to CVs for flow for FWHs 3E3A/B and SV for Extraction Steam	Pressure boundary/ system integrity/ deadleg/instrument control	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length. No protection required for the airline to/from the LC, not subjected to freezing.		
239	PTN	3	081	5613-M-3081 Sh. 5	21	Vents / Drains / Misc. Connections	Vents	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
240	PTN	3	081	5613-M-3081 Sh. 5	21	Vents / Drains / Misc. Connections	Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
241	PTN	3	081	5613-M-3081 Sh. 5	21	Vents / Drains / Misc. Connections	Connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
259	PTN	3	081	5613-M-3081 Sh. 5	22	Piping	1.5" Instrument Piping	Yes	Piping to all of the Instruments associated with Heatert Drains for the FWHs	Pressure boundary/ system integrity/ deadleg/instrument loop	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
260	PTN	3	081	5613-M-3081 Sh. 5	22	Instr. Local	LG	Yes	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		

261	PTN	3	081	5613-M-3081 Sh. 5	22	Instr. Annunciation / Indication	LS	Yes	CR Annunciator	Pressure boundary/ system integrity/ deadleg/instrument alarm	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
262	PTN	3	081	5613-M-3081 Sh. 5	22	Instr. Control / Protection	LS & LC	Yes	Control to CVs for flow to FWHs and Condensers and SV for Extraction Steam	Pressure boundary/ system integrity/ deadleg/instrument control	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length. No protection required for the airline to/from the LC, not subjected to freezing.		
263	PTN	3	081	5613-M-3081 Sh. 5	22	Vents / Drains / Misc. Connections	Vents	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
264	PTN	3	081	5613-M-3081 Sh. 5	22	Vents / Drains / Misc. Connections	Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
265	PTN	3	081	5613-M-3081 Sh. 5	22	Vents / Drains / Misc. Connections	Connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
232	PTN	3	081	5613-M-3081 Sh. 5	-	Heat Exchangers	FWH 3E4A/B	Yes	Required for generation	Pressure boundary/ system integrity	None	No protection recommended	FWHs will be in operation and hot which will prevent freezing. In addition, the FWHs should alos be insulated already.	
233	PTN	3	081	5613-M-3081 Sh. 5	-	Relief Valves	RV (4" Inlet, 6" Outlet per NAMS)	Standby	Relieves at 100 psig for the FWHs	Prevent overpressurization of the FWHs	Protect	Inspect during walkdown, possibly already insulated. Otherwise, 1" Insulation to prevent >25% freezing.		
234	PTN	3	081	5613-M-3081 Sh. 5	-	Vents / Drains / Misc. Connections	1.5" Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
256	PTN	3	081	5613-M-3081 Sh. 5	-	Heat Exchangers	FWH 3E3A/B	Yes	Required for generation	Pressure boundary/ system integrity	None	No protection recommended	FWHs will be in operation and hot which will prevent freezing. In addition, the FWHs should alos be insulated already.	
257	PTN	3	081	5613-M-3081 Sh. 5	-	Relief Valves	RV (4" Inlet, 6" Outlet per NAMS)	Standby	Relieves at 100 psig for the FWHs	Prevent overpressurization of the FWHs	Protect	Options: 1. Inspect during walkdown, possibly already insulated 2. 1" Insulation to prevent >25% freezing.		
258	PTN	3	081	5613-M-3081 Sh. 5	-	Vents / Drains / Misc. Connections	1.5" Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
285	PTN	3	081	5613-M-3081 Sh. 6	1	Piping	8" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
295	PTN	3	081	5613-M-3081 Sh. 6	2	Piping	3" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
296	PTN	3	081	5613-M-3081 Sh. 6	3	Piping	3" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require 2" Insulation to prevent >25% freezing.		
297	PTN	3	081	5613-M-3081 Sh. 6	4	Piping	1" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
298	PTN	3	081	5613-M-3081 Sh. 6	5	Piping	1" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require heat trace to prevent freezing.		
299	PTN	3	081	5613-M-3081 Sh. 6	6	Piping	10" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required. 1" Insulation would protect against >25% freezing.		

300	PTN	3	081	5613-M-3081 Sh. 6	7	Piping	2" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required. 4" Insulation would protect against >25% freezing, or Heat Trace & 1" Insulation to prevent freezing.		
301	PTN	3	081	5613-M-3081 Sh. 6	8	Piping	10" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
302	PTN	3	081	5613-M-3081 Sh. 6	8	Vents / Drains / Misc. Connections	1" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
303	PTN	3	081	5613-M-3081 Sh. 6	8	Instr. Local	PX	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
304	PTN	3	081	5613-M-3081 Sh. 6	9	Piping	8" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
305	PTN	3	081	5613-M-3081 Sh. 6	9	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
306	PTN	3	081	5613-M-3081 Sh. 6	10	Piping	14" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
307	PTN	3	081	5613-M-3081 Sh. 6	10	Vents / Drains / Misc. Connections	14" Flange	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the flange. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
317	PTN	3	081	5613-M-3081 Sh. 6	11	Piping	8" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
318	PTN	3	081	5613-M-3081 Sh. 6	12	Piping	10" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
319	PTN	3	081	5613-M-3081 Sh. 6	12	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		

320	PTN	3	081	5613-M-3081 Sh. 6	13	Piping	12" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
321	PTN	3	081	5613-M-3081 Sh. 6	13	Vents / Drains / Misc. Connections	12" Flange	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
322	PTN	3	081	5613-M-3081 Sh. 6	14	Piping	8" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
323	PTN	3	081	5613-M-3081 Sh. 6	14	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
324	PTN	3	081	5613-M-3081 Sh. 6	15	Piping	1.5" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
325	PTN	3	081	5613-M-3081 Sh. 6	16	Piping	1.5" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require heat trace to prevent freezing.		
326	PTN	3	081	5613-M-3081 Sh. 6	17	Piping	4" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
327	PTN	3	081	5613-M-3081 Sh. 6	18	Piping	4" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require 1" Insulation to prevent >25% freezing.		
328	PTN	3	081	5613-M-3081 Sh. 6	19	Piping	12" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
329	PTN	3	081	5613-M-3081 Sh. 6	19	Vents / Drains / Misc. Connections	3/4" & 1" Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
330	PTN	3	081	5613-M-3081 Sh. 6	19	Instr. Local	PX	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
331	PTN	3	081	5613-M-3081 Sh. 6	20	Piping	10" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		

332	PTN	3	081	5613-M-3081 Sh. 6	21	Piping	12" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
333	PTN	3	081	5613-M-3081 Sh. 6	22	Piping	8" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
334	PTN	3	081	5613-M-3081 Sh. 6	22	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
335	PTN	3	081	5613-M-3081 Sh. 6	23	Piping	10" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
336	PTN	3	081	5613-M-3081 Sh. 6	23	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
337	PTN	3	081	5613-M-3081 Sh. 6	24	Piping	12" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required. 1" Insulation would protect against >25% freezing.		
338	PTN	3	081	5613-M-3081 Sh. 6	25	Piping	2" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required. 4" Insulation would protect against >25% freezing, or Heat Trace & 1" Insulation to prevent freezing.		
288	PTN	3	081	5613-M-3081 Sh. 6	26	Piping	1.5" Pipe	Yes	Piping to all of the Instruments associated with Heatert Drains for the FWHs	Pressure boundary/ system integrity/ deadleg/instrument loop	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
289	PTN	3	081	5613-M-3081 Sh. 6	26	Instr. Control / Protection	LC, LS	Yes	Control to CVs for flow to FWHs and Condensers	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length. No protection required for the airline to/from the LC, not subjected to freezing.		
290	PTN	3	081	5613-M-3081 Sh. 6	26	Instr. Annunciation / Indication	LS	Yes	CR Annunciator	Pressure boundary/ system integrity/ deadleg/instrument alarm	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
291	PTN	3	081	5613-M-3081 Sh. 6	26	Instr. Local	LI, LGs	Yes	None	Pressure boundary/ system integrity/ deadleg/instrument control	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
292	PTN	3	081	5613-M-3081 Sh. 6	26	Vents / Drains / Misc. Connections	Vents	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
293	PTN	3	081	5613-M-3081 Sh. 6	26	Vents / Drains / Misc. Connections	Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		

294	PTN	3	081	5613-M-3081 Sh. 6	26	Vents / Drains / Misc. Connections	3/4" Connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
310	PTN	3	081	5613-M-3081 Sh. 6	27	Piping	1.5" Pipe	Yes	Piping to all of the Instruments associated with Heatert Drains for the FWHs	Pressure boundary/ system integrity/ deadleg/instrument loop	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
311	PTN	3	081	5613-M-3081 Sh. 6	27	Instr. Control / Protection	LC, LS	Yes	Control to CVs for flow to Condensers	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length. No protection required for the airline to/from the LC, not subjected to freezing.		
312	PTN	3	081	5613-M-3081 Sh. 6	27	Instr. Annunciation / Indication	LS	Yes	CR Annunciator	Pressure boundary/ system integrity/ deadleg/instrument alarm	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
313	PTN	3	081	5613-M-3081 Sh. 6	27	Instr. Local	LI, LGs	Yes	None	Pressure boundary/ system integrity/ deadleg/instrument control	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
314	PTN	3	081	5613-M-3081 Sh. 6	27	Vents / Drains / Misc. Connections	Vents	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
315	PTN	3	081	5613-M-3081 Sh. 6	27	Vents / Drains / Misc. Connections	Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
316	PTN	3	081	5613-M-3081 Sh. 6	27	Vents / Drains / Misc. Connections	3/4" Connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
286	PTN	3	081	5613-M-3081 Sh. 6	-	Heat Exchangers	FWH 3E2A/B	Yes	Required for generation	Pressure boundary/ system integrity	None	No protection recommended	FWHs will be in operation and hot which will prevent freezing. In addition, the FWHs should alos be insulated already.	
287	PTN	3	081	5613-M-3081 Sh. 6	-	Vents / Drains / Misc. Connections	1.5" Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
308	PTN	3	081	5613-M-3081 Sh. 6	-	Heat Exchangers	FWH 3E1A/B	Yes	Required for generation	Pressure boundary/ system integrity	None	No protection recommended	FWHs will be in operation and hot which will prevent freezing. In addition, the FWHs should alos be insulated already.	
309	PTN	3	081	5613-M-3081 Sh. 6	-	Vents / Drains / Misc. Connections	1.5" Drain	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
342	PTN	3	081	5613-M-3081 Sh. 7	1	Instr. Control / Protection	Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
343	PTN	3	081	5613-M-3081 Sh. 7	1	Vents / Drains / Misc. Connections	1" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. (shown as inside MSR on P&ID) Inspect during walkdown to determine if actions are required.	Location/configuration unclear.	
344	PTN	3	081	5613-M-3081 Sh. 7	1	Vents / Drains / Misc. Connections	1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Location/configuration unclear.	
345	PTN	3	081	5613-M-3081 Sh. 7	2	Piping	4" Piping from MSR 25B to RHTR Drain Tk 3A (Vent) [3-4"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
346	PTN	3	081	5613-M-3081 Sh. 7	2	Vents / Drains / Misc. Connections	1/2" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
347	PTN	3	081	5613-M-3081 Sh. 7	2	Vents / Drains / Misc. Connections	capped pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		

348	PTN	3	081	5613-M-3081 Sh. 7	3	Piping	12" and 8" Piping to RHTR Drain Tk 3A (Drain)	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
349	PTN	3	081	5613-M-3081 Sh. 7	4	Piping	4" piping from MSR to 6B FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
350	PTN	3	081	5613-M-3081 Sh. 7	5	Piping	3" piping from MSR to 6B FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
351	PTN	3	081	5613-M-3081 Sh. 7	5	Instr. Local	PI	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
352	PTN	3	081	5613-M-3081 Sh. 7	5	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
353	PTN	3	081	5613-M-3081 Sh. 7	5	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
354	PTN	3	081	5613-M-3081 Sh. 7	6	Piping	2" piping from MSR to 6B FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
355	PTN	3	081	5613-M-3081 Sh. 7	7	Piping	3" piping from MSR to 6B FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
356	PTN	3	081	5613-M-3081 Sh. 7	7	Vents / Drains / Misc. Connections	Flanges	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
357	PTN	3	081	5613-M-3081 Sh. 7	7	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
358	PTN	3	081	5613-M-3081 Sh. 7	7	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
359	PTN	3	081	5613-M-3081 Sh. 7	8	Piping	4" piping from MSR to 6B FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
360	PTN	3	081	5613-M-3081 Sh. 7	8	Vents / Drains / Misc. Connections	Flanges	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
361	PTN	3	081	5613-M-3081 Sh. 7	8	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
362	PTN	3	081	5613-M-3081 Sh. 7	9	Piping	8" piping from MSR to 6B FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
363	PTN	3	081	5613-M-3081 Sh. 7	9	Vents / Drains / Misc. Connections	Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

364	PTN	3	081	5613-M-3081 Sh. 7	10	Piping	1" Pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. The line is exposed to warm system flow on both sides of closed valve; Configuration/location of is unknown. Inspect during walkdown to determine if actions are required.	Inspect during walkdown. Configuration/location is unknown. Expected to be short runs of pipe and potentially insulated already. Main piping will be hot.	
365	PTN	3	081	5613-M-3081 Sh. 7	11	Piping	3" Pipe	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Not used in normal operation. Chain operated isolation valve.	
366	PTN	3	081	5613-M-3081 Sh. 7	11	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
367	PTN	3	081	5613-M-3081 Sh. 7	11	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally open to condenser side up to isolation valve. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
368	PTN	3	081	5613-M-3081 Sh. 7	12	Piping	1" Pipe	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
369	PTN	3	081	5613-M-3081 Sh. 7	13	Piping	1/2" piping	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm on system side of isolation valve. Configuration/location components is unknown. Inspect during walkdown to determine if actions are required.	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	
370	PTN	3	081	5613-M-3081 Sh. 7	13	Instr. Local	Test Connection (PX) and	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm on system side of isolation valve. Configuration/location components is unknown. Inspect during walkdown to determine if actions are required.	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	
371	PTN	3	081	5613-M-3081 Sh. 7	14	Piping	8" Pipe	Yes	Flowpath to 3B HTR Drain Tank & Condenser	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
372	PTN	3	081	5613-M-3081 Sh. 7	14	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
373	PTN	3	081	5613-M-3081 Sh. 7	14	Vents / Drains / Misc. Connections	Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
374	PTN	3	081	5613-M-3081 Sh. 7	15	Piping	1/4", 3/8", 1/2" to sample system	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
375	PTN	3	081	5613-M-3081 Sh. 7	15	Instr. Local	Pressure Test Connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
376	PTN	3	081	5613-M-3081 Sh. 7	16	Piping	10" Pipe	Yes	Condenser Flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		

377	PTN	3	081	5613-M-3081 Sh. 7	16	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
378	PTN	3	081	5613-M-3081 Sh. 7	17	Piping	6" Pipe and CV	Yes	Condenser Flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
379	PTN	3	081	5613-M-3081 Sh. 7	18	Piping	10" Pipe	Yes	Condenser Flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
380	PTN	3	081	5613-M-3081 Sh. 7	18	Vents / Drains / Misc. Connections	Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
381	PTN	3	081	5613-M-3081 Sh. 7	19	Piping	8" Pipe	No	Bypass to Condenser	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
382	PTN	3	081	5613-M-3081 Sh. 7	19	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
339	PTN	3	081	5613-M-3081 Sh. 7	-	Heat Exchangers	MSR 3T25C/D	Yes	MSR	-	None	No protection recommended	MSR is already insulated and is hot	
340	PTN	3	081	5613-M-3081 Sh. 7	-	Outdoor Tanks	Shell Side Drain Tank	Yes	Drain Tank	-	None	No protection recommended	MSR is already insulated and is hot	
341	PTN	3	081	5613-M-3081 Sh. 7	-	Vents / Drains / Misc. Connections	Drain Tank Connections	No	Drain Tank Pressure Boundary	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdwon to determine if already insulated, lentth and if add'l protection is required. If short and/or insulated, no protection should be needed		
1	PTN	3	084	5613-M-3084 SH 1	1	Piping	Piping from MS to AS. Pipe sections: [3-3"-2-C, 3-10-076, 3-10-077, 3-1"-2-C, 3-3/4"-2-C, 3-1"-2-C] Check valve 3-10-077	Yes	Flowpath to Aux Priming Ejectors (CW - waterbox vacuum) Alternate supply to AFW pumps	Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing.	Either U3 or U4 reducing station will be in service. AFW pumps supply - unable to determine if/where this path is credited	
2	PTN	3	084	5613-M-3084 SH 1	1	Piping	Aux Steam Reducing Station control valves CV-3-1601, 1601A	Yes	Flow Controlled by CV-13-1601; Either U3 or U4 supply is in service. (P&ID shows U3 in service)	Pressure boundary/ Flow control	None	Normal operation will keep piping and components warm and well above freezing.		
3	PTN	3	084	5613-M-3084 SH 1	1	Instr. Control / Protection	Instrument Air Tubing / position controller to valves CV-3-1601, 1601A	Yes	CV-3-1601 control (flowpath to Aux Priming Ejectors)	Flow control/ Valve fails closed on loss of signal	Protect	Air lines not subject to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
4	PTN	3	084	5613-M-3084 SH 1	1	Instr. Control / Protection	PC-3-1601 and associated piping	Yes	Flowpath to Aux Priming Ejectors (Circ water)	Pressure boundary; Condenser Performance	Protect	Normal operation will keep piping and components warm and well above freezing.	Either U3 or U4 reducing station will be in service.	
5	PTN	3	084	5613-M-3084 SH 1	1	Instr. Annunciation / Indication	PI-3-1717 and associated piping.	Yes	None	Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing.		
6	PTN	3	084	5613-M-3084 SH 1	1	Vents / Drains / Misc. Connections	Valves/ drains/ Steam Trap	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
7	PTN	3	084	5613-M-3084 SH 1	2	Piping	Piping [3-6"-2-C] Valves [SLWU-3-001, SLWU-3-002 (check vlv)]	No	None	Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing (on steam side). Potential dead leg concern between isolation valve and check valve.	Pipe section used for WLU only. Pipe will be filled to check valve. Configuration between isolation and check valve is unknown; confirm no dead leg concern.	
8	PTN	3	084	5613-M-3084 SH 1	3	Piping	Piping from the U4 AS HDR to class boundry. [6"-6-D, 3-10-078, 3-6"-6-D]	Yes	None	Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing. Header should be hot to the U4 isolation valve		
9	PTN	3	084	5613-M-3084 SH 1	3	Relief Valves	Relief valves [RV-3-6264, RV-3-1422]	Standby	Overpressure control for AS	Overpressure relief	Protect	Ensure operability of relief valve. Normal flow should keep components warm, exhaust configuration is unknown.	Location and configuration is unknown. Walkdown to evaluate whether additional measures are required.	
10	PTN	3	084	5613-M-3084 SH 1	3	Vents / Drains / Misc. Connections	Drain 3-10-41B Capped pipe section 3-2"-3-D Steam Trap	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	

11	PTN	3	084	5613-M-3084 SH 1	4	Piping	Class Piping [3-6"-3-D] to AFW pumps	Yes	Flowpath is not normally used and leads to locked closed valve. Unable to determine if/where this path is credited.	Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing.		
12	PTN	3	084	5613-M-3084 SH 1	4	Piping	Piping [3-4"-6-D] to Locked Close isolation valve [3-10-400]	Yes	N/A; Leads to locked closed valve/ abondoned equipment.	Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing.		
13	PTN	3	084	5613-M-3084 SH 1	4	Vents / Drains / Misc. Connections	Steam Trap/Drains	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
14	PTN	3	084	5613-M-3084 SH 1	5	Piping	Piping to Aux Priming Ejectors [3-2"-6-D]	Yes	Flowpath to Aux Priming Ejectors (Circ water)	Pressure boundary; Condenser Performance	None	Normal operation will keep piping and components warm and well above freezing.		
15	PTN	3	084	5613-M-3084 SH 1	6	Piping	Piping from MS to Turbine Gland Seal [3-2 1/2"-2-C]	Yes	None	Provide Gland Seal Steam	None	Normal operation will keep piping and components warm and well above freezing.		
16	PTN	3	084	5613-M-3084 SH 1	6	Vents / Drains / Misc. Connections	Steam Trap	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
17	PTN	3	084	5613-M-3084 SH 1	7	Piping	Piping to Steam Jet Air Ejectors [3-2"-2-C]	Yes	Provide steam for SJAE	Condenser Performance	None	Normal operation will keep piping and components warm and well above freezing.	SJAEs on TB Op floor	
18	PTN	3	084	5613-M-3084 SH 1	7	Vents / Drains / Misc. Connections	Valves/ drains/ Steam Traps	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
19	PTN	3	084	5613-M-3084 SH 1	8	Piping	Piping to Hogging Ejectors	No	Hogging Ejectors Isolated during operation	None	None	Normal operation will keep piping and components warm and well above freezing.		
20	PTN	3	084	5613-M-3084 SH 1	9	Piping	Piping to Main Priming Ejectors	No	Main Priming Ejectors Isolated during operation	None	None	Normal operation will keep piping and components warm and well above freezing.		
21	PTN	3	085	5613-M-3085 SH 1	1	Piping	ES from HP turbine exhaust to 5A/5B FW HTRS [3-16"-4-CM, 3-10"-4-E]	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
22	PTN	3	085	5613-M-3085 SH 1	1	Piping	Control Valves [BTV-3-1518, -1520]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
23	PTN	3	085	5613-M-3085 SH 1	1	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-3-1518, -1520	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
24	PTN	3	085	5613-M-3085 SH 1	1	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
25	PTN	3	085	5613-M-3085 SH 1	1	Vents / Drains / Misc. Connections	Steam traps [ST-3-19,-20,-21,-22]	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
26	PTN	3	085	5613-M-3085 SH 1	2	Piping	ES from HP turbine exhaust to 6A/6B FW HTRS [3-12"-4-CM, 3-12"-4-D] Connections to Condenser Drains, SWLU, MSR Drains [3-1"-4-U, 3-1 1/2"-4-D, 3-2"-2-C, 8"-5CM]	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no valves shown on this P&ID). Therefore, assumed warm and above freezing.	
27	PTN	3	085	5613-M-3085 SH 1	2	Piping	Connection to RHTR Drain Tank vent [3-2"-2-C]	No	None	Pressure Boundary	Protect	Normal operation will keep piping on steam side of isolation valve warm and well above freezing. Configuration/location of piping is unknown. Inspect during walkdown to determine if actions are required.		
28	PTN	3	085	5613-M-3085 SH 1	2	Piping	Control Valves [BTV-3-1522, -1524]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
29	PTN	3	085	5613-M-3085 SH 1	2	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-3-1522, -1524	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
30	PTN	3	085	5613-M-3085 SH 1	2	Instr. Annunciation / Indication	Local Indication (PI) and associated piping	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	

31	PTN	3	085	5613-M-3085 SH 1	2	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
32	PTN	3	085	5613-M-3085 SH 1	2	Vents / Drains / Misc. Connections	Steam traps [ST-3-17,-18]	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
33	PTN	3	085	5613-M-3085 SH 1	3	Piping	Piping from Condenser to 3B FW HTR Connection to Turbine Cold Reheat STM Line DRN	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no closed valves shown on this P&ID). Therefore, assumed warm and above freezing.	
34	PTN	3	085	5613-M-3085 SH 1	3	Piping	Control Valves [BTV-3-1509, -1510]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
35	PTN	3	085	5613-M-3085 SH 1	3	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-3-1509, -1510	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
36	PTN	3	085	5613-M-3085 SH 1	3	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
37	PTN	3	085	5613-M-3085 SH 1	3	Vents / Drains / Misc. Connections	Steam traps [ST-3-27,-28, -31, -32]	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
38	PTN	3	085	5613-M-3085 SH 1	4	Piping	Piping from Condenser to 4B FW HTR Connections to SWLU, SG Blowdown Recovery System	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no closed valves shown on this P&ID). Therefore, assumed warm and above freezing.	
39	PTN	3	085	5613-M-3085 SH 1	4	Piping	Control Valves [BTV-3-1514]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
40	PTN	3	085	5613-M-3085 SH 1	4	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-3-1514	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
41	PTN	3	085	5613-M-3085 SH 1	4	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
42	PTN	3	085	5613-M-3085 SH 1	4	Vents / Drains / Misc. Connections	Steam trap [ST-3-24]	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
43	PTN	3	085	5613-M-3085 SH 1	5	Piping	Piping from Condenser to 3A FW HTR Connection to Turbine Cold Reheat STM Line DRN	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no closed valves shown on this P&ID). Therefore, assumed warm and above freezing.	
44	PTN	3	085	5613-M-3085 SH 1	5	Piping	Control Valves [BTV-3-1507, -1508]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
45	PTN	3	085	5613-M-3085 SH 1	5	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-3-1507, -1508	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
46	PTN	3	085	5613-M-3085 SH 1	5	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
47	PTN	3	085	5613-M-3085 SH 1	5	Vents / Drains / Misc. Connections	Steam traps [ST-3-25,-26, -29, -30]	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
48	PTN	3	085	5613-M-3085 SH 1	6	Piping	Piping from Condenser to 4A FW HTR Connections to SWLU, SG Blowdown Recovery System	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no valves shown on this P&ID). Therefore, assumed warm and above freezing.	

49	PTN	3	085	5613-M-3085 SH 1	6	Piping	Control Valves [BTV-3-1512]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
50	PTN	3	085	5613-M-3085 SH 1	6	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-3-1512	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
51	PTN	3	085	5613-M-3085 SH 1	6	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
52	PTN	3	085	5613-M-3085 SH 1	6	Vents / Drains / Misc. Connections	Steam trap [ST-3-23]	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
1	PTN	3	087	5613-M-3087, Sh. 1 Turbine Lube Oil System - Lube Oil Reservoir	N/A	Piping	3", 6" pipe, small-bore pipe, Lube Oil Resevoir, Lube Oil Coolers. Equipment located on Ground Floor EL 18' - 0" Turbine Building	Yes	While in cold weather procedure, frequently check that secondary parameters are stable. This includes Turbine Generator Parameters for lube oil, seal oil, and vibration. Required for power generation.	N/A	None	No Protection Required	System lubrication for normal operation. Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F.	FSAR 10.2.3, Procedure 0-ONOP-103.2, p12,13, Turkey Point Extreme Temperature Reassessment p.14
2	PTN	3	087	5613-M-3087, Sh. 2 Turbine Lube Oil System - Lube Oil Conditioner	N/A	Piping	2", 3 " Pipe, Lube Oil Conditioner, heaters, transfer pump, Lube Oil Storage Tank	Yes	While in cold weather procedure, frequently check that secondary parameters are stable. This includes Turbine Generator Parameters for lube oil, seal oil, and vibration. Required for power generation.	N/A	None	No Protection Required	System lubrication for normal operation. Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F.	FSAR 10.2.3, Procedure 0-ONOP-103.2, p12,13, Turkey Point Extreme Temperature Reassessment p.14
3	PTN	3	087	5613-M-3087, Sh. 3 Turbine Lube Oil System - Generator Seal Oil	N/A	Piping	3", 4", small bore pipe, Oil defoaming tank, Loop Seal Tank, Seal Oil Coolers, Seal Oil Pumps	Yes	While in cold weather procedure, frequently check that secondary parameters are stable. This includes Turbine Generator Parameters for lube oil, seal oil, and vibration. Required for power generation.	N/A	None	No Protection Required	Used to Prevent Hydrogen leakage from Generator. Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F.	FSAR 10.2.3, Procedure 0-ONOP-103.2, p12,13, Turkey Point Extreme Temperature Reassessment p.14
1	PTN	3	089	5613-M-3089 SH 1	1	Piping	30" piping, Turbine stop valves (x2) (from Main Steam Header to HP Turbine)	Yes	Requied for Power Generation	Normal Steam flow adequate to prevent freezing.	None	None		
2	PTN	3	089	5613-M-3089 SH 1	1	Piping	4" turbine stop valve bypass (normally closed) (x2)	Yes	Requied for Power Generation; Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	No strategy expected. Normal steam flow will keep both sides of closed valve warm.	
3	PTN	3	089	5613-M-3089 SH 1	1	Piping	18" piping (x4), Turbine control valves (x4) (from Main Steam Header to HP Turbine)	Yes	Requied for Power Generation	Normal Steam flow adequate to prevent freezing.	None	None		
4	PTN	3	089	5613-M-3089 SH 1	1	Instr. Control / Protection	1", 1 1/2" instrument line to Pressure Transmitter (x2) (for steam break protection and control; control of steam dump valves)	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
5	PTN	3	089	5613-M-3089 SH 1	1	Instr. Annunciation / Indication	1", 1 1/2" instrument line to Pressure Indication & Transmitter (x4) (control room indication of HP turbine supply pressure)	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
6	PTN	3	089	5613-M-3089 SH 1	1	Vents / Drains / Misc. Connections	1/2" drains (closed) off of PIT instrument lines	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	Protect	Ensure instrument drain is insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
7	PTN	3	089	5613-M-3089 SH 1	2	Piping	32" & 45" Steam piping (from HP Turbine to 4 MSRs)	Yes	Requied for Power Generation	Normal Steam flow adequate to prevent freezing.	None	None		
8	PTN	3	089	5613-M-3089 SH 1	2	Instr. Annunciation / Indication	PI and PT instruments 1/2" instrument tubing	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
9	PTN	3	089	5613-M-3089 SH 1	2	Instr. Local	Temporary Instrument ports: PX (x3) SN (x2) with closed root valve	No	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	

10	PTN	3	089	5613-M-3089 SH 1	3	Piping	36" & 60" Steam piping (from 4 MSRs to 2 LP Turbines)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None		
11	PTN	3	089	5613-M-3089 SH 1	3	Piping	Reheat stop valves (x4); interceptor valves (x4) (from 4 MSRs to 2 LP Turbines)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None		
12	PTN	3	089	5613-M-3089 SH 1	3	Vents / Drains / Misc. Connections	1/2" vent (closed)(x4) 3/4" vent (closed)(x4) 3/4" capped end (from 4 MSRs to 2 LP Turbines)	No	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
13	PTN	3	089	5613-M-3089 SH 1	3	Instr. Annunciation / Indication	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	Yes	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
14	PTN	3	089	5613-M-3089 SH 1	3	Instr. Control / Protection	PIT (x3) (pressure indicator and transmitter) (input to Turbine Control System)	Yes	Maintain steam pressure boundary.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
15	PTN	3	089	5613-M-3089 SH 1	4	Piping	1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" piping and reducers. (Valve leakoffs to Gland Steam Cond or South Cond)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None		5613-M-3014 SH 1 5613-M-3089 SH 2
16	PTN	3	089	5613-M-3089 SH 1	5	Piping	1" and 1 1/2" piping, flow control valves (normally closed, fail open) HP steam supply drains to the South Condenser. These drains are used to direct condensate to condenser.	Yes	None	Likely located on TB Mezz level between HP turbine and south condenser	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. Main steam piping and condenser will be hot. Assume FCVs on these lines are not opened during normal operation. However orifice plate keeps constant flow open in one leg (bypassing HP turbine.)	5613-M-3014 SH 1
17	PTN	3	089	5613-M-3089 SH 1	5	Instr. Local	Temporary Instrument ports: PX (x4) (closed root valve)	No	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. Main steam line will be hot.	
18	PTN	3	089	5613-M-3089 SH 1	5	Instr. Annunciation / Indication	PI and PT instruments instrument tubing	Yes	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
19	PTN	3	089	5613-M-3089 SH 1	6	Piping	1 1/2" piping Turbine stop valve leakoffs to HP turbine cylinder heating	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown. May be insulated already. Main steam piping will be hot.	5613-M-3089 SH 2
20	PTN	3	089	5613-M-3089 SH 1	7	Piping	16" piping (x2) Extraction Steam to Feedwater Heater 5A/B	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None		5613-M-3085 SH 1
21	PTN	3	089	5613-M-3089 SH 1	8	Piping	3", 1 1/2", and 1" piping HP turbine exhaust to FW Htr 3A/B drain and drain to South cond.	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main steam piping will be hot.	5613-M-3014 SH 1 5613-M-3085 SH 1
22	PTN	3	089	5613-M-3089 SH 1	9	Piping	1 1/2" piping HP turbine exhaust drain to South cond.	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main steam piping will be hot.	5613-M-3014 SH 1
23	PTN	3	089	5613-M-3089 SH 1	10	Piping	1" piping HP turbine exhaust to extraction steam.	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main steam piping will be hot.	5613-M-3085 SH 1
24	PTN	3	089	5613-M-3089 SH 1	11	Piping	1" piping HP turbine bypass	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main steam piping will be hot.	
25	PTN	3	089	5613-M-3089 SH 1	--	Heat Exchangers	MSR 3A, 3B, 3C, and 3D	Yes	Requied for Power Generation	Normal Steam flow adequate to prevent freezing.	None	None		
26	PTN	3	089	5613-M-3089 SH 1	--	Instr. Local	PI (pressure indicator) (x2 per MSR) 1" instrument tube MSR 3A, 3B, 3C, and 3D	Yes	Requied for Power Generation	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. MSR will be hot.	

27	PTN	3	089	5613-M-3089 SH 1	--	Instr. Annunciation / Indication	TE (temperature element) (x2 per MSR) (closed root valve) MSR 3A, 3B, 3C, and 3D	Yes	Requied for Power Generation	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. MSR will be hot.	
28	PTN	3	089	5613-M-3089 SH 1	--	Instr. Local	Temporary Instrument ports: PX (x2 per MSR) (closed root valve) MSR 3A, 3B, 3C, and 3D	No	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. MSR will be hot.	
29	PTN	3	089	5613-M-3089 SH 1	--	Relief Valves	One relief valve per shell. MSR 3A, 3B, 3C, and 3D	Standby	Requied for Power Generation	Normal steam flow keeps line warm and well above freezing. MSRs already insulated.	None	No additional strategies - normal steam flow will keep piping and components warm and well above freezing.	Located on TB operating deck. Inspect during walkdown. MSR will be hot, unlikely to freeze. Verify close to MSR	
30	PTN	3	089	5613-M-3089 SH 1	--	Instr. Annunciation / Indication	TE (temperature element) (one per LP Turbine) (LP Turbine 3B South & 3A North)	Yes	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. LP Turbine will be hot.	
31	PTN	3	089	5613-M-3089 SH 2	1	Piping	2", 2 1/2", 3", 3 1/2", 4", 5", 6", 8", 10" piping, reducers, one air operated control valve (2.5") this segment is main steam supply to turbine gland seal lines (HP and LP turbines)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
32	PTN	3	089	5613-M-3089 SH 2	1	Instr. Control / Protection	Pressure Control Instrument (PC x2)	Yes	Maintain steam pressure boundary. Regulate gland seal supply steam conditions.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
33	PTN	3	089	5613-M-3089 SH 2	1	Instr. Annunciation / Indication	Pressure Transmitter (PT) teed off of 4" pipe near HP Turb gland seal inlet. PT instrument has 1/2" tubing. PT has local/remote indication and control room alarm on low pressure.	Yes	Maintain steam pressure boundary. Regulate gland seal supply steam conditions.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
34	PTN	3	089	5613-M-3089 SH 2	1	Instr. Local	Pressure Indicator (PI) w/ 3/8" and 1/2" instrument tubing.	Yes	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. Main steam piping will be hot.	
35	PTN	3	089	5613-M-3089 SH 2	1	Strainers	Wye strainers (x6)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
36	PTN	3	089	5613-M-3089 SH 2	1	Vents / Drains / Misc. Connections	1 1/2" drains (x2) and 2" drains (x4) from Wye strainers	No	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Short drain connected to hot steam pipe. Steam piping and strainer will be hot.	
37	PTN	3	089	5613-M-3089 SH 2	1	Relief Valves	relief valve (25 psig) and rupture disc (100 psig)	Standby	Provide over-pressure protection for gland seal steam piping.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Relief valve and rupture disc likely installed in close proximity to main 10" pipe. Therefore, hot process flow in main pipe will keep relief valve and rupture disc from freezing. Steam piping will be hot.	
38	PTN	3	089	5613-M-3089 SH 2	2	Piping	1", 8", 10" piping, reducers, and one air operated control valve (6") These segments are misc condensate drain lines from turbine gland seal supply lines to the South and North condensers.	Yes	Maintain turbine gland seal pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
39	PTN	3	089	5613-M-3089 SH 2	3	Piping	2 1/2", 4", 5", 8", 10" piping, reducers Turbine gland seal exhaust piping to Gland Steam Condenser	Yes	Maintain turbine gland seal pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
40	PTN	3	089	5613-M-3089 SH 2	4	Piping	1 1/4", 1 1/2", 3" piping and reducers, one air operated control valve on each main 3" line.	Yes	Maintain turbine gland seal pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	

41	PTN	3	089	5613-M-3089 SH 2	4	Relief Valves	relief valve teed off the 3" main line (x2)	Standby	Provide over-pressure protection for cylinder heating piping	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Relief valve is likely installed in close proximity to main 3" pipe. Therefore, hot process flow in main pipe will keep relief valve from freezing. Steam piping will be hot.	
42	PTN	3	089	5613-M-3089 SH 2	4	Strainers	Wye strainers (x2)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
43	PTN	3	089	5613-M-3089 SH 2	4	Vents / Drains / Misc. Connections	3/4" drains (x2) from Wye strainers	No	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Short drain connected to hot steam pipe. Steam piping and strainer will be hot.	
44	PTN	3	089	5613-M-3089 SH 2	5	Vents / Drains / Misc. Connections	Pipe size not shown. LP turbine water trough drain to "Waste Drain Near Bowser Filter"	Yes	None	Dead leg	None	None	Inspect during walkdown, may actually be internal to condenser. Turbine and condenser will be hot and preclude freezing.	
45	PTN	3	089	5613-M-3089 SH 2	6	Vents / Drains / Misc. Connections	1" loop seal drains from LP Turbine gland seal exhaust to either an equipment drain or gland steam condensate reciever.	Yes	None	Dead leg	None	None	Inspect during walkdown, may actually be internal to condenser. Turbine and condenser will be hot and preclude freezing.	
46	PTN	3	089	5613-M-3089 SH 2	7	Piping	6", 1" piping Turbine valves steam leakoffs to gland steam condenser	Yes	None	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Steam piping will be hot.	
47	PTN	3	089	5613-M-3089 SH 2	8	Piping	3" piping, loop seal Gland steam condenser drain to condensate recovery reciever	Yes	None	Normal process flow is warm. Gland steam condenser and Cond. Recovery Receiver are located on TB ground floor and partially enclosed.	None	None	Inspect during walkdown, insulation may already be present. Process piping will be hot.	5613-M-3080 SH 1
48	PTN	3	089	5613-M-3089 SH 2	8	Vents / Drains / Misc. Connections	vent and overflow pipe	Yes	None	Normal process flow is warm. Gland steam condenser and Cond. Recovery Receiver are located on TB ground floor and partially enclosed.	None	None	Inspect during walkdown, insulation may already be present. Process piping will be hot.	
49	PTN	3	089	5613-M-3089 SH 2	8	Instr. Local	Temporary Instrument port: TX	No	None	Dead leg	None	None	Inspect during walkdown. Expected to be short run of pipe and potentially insulated already. Process piping will be warm. Location is ground floor of TB (partially enclosed between condensers and Rx bldg). Location may preclude freezing.	
50	PTN	3	089	5613-M-3089 SH 2	9	Piping	6" piping disch to atmos, 1 1/2" drain piping, exhaust blower (x2) Air exhaust from Gland Steam Condenser	Yes	None	Normal process flow is warm. Gland steam condenser is located on TB ground floor and partially enclosed.	None	None	Inspect during walkdown, insulation may already be present. Process piping will be warm. Location is ground floor of TB (partially enclosed between condensers and Rx bldg). Location may preclude freezing.	
51	PTN	3	089	5613-M-3089 SH 2	Gland Steam Condenser	Heat Exchangers	Gland Steam Condenser	Yes	Condenses gland steam exhaust from turbines.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Gland Steam Condenser will be hot/warm. Location is ground floor of TB (partially enclosed between condensers and Rx bldg). Location may also preclude freezing.	
52	PTN	3	089	5613-M-3089 SH 2	Gland Steam Condenser	Instr. Local	PI (pressure indicator) local indication of gland steam cond shell pressure	Yes	None	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Gland Steam Condenser will be hot/warm. Location is ground floor of TB (partially enclosed between condensers and Rx bldg). Location may also preclude freezing.	
53	PTN	3	089	5613-M-3089 SH 2	HP Turbine	Instr. Local	Temperature Element (TE x5), Pressure indication (PI x4), 1/2" tubing and open root valve.	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. HP turbine will be hot. Temp Element and pressure indicators unlikely to freeze.	

54	PTN	3	089	5613-M-3089 SH 2	HP Turbine	Instr. Control / Protection	DP controler (x2)	Yes	Requied for Power Generation; Main steam pressure boundary; Regulates incoming cylinder heating steam flow.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. HP turbine will be hot. Temp Element and pressure indicators unlikely to freeze.	
55	PTN	3	089	5613-M-3089 SH 2	LP Turbine North & South	Instr. Local	Temperature Element (1 per turbine), Temperature indicator (1 per turbine),	Yes	Maintain turbine pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. LP turbine will be hot. Temp Element and indicator unlikely to freeze.	
56	PTN	3	089	5613-M-3089 SH 2	LP Turbine North & South	Instr. Local	Temporary Instrument ports: PX (x4 on each turbine) with closed root valve	No	Maintain turbine pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. LP turbine will be hot. Temp Element and indicator unlikely to freeze.	
57	PTN	3	089	5613-M-3089 SH 2	LP Turbine North & South	Instr. Control / Protection	TC (Temperature controller) one on each LP Turbine, actuates Exhaust hood sprays to regulate LP turbine exhaust temp.	Standby	Maintain turbine pressure boundary	Dead leg	Protect	Ensure capillary instrument tubing is insulated.	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. HP turbine will be hot. Temp Element and pressure indicators unlikely to freeze.	
1	PTN	3	090	5613-M-3090, Sh. 1 Generator System Hydrogen & CO2 Supply	N/A	Piping	Small bore piping, gas dryer, reactivating blower, Equipment located on Ground Floor EL 18' - 0" Turbine Building	Yes	Required to maintain 100% power generation.	N/A	None	No Protection Required - Gas system	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F. Note: Hydrogen gas leak rate changes with temperature and pressure. U3 has elevated H2 leakage.	FSAR 10.1.1, 10.2.2 (p. 10.2-3). Nothing in Cold Weather Procedure 0-ONOP-103.2, See Turkey Point Extreme Temperature Reassessment, Mar 2021, p.14
3	PTN	3	090	5613-M-3-117 Sh. 1 5613-M-3-117 Sh. 2	-		Main Generator H2 Purity Panel 3C19	Yes	No safety function; however, provides control to pressure analysis components and alarms in the CR. Panel only qualified to 32F	-	Protect	Consider implementing global strategy (such as tenting and/or space heaters) to protect the panel to maintain ambient temperature of 32F	-	5613-M-3090 Sh. 1
1	PTN	4	IAS / 013	5614-M-013-1 Sh. 1 5614-M-013-1 Sh. 3	-		IA Electric Compressor Skid 4CM	Yes	No Safety function; however, it normally provides air to components that require instrument air. Nitrogen stations are the SR backup. Compressor only specified to 32F.	-	Protect	Consider implementing global strategy (such as tenting and/or space heaters) to protect the electric compressor skid.	Consider global strategy to protect either electric driven or diesel driven instrument air compressor skids from at least one unit. A single electric motor or diesel driven compressor from either units is fully capable of providing 100% of the IA needs for both units. Therefore, global strategy does not need to be implemented for all four IA compressors.	5614-M-3013 Sh. 1
2	PTN	4	IAS / 013	5614-M-013-2 Sh. 1 5614-M-013-2 Sh. 4 5614-M-013-2 Sh. 6 5614-M-013-2 Sh. 7	-		IA Diesel Driven Compressor Skid 4CD	Yes	No Safety function; however, it normally provides air to components that require instrument air. Nitrogen stations are the SR backup. Compressor only specified to 32F.	-	Protect	Consider implementing global strategy (such as tenting and/or space heaters) to protect the diesel driven compressor skid.	Consider global strategy to protect either electric driven or diesel driven instrument air compressor skids from at least one unit. A single electric motor or diesel driven compressor from either units is fully capable of providing 100% of the IA needs for both units. Therefore, global strategy does not need to be implemented for all four IA compressors.	5614-M-3013 Sh. 1
1	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Instrumentation - Local	PI-4-1467, -1468, -1469, -1470, -6900	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
2	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Instrumentation - Control / Protection	FE (FT)-4-6900	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	

3	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Instrumentation - Annunciation / Recorder / Indication	PT (PS)-4-1621	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
4	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Piping	4-20"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
5	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Piping	4-16"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
6	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Motors	Turbine Plant Cooling Water Pump Motors (A, B)	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	Swap Pumps and Trains Regularly	Prevent Component Failure from Insufficient Lubrication. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	
7	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Heat Exchangers	Turbine Cooling Water Heat Exchangers (3A, 3B)	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
8	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Relief Valves	RV-4-171A, -171B	No	Protect Turbine Cooling Water Heat Exchangers (3A, 3B)	Dead Ended Water Leg	Protect	Relief Valves are often located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Trapped water will cause valve to relieve avoiding freezing.	Dead Legs May Freeze and Burst.	

9	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	1	Vents / Drains / Misc. Connections	Small Bore Vents, Drains & Test Connections	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
10	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	2	Piping	4-8"-8-S	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Open 3-60-887, -888, -889, -890 periodically to allow flow through the branch lines.	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
11	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	2	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
12	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	3	Piping	4-2"-8-F	Standby	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
13	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	3	Piping	4-1"-8-F	Standby	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	

14	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	3	Outdoor Tanks	T.P.C.W. Additive Tank	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
15	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	3	Relief Valves	RV-4-1437	No	Protect T.P.C.W. Additive Tank	Dead Ended Water Leg	Protect	Relief Valves are often located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Trapped water will cause valve to relieve avoiding freezing.	Dead Legs May Freeze and Burst.	
16	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	4	Instrumentation - Annunciation / Recorder / Indication	LS-4-1527, -1528	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
17	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	4	Instrumentation - Local	FM-4-0540, LG-4-1422, -1423, -1424	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
18	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	4	Instrumentation - Control / Protection	LC-4-1530	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Control Function	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
19	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	4	Piping	4-2"-4-D, 3-2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Valves (4-60-004, -007, -086) shall either be opened periodically to permit flow through CV-4-1530 bypass, FM-4-0540 bypass, condensate addition bypass, respectively, or crack open to ensure trickle flow.	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
20	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	4	Piping	4-8"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Valve (4-60-021) shall either be opened periodically to permit flow through the T. P.C. W. Surge Tank drain or crack open to ensure trickle flow.	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.

21	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	4	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
22	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	5	Piping	4-1"-8-F, 4-2 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
23	PTN	4	TPCW / 008	5614-M-3008, Sh. 1	5	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
24	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	1	Instrumentation - Annunciation / Recorder / Indication	FE(FI)-4-1410	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	

25	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	1	Piping	4-16"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
26	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	1	Piping	4-12"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
27	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	1	Piping	4-10"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
28	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	1	Piping	4-8"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
29	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	1	Vents / Drains / Misc. Connections	Small Bore Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
30	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	2	Instrumentation - Local	PI-4-1475, -1476, -1477, -1478	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
31	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	2	Instrumentation - Local	FG-4-1406, -1415	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
32	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	2	Piping	4-2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	

33	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	2	Piping	4-2"-8-F, 4-1 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
34	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	2	Heat Exchangers	Feedwater Pump Lube Oil Coolers (East, West)	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
35	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	3	Piping	4-2 1/2"-8-F, 4-2"-8-F, 4-1 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
36	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	3	Heat Exchangers	Sample Coolers (SC-4-1435, -1436, -1437, -1438, -1439, -1440)	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
37	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	3	Relief Valves	RV-4-6720	No	Protect Various Sample Coolers	Dead Ended Water Leg	Protect	Relief Valves are often located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Trapped water will cause valve to relieve avoiding freezing.	Dead Legs May Freeze and Burst.	
38	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	4	Instrumentation - Local	PI-4-1471, -1472, -1473, -1474,	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
39	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	4	Piping	3-10"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
40	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	4	Valves	Bypass valves Around CV-4-2200	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Open Valve (4-60-116) periodically to allow flow through the bypass around valves (CV-4-2200).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	

41	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	4	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
42	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	5	Instrumentation - Local	FE(FI-4-861, -862, PI-4-861, 862, 863, 864	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. Open Valve (4-60-874, -878) periodically to maintain flow through flow element bypasses.	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
43	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	5	Piping	4-3"-8-F, 4-2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
44	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	5	Strainers	YS-4-8601, -8602	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
45	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	5	Heat Exchangers	EHC Heat Exchangers 4E01, 4E02	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.

46	PTN	4	TPCW / 008	5614-M-3008, Sh. 2	5	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
47	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	1	Instrumentation - Local	FG-4-1416	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
48	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	1	Piping	4-4"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
49	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	1	Piping	4-3"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
50	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	1	Piping	4-2 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
51	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	3	Instrumentation - Local	FG-4-1410, -1407, -1411, -1405, -1409, -1408	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
52	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	3	Heat Exchangers	Heater Drain Pump 4A,4B (Stuffing Box Cooler, Mechanical Seal Quenching, Motor Bearing Cooler)	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.

53	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	3	Piping	4-2"-8-F, 4-1 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
54	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	4	Piping	2", 1", 3/4", 1/2"	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
55	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	4	Heat Exchangers	Steam Generator A, B, C Blowdown Sample Coolers, LSC Steam Generator A, B, C, Feedwater Sample Coolers, Main Steam Sample Coolers, Steam Generator Wet Layup Pump A, B, C Seal Flush Cooler, Steam Generator Wet Layup Pump Sample Cooler, Steam Generator A, B, C to Sample Hood Sample Coolers	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F. Open Valves (4-60-707, -709) periodically to ensure flow through SPARE heat exchanger (SC-4-1429).	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
56	PTN	4	TPCW / 008	5614-M-3008, Sh. 3	4	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
57	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	1	Instrumentation - Local	FE(FI)-4-1411, PI-4-1479	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
58	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	1	Piping	4-16"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
59	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	1	Valves	Bypass valves Around CV-4-2203	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Open Valve (4-60-212) periodically to allow flow through the bypass around valves (CV-4-2203).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	

60	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	1	Vents / Drains / Misc. Connections	Small Bore Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
61	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	2	Instrumentation - Local	PX-4-1467, -1469, PI-4-1570, -1571	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
62	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	2	Instrumentation - Local	FG-4-1412, -1413	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
63	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	2	Piping	4-4"-8-F	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
64	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	2	Piping	4-3"-8-F	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. Open Valves (4-60-269) periodically to maintain flow through Air Side and Hydrogen Seal Oil Cooler	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
65	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	2	Piping	4-2 1/2"-8-F	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. Open Valves (4-60-262) periodically to maintain flow through Air Side and Hydrogen Seal Oil Cooler	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
66	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	3	Instrumentation - Local	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
67	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	3	Piping	4-6"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	

68	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	3	Piping	4-4"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
69	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	3	Piping	4-3"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
70	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	3	Piping	4-2 1/2"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.	
71	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	3	Valves	Bypass valves Around Valves (3-60-221, -225, -235, -242, -249, -254)	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Open Valve (4-60-226, -222, -236, -243, -250, -255) periodically to allow flow through the bypass around valves (4-60-225, -221, -235, -242, -249, -254).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
72	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	3	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
73	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	4	Instrumentation - Local	PX-4-1478. -1479, -1480, -1481, PI-4-1481, -1482, -1483, -1484	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
74	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	4	Instrumentation - Local	FG-4-1426	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	

75	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	4	Piping	4-8"-8-F	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
76	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	4	Piping	1"	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
77	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	4	Heat Exchangers	Condensate Pump A, B, C Motor Coolers, Generator Hydrogen Cooler A, B, C, D	Yes	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Maintain NSR Cooling and Plant Power Production	Mitigate	No Action Required as Long as Flow is Maintained. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance. During normal operation, water is circulated by one running turbine cooling water pump and the heat removed is transferred to the intake cooling water system through the two turbine cooling water heat exchangers	Per 0-ONOP-103.2, ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure.
78	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	4	Valves	Bypass valves Around Throttle Valves	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	Open Valves (4-60-189, -196, -203, -210) periodically to allow flow through the bypass around valves (4-60-188, -195, -202, -209, respectively).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
79	PTN	4	TPCW / 008	5614-M-3008, Sh. 4	4	Vents / Drains / Misc. Connections	Small Bore Vents	No	The turbine cooling water system is designed to provide a heat sink for power cycle equipment during normal operation and normal shutdown. The system serves no safety function since it is not required to achieve safe shutdown or to mitigate the consequences of a LOCA.	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. With ICW Temperature as Low as 50°F, TC temperature will be approximately 57 - 60°F.	
1	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Instrumentation - Local	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	Yes	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
2	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Instrumentation - Local	FG-4-1417, -1418, -1419, -1420	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance.	
3	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Piping	108", 90", 84"	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
4	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Piping	4-6"-7-R	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
5	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Piping	4-2"-7-U	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
6	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Motors	Circulating Wate Pump 4A1, 4A2, 4B1, 4B2 Motors	Yes	None	Maintain NSR Cooling and Plant Power Production	Mitigate	Swap Pumps and Trains Regularly	Prevent Component Failure from Insufficient Lubrication. During normal operation, water is circulated by more than one Circulating Water Pumps. During cold weather operation, pumps are secured. Swap pumps operating.	
7	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Motor Operators	MOV-4-1413, -1414, -1415, -1416	Yes	None	Maintain NSR Cooling and Plant Power Production	Mitigate	Enclose/Tent with Heat	Prevent Component Failure from Insufficient Lubrication	

8	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Heat Exchangers	North Condenser (4E7A), South Condenser (4E7B)	Yes	None	NSR Cooling Requiremen	None	No Action Required	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance CW Temperature as Low as 50°F	
9	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	None	Dead Ended Water Leg	Mitigate	**Vents** are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. **Drain - Options** Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. CW Temperature as Low as 50°F	
10	PTN	4	CWS / 010	5614-M-3010, Sh. 1	1	Vents / Drains / Misc. Connections	Pitot Tube Connections	No	None	Dead Ended Water Leg	Mitigate	Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. CW Temperature as Low as 50°F	
11	PTN	4	CWS / 010	5614-M-3010, Sh. 1	2	Piping	2"	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Ensure SV-4-1413 and -1414 cycle regularly to ensure flow through the piping.	
12	PTN	4	CWS / 010	5614-M-3010, Sh. 1	3	Instrumentation - Local	PI-4-3420, -3425	No	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
13	PTN	4	CWS / 010	5614-M-3010, Sh. 1	3	Piping	4-6"-13-T, 4-18"-13-T	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Ensure SV-4-1413 and -1414 cycle regularly to ensure flow through the piping.	
14	PTN	4	CWS / 010	5614-M-3010, Sh. 2	1	Instrumentation - Local	PI-4-1536, -1537. -1538, -1539, -1590,	Yes	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	

15	PTN	4	CWS / 010	5614-M-3010, Sh. 2	1	Instrumentation - Annunciation / Recorder / Indication	PS-4-2036, -2037, -2038, -2039, -2040, -2041, -2042, -2043	Yes	Indication provided to CR and/or Plant Computer.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide CR Operators Plant Status	
16	PTN	4	CWS / 010	5614-M-3010, Sh. 2	1	Instrumentation - Control / Protection	PS-3-2040, -2041, -2042, 2043	Yes	Provides Controlling Function	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide Controlling Functionality	
17	PTN	4	CWS / 010	5614-M-3010, Sh. 2	1	Piping	4-8"-7-F, 4-6"-7-F, 4-4"-7-F	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
18	PTN	4	CWS / 010	5614-M-3010, Sh. 2	1	Piping	1" and Smaller Drain Piping around Moisture Separator	Standby	None	Dead Ended Water Leg	Mitigate	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Open Valve (4-50-1028) periodically to drain the Moisture Separator drain piping.	
19	PTN	4	CWS / 010	5614-M-3010, Sh. 2	1	Vents / Drains / Misc. Connections	Small Bore Vents	No	None	Potentially Ice Block Vent	None	No Action Required	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance CW Temperature as Low as 50°F	
20	PTN	4	CWS / 010	5614-M-3010, Sh. 3	1	Instrumentation - Local	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	Yes	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
21	PTN	4	CWS / 010	5614-M-3010, Sh. 3	1	Instrumentation - Local	FI-4-1414, -1452, -1454, -1403	Yes	None	Local Indication	Mitigate	Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	

22	PTN	4	CWS / 010	5614-M-3010, Sh. 3	1	Instrumentation - Control / Protection	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	Yes	Provides Controlling Function	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide Controlling Functionality	
23	PTN	4	CWS / 010	5614-M-3010, Sh. 3	1	Instrumentation - Annunciation / Recorder / Indication	PoS-4-1700, PS-4-2018	Yes	Indication provided to CR and/or Plant Computer.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide CR Operators Plant Status	
24	PTN	4	CWS / 010	5614-M-3010, Sh. 3	1	Piping	4-3"-10-Y. 4-2"-10-Y, 4-1 1/2"-10-Y, 4-3/4"-10	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
25	PTN	4	Screen Wash / 011	5614-M-3011, Sh. 1	1	Instrumentation - Local	PI-4-1000, -2020, -2021, -2022, -2023	Yes	None	Local Indication	None	The instrumentation shall be removed as part of the Cold Weather Preparation plan and the root and/or instrument valve will be cracked open to implement a trickle flow to minimize the potential for freezing. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
26	PTN	4	Screen Wash / 011	5614-M-3011, Sh. 1	1	Instrumentation - Control / Protection	PS-4-1000, -2020, -2021, -2022, -2023	Yes	Provides Controlling Function	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing <u>Options</u> Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide Controlling Functionality	
27	PTN	4	Screen Wash / 011	5614-M-3011, Sh. 1	1	Piping	6", 3"	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
28	PTN	4	Screen Wash / 011	5614-M-3011, Sh. 1	1	Piping	1 1/2"	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Open Valves (4-50-149, -178, -206, -207) periodically to allow flow to the respective spargers and clear the 1 1/2" lines.	

29	PTN	4	Screen Wash / 011	5614-M-3011, Sh. 1	1	Vents / Drains / Misc. Connections	1 1/2" Hose Connections	Yes	None	Maintain NSR Cooling and Plant Power Production	None	No Action Required as Long as Flow is Maintained. CW Temperature as Low as 50°F	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance Open Valves (4-50-146, -154, -197, -208) periodically to allow flow through the dead ended hose connections.	
1	PTN	4	IAS / 013	5614-M-3013, Sh. 1	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	0-ONOP-103.2 already addresses the following: • 4-40-351, UNIT 4 IA 4F40B DRYER PREFILTER DRAIN YS-4-1430 BLOWDOWN • IAS-4-047, UNIT 4 IA 4F5B PARTICULATE FILTER DRAIN VALVE • IAS-4-046, UNIT 4 IA 4F5A PARTICULATE FILTER DRAIN VALVE • 4-40-347, UNIT 4 IA 4F40A DRYER PREFILTER DRAIN YS-4-1429 BLOWDOWN • 4-40-2027, 4F37 MIST ELIMINATOR DRAIN YS-4-1422 BLOWDOWN VALVE • 4-40-2026, 4T10 IA RECEIVER TANK DRAIN YS-4-1423 BLOWDOWN VALVE • 4-40-2267, UNIT 4 IA 4CA1&2 DISCHARGE PIPING YS-4-1424 STRAINER BLOWDOWN VLV • 4-40-2261, 4CA1 IA AFTERCOOLER DRAIN YS-4-1426 BLOWDOWN VALVE • 4-40-2264, 4CA2 IA AFTERCOOLER DRAIN YS-4-
2	PTN	4	IAS / 013	5614-M-3013, Sh. 2	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valve (4-40-2244) off Instrument Air Accumulator is periodically opened to drain the accumulator. Ensure Valves (4-40-079, -192) off the IA Distribution Supply to the Radwaste Building is periodically opened to drain the line. Ensure Valves (4-40-1513, -1514, -1515, -1516, -1517, -1518, -1519, -1520) off the Air Reserve Flasks (A, B, C, D, E, F, G, H) are periodically opened to drain the flasks. Ensure Valve (4-40-359) is periodically opened to drain the Turbine Deck Panel. Ensure Valves (4-40-358C, -422B) are periodically opened to drain the associated line.

3	PTN	4	IAS / 013	5614-M-3013, Sh. 3	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (4-40-467, -478, -489C, -1317, -1360) are periodically opened to drain the associated line. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)
4	PTN	4	IAS / 013	5614-M-3013, Sh. 4	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (4-40-547, -626, -1320, -1336) are periodically opened to drain the associated lined. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)
5	PTN	4	IAS / 013	5614-M-3013, Sh. 5	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (4-40-520A, -530C, -1358) are periodically opened to drain the associated line. Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)

6	PTN	4	IAS / 013	5614-M-3013, Sh. 7	tire Drawi	Vents / Drains / Misc. Connections	Small Bore Drains	No	The Instrument Air System (IAS) consists of air compressors, receiver tanks, aftercoolers, moisture separators, desiccant dryers, particulate filters, instrumentation and interconnecting piping and valves. The system is designed to provide a continuous reliable air source during normal plant operation.	Dead Ended Legs	None	None - The desiccant dryers are capable of lowering the dewpoint of the instrument air to 40°F which satisfies the ISA standard of 18°F below minimum ambient temperature.	In accordance with 0-ONOP-103.2, "Cold/Hot Weather Conditions" IF outside air temperature is predicted to be lower than 32°F, THEN PERFORM the following: BLOWDOWN instrument air lines to Remove any Trapped Water, BLOWDOWN air lines exposed to outside air temperature to remove any trapped water.	Majority of Piping on This P&ID is within Containment. The following shall be specifically added to 0-ONOP-103.2: Ensure Valves (4-40-716A, -716B, -716C) are periodically opened to drain the associated Accumulator Tank (4T75A, 4T75B, 4T75C). Numerous other potentially dead ended lines exist on the P&ID. These locations will need to be verified based on plant walkdown and configuration determination. (This assumes all the Air Connections are above the branch piping centerlines)
1	PTN	4	CNDSR / 014	5614-M-3014 SH 1	1	Piping	Direct piping connections to Condenser 3B Misc pipe sizes from 1" to 18", and 30" and 72".	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
2	PTN	4	CNDSR / 014	5614-M-3014 SH 1	2	Piping	8", 10" piping Air Removal Header to Steam Jet Air Ejectors	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
3	PTN	4	CNDSR / 014	5614-M-3014 SH 1	3	Piping	2" piping and control valves (air operated) Condensate Makeup Spray (from Deimineralized Water Storage Tank)	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	Protect	Ensure 2" piping and valves are insulated. This is likely on a lower level of the TB and so a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present. Condenser will be hot. Piping and control valves may be in a partially enclosed area that will be mitigated using global strategies.	5614-M-3014 SH 2, 5610-M-3074 SH 2
4	PTN	4	CNDSR / 014	5614-M-3014 SH 1	4	Piping	12" Steam Trap Drain Header, 4-12"-2-C	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
5	PTN	4	CNDSR / 014	5614-M-3014 SH 1	4	Piping	Individual steam trap drain connections to header. Misc piping 2", 1 1/2", 1", 3/4", 1/2"	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
6	PTN	4	CNDSR / 014	5614-M-3014 SH 1	4	Vents / Drains / Misc. Connections	3 pipe studs with closed valves (30-1041, 4-30-984, 4-30-981, and 4-30-981A)	No	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure capped and dead end pipe connections are insulated.	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
7	PTN	4	CNDSR / 014	5614-M-3014 SH 1	5	Piping	3/4" and 1/2" instrument line piping	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure instrument line piping is insulated. If piping is located on a lower level of the TB and a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
8	PTN	4	CNDSR / 014	5614-M-3014 SH 1	5	Instr. Control / Protection	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure instruments are insulated. Normal fluid temp may preclude freezing with insulation. If piping is located on a lower level of the TB and a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
9	PTN	4	CNDSR / 014	5614-M-3014 SH 1	5	Vents / Drains / Misc. Connections	One capped pipe with closed root valve (near PS 4-1613A)	No	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure capped pipe and valve connections are insulated.	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
10	PTN	4	CNDSR / 014	5614-M-3014 SH 1	h Condens	Heat Exchangers	South Condenser 4B	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal fluid conditions adequate to prevent freezing.	None	None		
11	PTN	4	CNDSR / 014	5614-M-3014 SH 1	h Condens	Instr. Local	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	No	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	

12	PTN	4	CNDSR / 014	5614-M-3014 SH 1	h Condens	Instr. Annunciation / Indication	Level Transmitter (LT) Condenser level with control room annunciation (high/low)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
13	PTN	4	CNDSR / 014	5614-M-3014 SH 1	h Condens	Instr. Local	Local level guage (x2)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
14	PTN	4	CNDSR / 014	5614-M-3014 SH 1	h Condens	Motor Operator Valve	Vent (screened open flange) with Motor Op Valve MOV-4-VAB1	Standby	None	Dead Leg	Protect	Ensure vent pipe and MOV are insulated or in close proximity to the condenser which would preclude freezing.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe and location of MOV in proximity to Condenser. Condenser will be hot. Include with global freeze evaluation for MOVs	
15	PTN	4	CNDSR / 014	5614-M-3014 SH 1	h Condens	Vents / Drains / Misc. Connections	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (4-1"-E) (x1)	No	None	Dead Leg	Protect	Ensure piping and end cap are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to Condenser. Condenser will be hot.	
16	PTN	4	CNDSR / 014	5614-M-3014 SH 2	1	Piping	Direct piping connections to Condenser 4A Misc pipe sizes from 1" to 18", and 30" and 72".	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
17	PTN	4	CNDSR / 014	5614-M-3014 SH 2	2	Piping	8", 10" piping Air Removal Header to Steam Jet Air Ejectors	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
18	PTN	4	CNDSR / 014	5614-M-3014 SH 2	3	Piping	10" header, and 2" piping and control valves (air operated) Condensate Makeup Spray (from Demineralized Water Storage Tank)	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	Protect	Ensure 2" piping and valves are insulated. This is likely on a lower level of the TB and so a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present. Condenser will be hot. Piping and control valves may be in a partially enclosed area that will be mitigated using global strategies.	5614-M-3014 SH 1, 5610-M-3074 SH 2
19	PTN	4	CNDSR / 014	5614-M-3014 SH 2	4	Piping	12" Steam Trap Drain Header, 4-12"-2-C	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
20	PTN	4	CNDSR / 014	5614-M-3014 SH 2	4	Piping	Individual steam trap drain connections to header. Misc 1/2", 3/4", 1" piping	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal Condensate/steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Condenser and active piping will be hot.	
21	PTN	4	CNDSR / 014	5614-M-3014 SH 2	5	Piping	3/4" and 1/2" instrument line piping	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure instrument line piping is insulated. If piping is located on a lower level of the TB and a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
22	PTN	4	CNDSR / 014	5614-M-3014 SH 2	5	Instr. Control / Protection	3 Pressure Indicating Transmitter (PIT) PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Dead Leg	Protect	Ensure instruments are insulated. Normal fluid temp may preclude freezing with insulation. If piping is located on a lower level of the TB and a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present.	
23	PTN	4	CNDSR / 014	5614-M-3014 SH 2	h Condens	Heat Exchangers	North Condenser 4A	Yes	Condenser pressure boundary; Maintain condenser vacuum.	Normal fluid conditions adequate to prevent freezing.	None	None		
24	PTN	4	CNDSR / 014	5614-M-3014 SH 2	h Condens	Instr. Local	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	No	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
25	PTN	4	CNDSR / 014	5614-M-3014 SH 2	h Condens	Instr. Control / Protection	Level Controler (LC) Condenser level control with signal input to condenser water makeup spray valves (suction from DWST)	Standby	None	Dead Leg	Protect	Ensure instrument, instrument lines, and drains are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	
26	PTN	4	CNDSR / 014	5614-M-3014 SH 2	h Condens	Instr. Local	Local level guage (x3)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to Condenser. Condenser will be hot.	

27	PTN	4	CNDSR / 014	5614-M-3014 SH 2	h Condens	Motor Operator Valve	Vent (screened open flange) with Motor Op Valve MOV-4-VAB	Standby	None	Dead Leg	Protect	Ensure vent pipe and MOV are insulated or in close proximity to the condenser which would preclude freezing.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe and location of MOV in proximity to Condenser. Condenser will be hot. Include with global freeze evaluation for MOVs	
28	PTN	4	CNDSR / 014	5614-M-3014 SH 2	h Condens	Vents / Drains / Misc. Connections	Capped piping 1 1/2" pipe (leak detect) (x8)	No	None	Dead Leg	Protect	Ensure piping and end cap are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to Condenser. Condenser will be hot.	
29	PTN	4	CNDSR / 014	5614-M-3014 SH 3	1	Piping	2", 1 1/2", 1" Piping Main steam supply to steam jet air ejectors.	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Steam piping will be hot.	
30	PTN	4	CNDSR / 014	5614-M-3014 SH 3	1	Instr. Local	Local Pressure indication (PI) 1/2" tubing and open root valve.	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and instrument in proximity to main line. Steam piping will be hot and flowing.	
31	PTN	4	CNDSR / 014	5614-M-3014 SH 3	1	Strainers	Wye Strainer YS-4-3400	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam/condensate Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Steam piping will be hot and flowing.	
32	PTN	4	CNDSR / 014	5614-M-3014 SH 3	1	Vents / Drains / Misc. Connections	1/2" Drain (Piping & valve)(wye strainer drain)	No	None	Dead Leg	Protect	Ensure piping and drain valve are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to connected wye strainer and 2" steam piping. Main piping will be hot.	
33	PTN	4	CNDSR / 014	5614-M-3014 SH 3	1	Instr. Annunciation / Indication	Pressure Switch (PS) with control room annunciation. Local Pressure indication (PI) 1/2" tubing and open root valve.	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and instrument in proximity to main line. Steam piping will be hot and flowing.	
34	PTN	4	CNDSR / 014	5614-M-3014 SH 3	2	Piping	1" Piping Steam trap and drain for segment 1.	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam/condensate Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Drain piping will be hot.	
35	PTN	4	CNDSR / 014	5614-M-3014 SH 3	2	Strainers	Steam trap ST-4-1404; Wye Strainer YS-4-3412	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam/condensate Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Drain piping will be hot.	
36	PTN	4	CNDSR / 014	5614-M-3014 SH 3	2	Vents / Drains / Misc. Connections	1" Drain (Piping & valve)	No	None	Dead Leg	Protect	Ensure piping and drain valve are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to main 1" piping. Main piping will be hot.	
37	PTN	4	CNDSR / 014	5614-M-3014 SH 3	3	Piping	10", 8" piping Air Removal header from condensers A & B	Yes	Required for power operations; Maintain condenser vacuum.	Normal Air flow from condenser will prevent line from freezing.	None	None	Inspect during walkdown, insulation may already be present. Main piping will be hot.	
38	PTN	4	CNDSR / 014	5614-M-3014 SH 3	3	Vents / Drains / Misc. Connections	8" Vent/Vacuum breaker	No	Required for power operations; Condenser vacuum boundary	Dead Leg	Protect	Ensure piping and vacuum breaker valve are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to main 10" line. Main piping will be hot.	
39	PTN	4	CNDSR / 014	5614-M-3014 SH 3	3	Instr. Local	Local Pressure indication (PI) 1/4" tubing and open root valve; branch from 8" vacuum breaker line	Yes	Required for power operations; Condenser vacuum boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and instrument in proximity to main line. Main 10" header will be hot and flowing.	
40	PTN	4	CNDSR / 014	5614-M-3014 SH 3	3	Instr. Local	Local Pressure indication (PI) (x2) 1/2" tubing and open root valve; branch from 8" lines into SJAEs	Yes	Required for power operations; Condenser vacuum boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and instrument in proximity to main line. Main 8" piping will be hot and flowing.	
41	PTN	4	CNDSR / 014	5614-M-3014 SH 3	4	Piping	3" piping SJAEs to Inner Condenser to SJAEs to After Condenser	Yes	Required for power operations; Maintain condenser vacuum.	Normal Air flow from condenser will prevent line from freezing.	None	None	Inspect during walkdown, insulation may already be present. Main piping will be hot.	
42	PTN	4	CNDSR / 014	5614-M-3014 SH 3	4	Relief Valves	1/2" relief valve (x2) pressure relief on first set of SJAEs	Yes	Required for power operations; Maintain condenser vacuum.	Normal Steam Flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main piping and SJAEs will be hot.	
43	PTN	4	CNDSR / 014	5614-M-3014 SH 3	5	Piping	24" piping Cooling water (condensate) to SJAE inner and after condensers	Yes	Required for power operations; Maintain condenser vacuum.	Normal flow of condensate will keep line from freezing	None	None	Inspect during walkdown, insulation may already be present. Main piping will be warm, SJAE condensers will be warm.	5610-M-3073 SH 2

44	PTN	4	CNDSR / 014	5614-M-3014 SH 3	6	Piping	24" piping Cooling water (condensate) from SJAE inner and after condensers	Yes	Required for power operations; Maintain condenser vacuum.	Normal flow of condensate will keep line from freezing	None	None	Inspect during walkdown, insulation may already be present. Main piping will be warm, SJAE condensers will be warm.	5610-M-3073 SH 2
45	PTN	4	CNDSR / 014	5614-M-3014 SH 3	7	Piping	1" Piping SJAE condenser drains	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Condenser and condensate drain will be warm.	None	None	Inspect during walkdown, insulation may already be present. Piping will be warm, SJAE condensers will be warm.	
46	PTN	4	CNDSR / 014	5614-M-3014 SH 3	7	Instr. Local	Local level gauge (x2) indicates liquid level in condenser drain line.	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, and instrument in proximity to main line. Piping will be warm, SJAE condensers will be warm.	
47	PTN	4	CNDSR / 014	5614-M-3014 SH 3	8	Piping	2", 3" piping SJAE condensers drain to North Condenser	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Condenser and condensate drain will be warm.	None	None	Inspect during walkdown, insulation may already be present. Piping will be warm, SJAE condensers will be warm. SJAEs and SJAE condensers are located on TB operating deck (exposed outside), majority of condeser drain however would be on TB mezzanine and ground floor with connection to condenser - global mitigating strategies may apply.	
48	PTN	4	CNDSR / 014	5614-M-3014 SH 3	8	Instr. Local	Local level gauge and 1/2" tubing indicates liquid level in condenser drain line.	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, and instrument in proximity to main line. Piping will be warm, SJAE condensers will be warm. SJAEs and SJAE condensers are located on TB operating deck (exposed outside), majority of condeser drain however would be on TB mezzanine and ground floor with connection to condenser - global mitigating strategies may apply.	
49	PTN	4	CNDSR / 014	5614-M-3014 SH 3	8	Vents / Drains / Misc. Connections	1/2" capped pipe (closed root valve) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	No	SJAE condenser drain pressure boundary	Dead Leg	Protect	Ensure isolated pipe and pipe ends, and isolation valves are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to main line. Main SJAE condenser drain piping will be warm, SJAE condensers will be warm.	
50	PTN	4	CNDSR / 014	5614-M-3014 SH 3	9	Piping	4" piping, misc insluating flanges SJAE condenser (air/steam side) discharge to Aux Building Ventilation	Yes	Steam Jet Air Ejector is required for power operation to maintain condenser vacuum.	SJAE Condenser discharge will be warm.	None	None	Inspect during walkdown, insulation may already be present. Piping will be warm, SJAE condensers will be warm.	
51	PTN	4	CNDSR / 014	5614-M-3014 SH 3	9	Instr. Local	Local gauges and 3/8" tubing press differential (dPI) Flow indication (FI) Flow element (FE)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present.	
52	PTN	4	CNDSR / 014	5614-M-3014 SH 3	9	Instr. Local	Local flow indicator (FI)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. P&ID symbol indicates flow indicator is already heat traced. Verify during walkdown.	
53	PTN	4	CNDSR / 014	5614-M-3014 SH 3	9	Instr. Annunciation / Indication	Radiation detector (RD) with control room alarm/annunciation	Yes	Used to determine radiation levels in SJAE condenser air/steam side discharge to Aux Bldg exhaust ventilation.	Dead Leg	Protect	Ensure instrument is well insulated.	Inspect during walkdown, insulation may already be present. Instrument is installed in-line along the 4" piping.	
54	PTN	4	CNDSR / 014	5614-M-3014 SH 3	9	Vents / Drains / Misc. Connections	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 7) 1" line (isolated) from Condensate Sys Loop Seal Fill	No	None	Dead Leg	Protect	Ensure isolated pipe and pipe ends, and isolation valves are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of piping in proximity to main line. Main 4" SJAE exhaust line expected to be warm.	

1	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 1	egment AL	Piping	All piping, pumps, valves and handling equipment.	Yes	None	Indication / Control Inst	Protect	Zachry proposes isolating and draining (blowing down) the Condenser Tube Cleaning and Debris Filter Systems at the start of the cold weather period and reinstating them following temperature increases. This will result in no permanent impact to the systems and minimal impact to Procedure 0-ONOP-103.2 "Cold/Hot Weather Conditions."	With respect to microbiologicals, various microbiological growths prosper at different temperatures. Therefore, the temperature of the Ultimate Heat Sink (UHS) being its lowest during the cold weather period will not have a significant impact on the growth inside the condenser tubes. It is believed the growth on condenser tubes will be minimal during the postulated four (4) day period of extremely cold weather. With respect to scale, many compounds, most notably calcium carbonate (CaCO3), become less water-soluble as the temperature rises. When a compound in recirculating water reaches its saturation point in a condenser, the compound precipitates and forms a layer of scale on the tubes. Calcium carbonate scaling is the most common type; however, calcium sulfate and phosphate, manganese compounds and silicates can also precipitate. Hard, adhering scale is difficult to remove and often requires mechanical tube cleaning and / or water lancing. This is generally a long term buildup process that would not be affected by a four (4) day cessation of the subject systems.	
2	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	egment AL	Piping	All piping, pumps, valves and handling equipment.	Yes	None	Indication / Control Inst	Protect	Zachry proposes isolating and draining (blowing down) the Condenser Tube Cleaning and Debris Filter Systems at the start of the cold weather period and reinstating them following temperature increases. This will result in no permanent impact to the systems and minimal impact to Procedure 0-ONOP-103.2 "Cold/Hot Weather Conditions."	With respect to microbiologicals, various microbiological growths prosper at different temperatures. Therefore, the temperature of the Ultimate Heat Sink (UHS) being its lowest during the cold weather period will not have a significant impact on the growth inside the condenser tubes. It is believed the growth on condenser tubes will be minimal during the postulated four (4) day period of extremely cold weather. With respect to scale, many compounds, most notably calcium carbonate (CaCO3), become less water-soluble as the temperature rises. When a compound in recirculating water reaches its saturation point in a condenser, the compound precipitates and forms a layer of scale on the tubes. Calcium carbonate scaling is the most common type; however, calcium sulfate and phosphate, manganese compounds and silicates can also precipitate. Hard, adhering scale is difficult to remove and often requires mechanical tube cleaning and / or water lancing. This is generally a long term buildup process that would not be affected by a four (4) day cessation of the subject systems.	
2	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	1	Piping	8" & 10" AFW pumps supply	Yes	TS 3.7.1.3 - Cond Storage Tank min volume 210,000 gal. **Action:** Restore volume within 4 hrs, or attain HSB in 6 hrs.	Break in this line could compromise CST inventory and diminish AFW pump supply.	Protect	Insulate, 2"	Condensate lines are likely insulated already	
3	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	1	Piping	10" blind flange connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
4	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	1	Vents / Drains / Misc. Connections	manual vent	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
5	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	2	Piping	4" & 10" condensate transfer pump suction	Standby	Required for power generation	Ensure availability of routine makeup water for power operation	Protect	Insulate and heat trace		
6	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	2	Vents / Drains / Misc. Connections	Condensate Transfer pump vent	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
7	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	2	Vents / Drains / Misc. Connections	manual drain	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
8	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	2	Tank	chemical addition tank	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
9	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	3	Piping	6" condensate transfer pump discharge piping	Standby	Required for power generation	Ensure availability of routine makeup water for power operation	Protect	Insulate and heat trace		
10	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	3	Instr. Local	Condensate Transfer pump discharge pressure PI	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
11	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	3	Piping	6" crosstie with Unit 3 condensate transfer	No	N/A	Dead Leg	Protect	Insulate and heat trace.	Line normally isolated from header.	
12	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	4	Piping	1" condensate pump seal supply from condensate header	Yes	Required for power generation	None	None	None: lines normally flowing		
13	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	5	Piping	10" condensate reject to/from DWST	Standby	Required for power generation	Ensure availability of routine water storage for power operation	Protect	Insulate and heat trace		

14	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	6	Piping	3" condensate recovery return	Standby	Required for power generation	Ensure availability of routine water storage for power operation	Protect	Insulate and heat trace		
15	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	7	Piping	6" condensate return	Standby	Required for power generation	Ensure availability of routine water storage for power operation	Protect	Insulate and heat trace		
16	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	8	Piping	2" surge tank supply	No	N/A	Dead Leg	Protect	Insulate and heat trace.	Line normally isolated from header.	
17	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	10	Piping	2" alternate surge tank supply from Unit 3	Standby	Required for power generation	Ensure availability of CST supply from Unit 4	Protect	Insulate and heat trace		
18	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	10	Vents / Drains / Misc. Connections	manual drain	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
19	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	11	Piping	1", 4" & 6" supply to chemical feed and wet layup from primary water header and condensate transfer pump	No	N/A	Break in this dead leg could compromise CST inventory.	Protect	Insulate and heat trace		
20	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	12	Piping	6" primary water makeup supply to CST	Yes	N/A	Break in this dead leg could compromise CST inventory.	Protect	Insulate and heat trace		
21	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	12	Instr. Local	flow indicator	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
22	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	13	Piping	4" flow indicator and control valve bypass line	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
23	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	14	Piping	2 1/2" AFW Pump recirc line	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
24	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	15	Piping	2" and 8" CST overflow line to drain	Yes	Required for power generation	None	None	None: lines normally empty		
25	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	16	Piping	4" CST drain	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
26	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	16	Piping	1/2" Flex connection	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
27	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	17	Instr. Control / Protection	CST level switch for CST makeup CV	Yes	TS 3.7.1.3 - Cond Storage Tank min volume 210,000 gal. **Action:** Restore volume within 4 hrs, or attain HSB in 6 hrs.	Maintain aux feedwater injection capability after reactor trip for sufficient duration to achieve cold shutdown.	Protect	Insulate / Heat trace.		
28	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	17	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
29	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	17	Piping	1" level switch piping	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
30	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	18	Instr. Annunciation / Indication	CST level transmitter / indication	Yes	TS 3.7.1.3 - Cond Storage Tank min volume 210,000 gal. **Action:** Restore volume within 4 hrs, or attain HSB in 6 hrs.	Maintain aux feedwater injection capability after reactor trip for sufficient duration to achieve cold shutdown.	Protect	Insulate / Heat trace.		
31	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	18	Vents / Drains / Misc. Connections	manual vents, drains and test connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
32	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	18	Piping	3/8", 1", & 3" level transmitter piping	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
33	PTN	4	AMERTAP / 015	5614-M-3015, Sh. 2	19	Piping	6" condensate supply to feedwater system	No	N/A	Breaks in this line could compromise operating feedwater header .	Protect	Insulate and heat trace	Line normally isolated from header.	
1	PTN	4	CS / 018	5614-M-3018, Sh. 1	-	Outdoor Tanks	Unit 3 CST	Yes	TS 3.7.1.3 - Cond Storage Tank min volume 210,000 gal. **Action:** Restore volume within 4 hrs, or attain HSB in 6 hrs.	Maintain aux feedwater injection capability after reactor trip for sufficient duration to achieve cold shutdown.	None	None	Preliminary analysis shows that postulated cold weather conditions will not induce freezing temperatures within the large volume of the CST, even without crediting heated influx of liquid inventory or the shielding effect of the concrete missile structure. Cold weather effects on lines and components attached to the CST are addressed in subsequent entries on this sheet.	

1	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Instrumentation - Local	PI(X)-4-1450, -1451, -1452, PI-4-1488, -1489, -6901, -6902, FE(FI)-3-1430, dPI-4-1400, -1401	Yes	None	Local Indication	Mitigate	Safety Related piping boundary As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. (UHS Temperature ~50°F Min.)	
2	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Instrumentation - Annunciation / Recorder / Indication	PS-4-1619, -1620, PI-4-1619, -1620, PT-4-1619, -1620	Yes	Indication provided to CR and/or Plant Computer.	Remote / CR Ind. / Alarm	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Prevent Freezing to Provide CR Operators Plant Status	
3	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Piping	Safety Related Piping 4-24"-13-L, 4-36"-13-L, 3-30"-13-L	Yes	T.S. 3.7.4 - At least two independent intake cooling water headers and three ICW Pumps shall be operable when in Modes 1 - 4. ACTION: a. With only two ICW pumps with independent power supplies OPERABLE, restore the inoperable ICW pump to OPERABLE status within 14 days or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. b. With only one ICW pump OPERABLE or with two ICW pumps OPERABLE, but not from independent power supplies, restore two pumps from independent power supplies to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	Maintain SR Cooling	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	

4	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Piping	Safety Related Piping 3-2"-12-L, 3-4"-12-L	Yes	T.S. 3.7.4 - At least two independent intake cooling water headers and three ICW Pumps shall be operable when in Modes 1 - 4. ACTION: a. With only two ICW pumps with independent power supplies OPERABLE, restore the inoperable ICW pump to OPERABLE status within 14 days or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. b. With only one ICW pump OPERABLE or with two ICW pumps OPERABLE, but not from independent power supplies, restore two pumps from independent power supplies to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	Maintain SR Cooling	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	
5	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Piping	Non-Safety Related Piping 3-24"-13-L, 3-36"-13-L, 3-30"-13-L	Yes	None	NSR Cooling Requirement - Cross-Connect	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	
6	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Piping	Non-Safety Related Piping 4-8"-13-L, 4-4"-13-L	Yes	None	NSR Cooling Requirement - Cross-Connect	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2
7	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Piping	Non-Safety Related Piping 4-2"-12-L	Yes	None	Capped Piping	Mitigate	Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2

8	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Motors	ICW Pump Motors (4A, 4B, 4C)	Yes	T.S. 3.7.4 - At least two independent intake cooling water headers and three ICW Pumps shall be operable when in Modes 1 - 4. ACTION: c. With only one intake cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours and in COLD SHUTDOWN within the following 30 hours. One, two, or three pumps are operated as required to support normal plant operating conditions. The A and B pumps are powered by 4160 volt buses backed up by each train's associated EDG. The C pump is powered by a swing 4160 volt SR bus which can be powered, through aligning the bus manually, by either the train A or train B EDG associated with the same unit. This pump is interlocked, such that, it starts on a loss of offsite power or safety injection signal, if the breaker for the A or B ICW pump	Maintain SR Cooling	Protect	Swap Pumps and Trains Regularly	Prevent Component Failure from Insufficient Lubrication Per UFSAR Section 6.2.4 (INSPECTIONS AND TESTS), "Idle intake cooling water and component cooling water pumps will be put in service periodically as part of the normal rotation of machinery use."	
9	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Cooling Towers and Intake Channel	Intake Canal	Yes	None	Maintain SR Cooling	Mitigate	Maintain Operation of ICW and CW Systems	Prevent Frazil Ice from Impacting Heat Transfer	
10	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Heat Exchangers	T. P. C. W. Heat Exchanger 4A, 4B	Yes	None	NSR Cooling Requirement	Mitigate	No Action Required as Long as Flow is Maintained.	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance	
11	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Relief Valves	RV-4-128A, -128B	Yes	Protect Turbine Plant Cooling Water Heat Exchangers	Dead Ended Water Leg	Protect	Relief Valves are often located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Trapped water will cause valve to relieve avoiding freezing.	Dead Legs May Freeze and Burst.	
12	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Strainers	BS-4-1400, -1401	Yes	None	NSR Cooling Requirement Avoid Strainer Flow Obstruction	Mitigate	No Action Required as Long as Flow is Maintained.	Avoid Freezing Leading to Low Flow & Degraded Plant Performance 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2
13	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Valves	POV-4-4882, -4883 Bypasses	Yes	None	Dead Ended Bypass Water Leg	Mitigate	Open Valves (4-50-315 & 4-50-335) periodically to preclude ice buildup within the POC bypasses.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	0-ONOP-103.2 states, "CYCLE POV-*-4882 and POV-*-4883, ICW TO THE TPCW HEAT EXCHANGERS INLET ISOLATION VALVES, at least once per shift"
14	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Vents / Drains / Misc. Connections	BS-4-1400, -1401 Manual Drains	Yes	None	Dead Ended Strainer Drain Water Leg	Mitigate	Open Valves (4-50-316 & 3-50-336) periodically to preclude ice buildup within the Strainer Drains.	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2

15	PTN	4	ICW / 019	5614-M-3019, Sh. 1	1	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	None	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
16	PTN	4	ICW / 019	5614-M-3019, Sh. 2	1	Instrumentation - Local	dPI-4-1402, -1403, FI-4-1407, -1408, -1409, PI-4-1519, -1520, -1521	Yes	None	Local Indication	Mitigate	Safety Related piping boundary As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. (UHS Temperature ~50°F Min.)	
17	PTN	4	ICW / 019	5614-M-3019, Sh. 2	1	Piping	Safety Related Piping 4-30"-13-L, 4-20"-13-L, 4-24"-13-L	Yes	T.S. 3.7.4 - At least two independent intake cooling water headers and three ICW Pumps shall be operable when in Modes 1 - 4. ACTION: a. With only two ICW pumps with independent power supplies OPERABLE, restore the inoperable ICW pump to OPERABLE status within 14 days or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. b. With only one ICW pump OPERABLE or with two ICW pumps OPERABLE, but not from independent power supplies, restore two pumps from independent power supplies to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	Maintain SR Cooling	Mitigate	Insulate and/or Swap Trains Regularly (UHS Temperature ~50°F Min.)	Insulation Thickness Required to Preclude Icing 1/2" Insulation (>38°F Water), 1" Insulation (>34°F Water) 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	

18	PTN	4	ICW / 019	5614-M-3019, Sh. 2	1	Heat Exchangers	Component Cooling Water Heat Exchanger 4A, 4B	Yes	During the recirculation mode, the Component Cooling System is used to cool the recirculation fluid as it passes through the residual heat exchanger. (UFSAR Section 6.2.2) Since the heat is transferred from the component cooling water to the intake cooling water, the component cooling loop serves as an intermediate system between the reactor coolant and intake cooling water system. (UFSAR Section 9.3.2)	SR Cooling Requirement	Mitigate	No Action Required as Long as Flow is Maintained. One pump and three component cooling water heat exchangers are normally operated to provide cooling water for various components located in the auxiliary and containment buildings. (UFSAR Section 9.3.1)	Maintaining Flow Avoids Freezing Which Could Lead to Degraded Plant Performance 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2
19	PTN	4	ICW / 019	5614-M-3019, Sh. 2	1	Strainers	BS-4-1402, -1403	Yes	None	NSR Cooling Requirement Avoid Strainer Flow Obstruction	Mitigate	No Action Required as Long as Flow is Maintained.	Avoid Freezing Leading to Low Flow & Degraded Plant Performance 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2 Open Valves (4-50-325, -873, -345, -875) periodically to ensure flow through 4-8"-14-L piping.
20	PTN	4	ICW / 019	5614-M-3019, Sh. 2	1	Strainers	4F228A, B	Yes	Per Note 5 of 5614-M-3019, sh. 2, "Filter Handwheel is restrained to maintain streainer in the "backwash" position."	SR Cooling Requirement Avoid Strainer Flow Obstruction	Mitigate	No Action Required as Long as Flow is Maintained. Strainer in "Backwash" ensure flow through the strainers.	Avoid Freezing Leading to Low Flow & Degraded Plant Performance	
21	PTN	4	ICW / 019	5614-M-3019, Sh. 2	1	Vents / Drains / Misc. Connections	Small Bore Vents & Drains	No	None	Dead Ended Water Leg	Mitigate	Vents are located at relative high points within the system piping, as such gas trapped upstream of the vent isolation valve will act as an accumulator to absorb the pressure rise associated with the expansion of ice forming in the branch connection. Based on Operations experience, identify if trapped gas exists. If the existence of trapped gas is not known, a limited amount of gas (air, nitrogen, etc.) can be added to the vent in support of the Cold Weather Preparation plan. Drain - Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst.	
22	PTN	4	ICW / 019	5614-M-3019, Sh. 2	2	Piping	4-4"-14-L, 4-8"-13-L	Yes	None	NSR Cooling Requirement - Supplemental ICW Strainer Flushing	Mitigate	Swap Trains Regularly Open Valves (4-50-346, -874, -872, -326) periodically to ensure flow through the ICW supplemental line. (UHS Temperature ~50°F Min.)	Un-Insulated and Non-Heat Traced Component May Freeze. Dead Legs May Freeze and Burst. 0-ONOP-103.2 states, "ESTABLISH water flow through idle systems exposed to outside temperatures for 5 minutes every 2 hours per applicable procedure"	0-ONOP-103.2
8	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	1	Piping	4" Pipe	Yes	One line is normally in operation per UFSAR 9.6.2	-	None	No Protection Recommended	Loss of the PMUS will not cause a shutdown due to generation loss or a Tech Spec Action, therefore, protection is not required. FPL Operations to provide input if the PWST and PMUS will be required to be operable over a max 4 day period. If the system is continuously running (one train), would prevent freezing. 1" of insulation can be used to prevent >25% freezing in 4" standby pipe. 2" insulation required for 3" pipe	
10	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	2	Piping	3" Pipe	Yes	One line is normally in operation per UFSAR 9.6.2	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
11	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	2	Instr. Local	PI	Yes	-	Dead Leg	None	No Protection Recommended		
12	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	2	Instr. Control / Protection	PS	Yes	Controls Pump	Dead Leg	Protect	Heat Trace & 1" Insulation	Conservatively protect control function, although not required (see Segment 1, Piping)	
13	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	2	Instr. Annunciation / Indication	PS	Yes	Annunciator	Dead Leg	Protect	Heat Trace & 1" Insulation	Conservatively protect alarm function, although not required (see Segment 1, Piping)	
14	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	3	Piping	3/4" pipe	Yes	-	-	None	No Protection Recommended		
15	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	4	Piping	1.5" Pipe	No	-	-	None	No Protection Recommended		
16	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	5	Piping	2" Pipe	No	-	-	None	No Protection Recommended		
17	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	6	Piping	1.5" to 3" Pipe	No	-	-	None	No Protection Recommended		
18	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	7	Piping	1/4"-1/2" pipe	No	-	-	None	No Protection Recommended		

19	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	8	Piping	2" pipe	No	-	-	None	No Protection Recommended		
20	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	9	Piping	3" Pipe & Capped Section	No	-	-	None	No Protection Recommended		
21	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	10	Piping	3" Pipe	No	-	-	None	No Protection Recommended		
22	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	11	Piping	3" & 4" Pipe	No	-	-	None	No Protection Recommended		
23	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	12	Piping	2.5" Pipe	No	-	-	None	No Protection Recommended		
1	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	-	Outdoor Tanks	Primary Water Storage Tank (PWST)	No	Per UFSAR 9.6.2, PWST and the Primary Water Makeup System (PMUS) are not required for Safe Shutdown. However, they are used to provide makeup water to systems such as RCS and CVCS during normal plant operation.	-	None	No Protection Recommended	Based on the size of the tank, the contents will not freeze over a four day period.	
2	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	-	Vents / Drains / Misc. Connections	1" Connections	No	Tank Pressure Boundary	Dead Leg	None	No Protection Recommended		
3	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	-	Vents / Drains / Misc. Connections	3/4" Vent	No	Tank Pressure Boundary	Dead Leg	None	No Protection Recommended		
4	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	-	Vents / Drains / Misc. Connections	4" Drain	No	Tank Pressure Boundary	Dead Leg	None	No Protection Recommended		
5	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	-	Instr. Local	3" pipe to LI	Yes	Tank Pressure Boundary	Dead Leg	None	No Protection Recommended		
6	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	-	Instr. Control / Protection	3/4" pipe to LI & Sample Sink Piping	Yes	Tank Pressure Boundary and level control	Dead Leg	Protect	Heat Trace & 1" Insulation	Also has an annuciator function Recommended to protect since it has a control function.	
7	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	-	Piping	6" Open Pipe (Loop Seal?)	Yes	Tank Pressure Boundary		None	No Protection Recommended		
9	PTN	4	PMUS / 020	5614-M-3020, Sh. 1	-	Motors	Primary Water Pumps	Yes	One line is normally in operation per UFSAR 9.6.2	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
24	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	1	Piping	3" Pipe	Yes	PMUS is normally in operation per UFSAR 9.6.2. Providing makeup water for multiple systems and can be used to fill the CSTs	-	None	No Protection Recommended	Loss of the PMUS will not cause a shutdown due to generation loss or a Tech Spec Action, therefore, protection is not required. FPL Operations to provide input if the PWST and PMUS will be required to be operable over a max 4 day period. If the system is continuously running (one train), would prevent freezing. 2" insulation required for 3" pipe (prevent >25% freezing).	
25	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	2	Piping	3" Pipe to U3 PWST Header	Yes	PMUS to various systems via U3 PWST Header (including CSTs)	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
26	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	3	Piping	3" Pipe	Yes	PMUS to various systems	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required Located in CCW Pump room, so global strategy could be used if protection is required.	
27	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	4	Piping	2" Pipe	No	None	-	None	No Protection Recommended	Located in the CCW Pump Room	
28	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	5	Piping	3" Pipe	No	Makeup water to various systems.	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required	
29	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	5	Vents / Drains / Misc. Connections	Connections	No	None	-	None	No Protection Recommended		
30	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	5	Vents / Drains / Misc. Connections	3/4" Connection	No	None	-	None	No Protection Recommended		
31	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	5	Instr. Local	FI	Yes	None	-	None	No Protection Recommended		
32	PTN	4	PMUS / 020	5614-M-3020, Sh. 2	6	Piping	3" Pipe & 1" Pipe	No	Makeup water to various systems.	-	None	No Protection Recommended	See Segment 1, Piping for this P&ID to determine if protection required Located in CCW Pump room, so global strategy could be used if protection is required.	
8	PTN	4	EDG HVAC / 108	5614-M-3022 Sh. 5	1	Radiator	EDG 4A cooling water radiator	Standby	TS 3/4.8.1 requires operable AC power sources, including EDGs. Cooling water required for EDG operation	With temporary heaters placed per 0-ONOP-103.2, radiators may still be susceptible to freezing due to location at exterior wall and possible in-flow of air through the exhaust louvers when EDGs are not running.	Protect	Ensure temporary heaters from 0-ONOP-103.2 are supplying sufficient heat to the location of the radiator. Consider temperature checks on the radiator tubing in addition the lube oil temperature checks already performed for 0-ONOP-103.2		
9	PTN	4	EDG HVAC / 108	5614-M-3022 Sh. 6	1	Radiator	EDG 4B cooling water radiator	Standby	TS 3/4.8.1 requires operable AC power sources, including EDGs. Cooling water required for EDG operation	With temporary heaters placed per 0-ONOP-103.2, radiators may still be susceptible to freezing due to location at exterior wall and possible in-flow of air through the exhaust louvers when EDGs are not running.	Protect	Ensure temporary heaters from 0-ONOP-103.2 are supplying sufficient heat to the location of the radiator. Consider temperature checks on the radiator tubing in addition the lube oil temperature checks already performed for 0-ONOP-103.2		
2	PTN	4	CCW / 030	5614-M-3030, Sh. 1	1	Piping	18" Pipe (Supply & Return)	Yes	Normally both trains of CCW (supply & return) are operating. There are only certain times for CCW pump testing that the headers are split, and TS Actions are entered, per UFSAR 9.3.2.	Maintain required flow	None	No recommended protection	In CCW Pump Room (See top Remark for this P&ID) CCW will normally be flowing through both trains of Supply and Discharge, and this will prevent freezing.	

3	PTN	4	CCW / 030	5614-M-3030, Sh. 1	1	Instr. Control / Protection	Rad Detection, FTs	Yes	CCW Pressure Boundary & Controls (Rad detection and flow indication)	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
4	PTN	4	CCW / 030	5614-M-3030, Sh. 1	1	Instr. Local	PI, FTs	Yes	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
5	PTN	4	CCW / 030	5614-M-3030, Sh. 1	1	Vents / Drains / Misc. Connections	18" connection	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	
6	PTN	4	CCW / 030	5614-M-3030, Sh. 1	1	Vents / Drains / Misc. Connections	3/8" Connections	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
7	PTN	4	CCW / 030	5614-M-3030, Sh. 1	1	Vents / Drains / Misc. Connections	3/4" Vents	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
8	PTN	4	CCW / 030	5614-M-3030, Sh. 1	2	Piping	16" Pipe (Pump & HX inlet and outlets)	Yes	UFSAR 9.3.2 - Normally 1 pump is operating with 2-3 Heat Exchangers. Therefore, some of this piping is expected to be stagnant while other portions will be flowing	Maintain required flow	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate - swap operating pumps and HXs on certain intervals to prevent freezing of any pipe 3. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	
9	PTN	4	CCW / 030	5614-M-3030, Sh. 1	2	Vents / Drains / Misc. Connections	2" Connection	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 4" Insulation to prevent >25% freezing 3. Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
10	PTN	4	CCW / 030	5614-M-3030, Sh. 1	2	Instr. Local	PI, IST	Yes	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
11	PTN	4	CCW / 030	5614-M-3030, Sh. 1	2	Vents / Drains / Misc. Connections	1", 3/4" Vents, Drains, Test Connections	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
12	PTN	4	CCW / 030	5614-M-3030, Sh. 1	2	Vents / Drains / Misc. Connections	16" Connections	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
13	PTN	4	CCW / 030	5614-M-3030, Sh. 1	2	Instr. Control / Protection	PI, PC	Yes	CCW Pressure Boundary & PC to control pumps	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID) Also provides an annunciator function	
14	PTN	4	CCW / 030	5614-M-3030, Sh. 1	2	Heat Exchangers	CCW HXs	Yes	TS 3.7.2 - 2 of 3 HXs required to be operable **Action**: With less than 2 HXs operable, two need to be restored within 1 hour. CCW Pressure Boundary - normally 2-3 HXs are operating at a time.	Maintain required flow	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate - use all 3 HXs 3. Mitigate - swap operating HXs on certain intervals to prevent freezing of any 3. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	
15	PTN	4	CCW / 030	5614-M-3030, Sh. 1	3	Piping	14" Pipe	Yes	UFSAR 9.3.2 - Normally 1 pump is operating. Therefore, 2 of the pumps and piping are expected to be stagnant while 3rd is flowing	Maintain required flow	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate - swap operating pump on certain interval to prevent freezing of any pipe 3. Protect - 1" Insulation to prevent >25% freezing	In CCW Pump Room (See top Remark for this P&ID)	
16	PTN	4	CCW / 030	5614-M-3030, Sh. 1	3	Piping	Pumps	Yes	UFSAR 9.3.2 - Normally 1 pump is operating. Therefore, 2 of the pumps and piping are expected to be stagnant while 3rd is flowing TS 3.7.2 - All 3 pumps required to be operable	Maintain required flow	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate - swap operating pump on certain interval to prevent freezing of any pipe 3. Protect - Insulate and/or heat trace as required to protect the pump.	In CCW Pump Room (See top Remark for this P&ID)	
17	PTN	4	CCW / 030	5614-M-3030, Sh. 1	3	Vents / Drains / Misc. Connections	Vents, Drains	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	

18	PTN	4	CCW / 030	5614-M-3030, Sh. 1	3	Instr. Local	PI, IST	Yes	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
19	PTN	4	CCW / 030	5614-M-3030, Sh. 1	3	Motors	Pump Motors	Yes	TS 3.7.2 - All 3 pumps/motors required to be operable **Action:** With two operable pumps, inoperable pump need to be restored within 30 days. With 2 inoperable pumps, or requires action in 72 hours.	Maintain operable equipment		Determine if protection is needed to protect the motors. Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect in some capacity	In CCW Pump Room (See top Remark for this P&ID)	
20	PTN	4	CCW / 030	5614-M-3030, Sh. 1	3	Vents / Drains / Misc. Connections	14" Connections	No	CCW Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
21	PTN	4	CCW / 030	5614-M-3030, Sh. 1	4	Piping	12" Pipe	Yes	One train of this CCW piping is operating at a time, the other train is isolated	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate by swapping trains on certain intervals to allow flow is both trains to prevent freezing. 3. Protect - 1" Insulation to protect against >25% freezing.	In CCW Pump Room (See top Remark for this P&ID)	
22	PTN	4	CCW / 030	5614-M-3030, Sh. 1	5	Piping	12" Pipe	Yes	CCW flow to SFP, Seal Water, Non-Regen HXs and Charging pump oil coolers (single pipe). Flow is provided from either Train A or B.	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID) Continuous flow expected in this piping and will prevent freezing.	
23	PTN	4	CCW / 030	5614-M-3030, Sh. 1	6	Piping	1" Pipe	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
24	PTN	4	CCW / 030	5614-M-3030, Sh. 1	7	Piping	1" Pipe	No	None - isolated from SR CCW piping, break in this piping will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
25	PTN	4	CCW / 030	5614-M-3030, Sh. 1	7	Vents / Drains / Misc. Connections	1" Drain and connection	No	None - isolated from SR CCW piping, break in this piping will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
28	PTN	4	CCW / 030	5614-M-3030, Sh. 1	8	Piping	4" Pipe	Yes	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
29	PTN	4	CCW / 030	5614-M-3030, Sh. 1	8	Vents / Drains / Misc. Connections	2" Connection	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 4" Insulation 3. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
30	PTN	4	CCW / 030	5614-M-3030, Sh. 1	9	Piping	3" Pipe	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 2" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
31	PTN	4	CCW / 030	5614-M-3030, Sh. 1	10	Piping	2" Pipe	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - 4" Insulation 3. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
32	PTN	4	CCW / 030	5614-M-3030, Sh. 1	10	Instr. Local	PI	Yes	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
33	PTN	4	CCW / 030	5614-M-3030, Sh. 1	11	Piping	3" Pipe	No	None - isolated from SR CCW piping, break in this piping will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
34	PTN	4	CCW / 030	5614-M-3030, Sh. 1	12	Piping	1" Pipe	No	CCW Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
35	PTN	4	CCW / 030	5614-M-3030, Sh. 1	13	Piping	2" Pipe	Yes	CCW Pressure Boundary	-	Protect	Options: 1. Protect - 4" Insulation 3. Protect - Heat Trace & 1" Insulation	On Aux Bldg Roof	
36	PTN	4	CCW / 030	5614-M-3030, Sh. 1	13	Vents / Drains / Misc. Connections	Vacuum Breakers	Yes	CCW Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	On Aux Bldg Roof	
37	PTN	4	CCW / 030	5614-M-3030, Sh. 1	13	Vents / Drains / Misc. Connections	1/2" Vent	No	CCW Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	On Aux Bldg Roof	
38	PTN	4	CCW / 030	5614-M-3030, Sh. 1	13	Instr. Control / Protection	LT	Yes	CCW Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	On Aux Bldg Roof	

41	PTN	4	CCW / 030	5614-M-3030, Sh. 1	14	Piping	2" Pipe	Yes	One train of this CCW piping is operating at a time to provide cooling to the HHSI Pumps, and flow from the other train is isolated	-	Mitigate	Options: 1. Mitigate - Global Strategy to protect CCW Pump Room 2. Mitigate by swapping trains on certain intervals to allow flow is both trains to prevent freezing. 3. Protect - 4" Insulation to protect against >25% freezing. 4. Protect - Heat Trace & 1" Insulation	In CCW Pump Room (See top Remark for this P&ID)	
1	PTN	4	CCW / 030	5614-M-3030, Sh. 1	-		-	-	-	-		-	A majority of the CCW piping on this P&ID is located in the U4 CCW Pump Room, which has concrete walls but an open grating roof and a large personnel gate. It is recommended that a global strategy for the room is used. An example strategy is deploying tarps or equivalent during cold weather events over the grating and doorway to enclose the room and then temporary space heaters are deployed in the room to maintain a temperature above freezing. If a global strategy cannot be used, then individual piping and components will be required to be protected or mitigated as necessary. Piping located in the Auxiliary Building is assumed to be able to be protected by a global strategy (deployment of space heaters), and individuval protection/mitigation strategies are not necessary.	
26	PTN	4	CCW / 030	5614-M-3030, Sh. 1	-	Outdoor Tanks	Chem Pot Feeder	No	None - isolated from SR CCW piping, break in this tank will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
27	PTN	4	CCW / 030	5614-M-3030, Sh. 1	-	Vents / Drains / Misc. Connections	1" Vent	No	None - isolated from SR CCW piping, break in this piping will not impact CCW	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID)	
39	PTN	4	CCW / 030	5614-M-3030, Sh. 1	-	Outdoor Tanks	CCW Head Tank	Yes	CCW Pressure Boundary	-	None	No Protection Required	On Aux Bldg Roof	
40	PTN	4	CCW / 030	5614-M-3030, Sh. 1	-	Instr. Local	LI & 1/2" Vent	Yes	CCW Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	On Aux Bldg Roof	
43	PTN	4	CCW / 030	5614-M-3030, Sh. 2	1	Piping	18" Pipe (Supply & Return)	Yes	Normally both trains of CCW (supply & return) are operating. There are only certain times for CCW pump testing that the headers are split, and TS Actions are entered, per UFSAR 9.3.2.	Maintain required flow	None	No recommended protection	In CCW Pump Room (See top Remark for this P&ID) CCW will normally be flowing through both trains of Supply and Discharge, and this will prevent freezing.	
44	PTN	4	CCW / 030	5614-M-3030, Sh. 2	2	Piping	12" Pipe	Yes	CCW flow to SFP, Seal Water, Non-Regen HXs and Charging pump oil coolers (single pipe). Flow is provided from either Train A or B.	-	None	No Protection Required	In CCW Pump Room (See top Remark for this P&ID) Continuous flow expected in this piping and will prevent freezing.	
42	PTN	4	CCW / 030	5614-M-3030, Sh. 2	-		-	-	-	-		-	A majority of the CCW piping on this P&ID is located in the U4 CCW Pump Room, which has concrete walls but an open grating roof and large personnel gate. It is recommended that a global strategy for the room is used. An example strategy is deploying tarps or equivalent during cold weather events over the grating and gate to enclose the room and then temporary space heaters are deployed in the room to maintain a temperature above freezing. If a global strategy cannot be used, then individual piping and components will be required to be protected or mitigated as necessary. Piping located in the Auxiliary Building is assumed to be able to be protected by a global strategy (deployment of space heaters), and individuval protection/mitigation strategies are not necessary.	
45	PTN	4	CCW / 030	5614-M-3030, Sh. 3	-		-	-	-	-		-	All portions of this drawing are located in the Auxiliary Building (Pipe & Valve Room, RHR HX Room) and Containment. Auxiliary Building does not have heating; however, it is expected that a global strategy can be used (i.e., space heaters as needed), in order to prevent freezing/cold temperatures in these locations to allow for systems to continue operating. Containment is expected to stay warm on its own.	
46	PTN	4	CCW / 030	5614-M-3030, Sh. 4	-		-	-	-	-		-	All portions of this drawing are located in the Auxiliary Building (Pipe & Valve Room) and Containment. Auxiliary Building does not have heating; however, it is expected that a global strategy can be used (i.e., space heaters as needed), in order to prevent freezing/cold temperatures in these locations to allow for systems to continue operating. Containment is expected to stay warm on its own.	
47	PTN	4	CCW / 030	5614-M-3030, Sh. 5	1	Piping	4", 6", 8", 10" Piping, NNS SCS Pump Skid, SCS Chiller Skids, Vents & Drains, RV	No	NNS SCS Supplemental Chiller Loop for U4	-	None	No Protection Required	Per UFSAR 9.3.2, the SCS was installed to provide supplemental cooling to U3 or U4 Normal Containment Coolers to maintain normal Containment temperature within TS limits when Intake Cooling Water temperature is high. The SCS cooling function is NNS. In addition, during a winter event, this system is not expected to be required since it's only for high temperature in containment and high ICW temperature. No protection required to prevent generation loss or TS Action.	
48	PTN	4	CCW / 030	5614-M-3030, Sh. 5	2	Piping	3" Pipe	No	NNS SCS Supplemental Chiller Loop for U4	-	None	No Protection Required	See Segment 2, Piping for this P&ID	

49	PTN	4	CCW / 030	5614-M-3030, Sh. 5	3	Piping	2" Pipe	No	NNS SCS Supplemental Chiller Loop for U4	-	None	No Protection Required	See Segment 2, Piping for this P&ID	
50	PTN	4	CCW / 030	5614-M-3030, Sh. 5	-		-		-	-		-	Portions of this drawing located in the Auxiliary Building. Auxiliary Building does not have heating; however, it is expected that a global strategy can be used (i.e., space heaters as needed), in order to prevent freezing/cold temperatures in these locations to allow for systems to continue operating.	
1	PTN	4	SS / 032	5614-M-3032, Sh. 1	1	Instrumentation - Local	FI-4-5116, -5117, -5118	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	
2	PTN	4	SS / 032	5614-M-3032, Sh. 1	1	Piping	All Piping and Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	
3	PTN	4	SS / 032	5614-M-3032, Sh. 1	1	Heat Exchangers	Steam Generator A, B, C To Sample Hood Sample Conditioner Blowdown (Inside Sampling Room) Steam Generator A, B, C Blowdown Sample Cooler and LSC Steam Generator A, B, C (Outside Sampling Room in Turbine Building)	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	
4	PTN	4	SS / 032	5614-M-3032, Sh. 1	1	Motor Operators	MOV-4-1425, -1426, -1427	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Containment Isolation	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	Maximum distance from penetration 10'-0"
5	PTN	4	SS / 032	5614-M-3032, Sh. 1	1	Valves	4-20-536, -537, -538	No	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Bypass around FI-4-5116	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Auxiliary Building with most of it in the Sampling Room. The sample sink, which is located in the Sampling Room, contains a drain line to the Waste Disposal System. Local instrumentation is provided to permit manual control of sampling operations and to ensure that the samples are at suitable temperatures and pressures before diverting flow to the sample sink.	Open Valves (4-20-536, -537, -538) periodically to clear ice formation in bypass lines.

6	PTN	4	SS / 032	5614-M-3032, Sh. 2	1	Piping	All Piping and Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 411 Sample Station Mezzanine
7	PTN	4	SS / 032	5614-M-3032, Sh. 2	1	Heat Exchangers	SC-4-1432, -1433, -1434	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 411 Sample Station Mezzanine
8	PTN	4	SS / 032	5614-M-3032, Sh. 2	1	Vents / Drains / Misc. Connections	Small Bore Drains to Sample Sink	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Sampling System equipment is located inside the Turbine Building.	Room/Location 411 Sample Station Mezzanine
9	PTN	4	SS / 032	5614-M-3032, Sh. 3	1	Instrumentation - Local	PI-4-6751, -6752, -6753, -6754, PI-4-6745, -6746, -6747, -6748, LG-4-3435, -3436, -3437, -3438	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 418 (East Condensate Pit)
10	PTN	4	SS / 032	5614-M-3032, Sh. 3	1	Instrumentation - Control / Protection	LS-4-6745, -6746, -6747, -6748, PS-4-6745, -6746, -6747, -6748,	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Pump Control	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 418 (East Condensate Pit)

11	PTN	4	SS / 032	5614-M-3032, Sh. 3	1	Piping	All Piping and Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 418 (East Condensate Pit)
12	PTN	4	SS / 032	5614-M-3032, Sh. 3	1	Outdoor Tanks	Seal Buffer Tank (4 times)	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 418 (East Condensate Pit)
13	PTN	4	SS / 032	5614-M-3032, Sh. 3	1	Valves	PCV-4-615, -616, -617, -618	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Pressue and Flow Contro	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building. Bypass Valves (4-20-915, -916, -917, -918) should periodically be opened to preclude ice formation in the bypasses around PCV-4-615, -616, -617, -618, respectively.	Room/Location 418 (East Condensate Pit)
14	PTN	4	SS / 032	5614-M-3032, Sh. 3	1	Vents / Drains / Misc. Connections	Small Bore Vents and Drains	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions. Insulate the branch connection and implement a trickle flow to ensure freezing does not occur. Trickle flow determination is based on calculated trickle flowrates contained in Table 1 (Fresh Water) and Table 2 (Saltwater).	Sampling System equipment is located inside the Turbine Building.	Room/Location 418 (East Condensate Pit)
15	PTN	4	SS / 032	5614-M-3032, Sh. 5	1	Piping	All Piping and Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 411 Sample Station Mezzanine

16	PTN	4	SS / 032	5614-M-3032, Sh. 5	1	Heat Exchangers	SC-4-1430, -1431	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 411 Sample Station Mezzanine
17	PTN	4	SS / 032	5614-M-3032, Sh. 6	1	Piping	All Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 421 South Main Condenser Area
18	PTN	4	SS / 032	5614-M-3032, Sh. 6	1	Heat Exchangers	SC-4-1437, -1438, -1439, -1440	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 421 South Main Condenser Area
19	PTN	4	SS / 032	5614-M-3032, Sh. 7	1	Piping	All Tubing	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 421 South Main Condenser Area
23	PTN	4	SS / 032	5614-M-3032, Sh. 7	1	Heat Exchangers	SC-4-1435, -1436	Standby	Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM. (T.S. Administrative Controls)	Local Sampling Requirer	Mitigate	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing. As appropriate, tent or enclose area and provide temporary heating based on surrounding heat sources and walkdown conditions.	Sampling System equipment is located inside the Turbine Building.	Room/Location 421 South Main Condenser Area
1	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	1	Piping	10" Pipe	No	Provides supplemental cooling to the SFP. There are two loops, both 100% capacity for normal operations	-	None	No Protection Required	Only a portion of the 10" pipe goes outside for one of the loop (that is noted on the P&ID). To protect against freezing, 1" of insulation would be required, or freezing could be mitigated by using the supplemental cooling loop to provide flow in the line and prevent freezing on a set interval.	
2	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	2	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	Could protect only up to Valve 4-805A and shut this valve, and the remainder of the pipe along with other segments (see below) would not require protection.	

5	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	3	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	See Segment 2...if valve 4-805A can be closed during cold weather, this segment does not require protection	
6	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	4	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	See Segment 2...if valve 4-805A can be closed during cold weather, this segment does not require protection	
7	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	5	Piping	3/4" Pipe to PI	Yes	RWST Pressure Boundary	-	Protect	Heat Trace & 1" Insulation	See Segment 2...if valve 4-805A can be closed during cold weather, this segment does not require protection	
8	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	6	Piping	2" Pipe	No	None	-	None	No Protection Required	Based on the check valve and diaphragm valve at the safety class changes, a break in this line would not impact the RWST pressure boundary.	
9	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	7	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	See Segment 2...if valve 4-805A can be closed during cold weather, this segment does not require protection	
3	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	-	Motors	Refueling Water Purification Pump Motor	No	Operation of the pump	-	None	No Protection Required	Pump operation not critical to maintain generation or initiate a TS Action.	
4	PTN	4	SFPC / 033	5614-M-3033 Sh. 1	-	Piping	Refueling Water Purification Pump	No	RWST Pressure Boundary	-	Protect	Options: 1. Insulate and/or heat trace the pump (unclear based on pump size which is required) 2. Operate the pump on a interval basis to prevent freezing of water in the pump.	See Segment 2...if valve 4-805A can be closed during cold weather, this segment does not require protection	
10	PTN	4	SFPC / 033	5614-M-3033 Sh. 2	1	Piping	1.5" Pipe	No	None	-	None	No Protection Required		
11	PTN	4	SFPC / 033	5614-M-3033 Sh. 2	2	Piping	1.5" Pipe	No	None	-	None	No Protection Required		
10	PTN	4	034	5614-M-3034	1	Ducting	U4 SFP Bldg supply and exhaust ductwork	Yes	None	Not affected by cold temperatures	None	None	Ducting is not susceptible to damage from freezing	
11	PTN	4	034	5614-M-3034	1	Instruments - General	Local D/P gages	Yes	None	Not affected by cold temperatures, not required for power operation	None	None	No instruments contain water that is susceptible to freezing	
12	PTN	4	034	5614-M-3034	1	Filter Train	Prefilters and HEPA filters for U4 SFP fans	Yes	None	Filter trains are not affected by cold weather	None	None		
13	PTN	4	034	5614-M-3034	1	Filter Train	Prefilters and HEPA filters for U4 cask handling facility	No	None	Not required for power operation	None	None		
14	PTN	4	034	5614-M-3034	1	Fan	U4 SFP exhaust fan, new fuel and SFP hx room supply fans	Yes	None	Required for continuous radiation monitoring, but cold weather has little to no effect on a fan or its motor.	None	None		
15	PTN	4	034	5614-M-3034	1	Fan	U4 cask handling fan	No	None	Not required for power operation	None	None		
16	PTN	4	034	5614-M-3034	1	Motor Operated Damper	U4 SFP supply and exhaust dampers, SFP HX Rm exhaust damper, new fuel storage area exhaust damper	Yes	None	SFP supply dampers do not need to reposition for normal operation or accident conditions.	None		Supply dampers to SFP area are outside, so gearbox lubricant at reduced temperatures may impart additional resisting torque on the damper motors. Other dampers are internal to the SFP area.	
22	PTN	4	CVCS / 046	5614-M-3046 Sh. 1	-		-		-	-		-	Most piping on this drawing is abandoned, and all is located in the Gas Stripper Room in the Auxiliary Building, and therefore assumed to be protected via a global strategy. Even if the pipes were subject to freezing, there would be no adverse effect on the site.	
23	PTN	4	CVCS / 046	5614-M-3046 Sh. 2	-		-		-	-		-	Most piping on this drawing is abandoned. Two pipes are not abandoned. One pipe is located on the Aux Bldg 4' Elevation. It's not clear from NAMS where the other pipe is located (valve ID not in NAMS); however, it goes to the sample system located in the Sample Room in the Auxiliary Building. Therefore, it is believed this pipe is also in the Auxiliary Building. Even if the pipe was subject to freezing, there would be no adverse effect on the site.	
1	PTN	4	CVCS / 047	5614-M-3047 Sh. 1	1	Piping	3" Pipe	No	None	-	None	No Protection Recommended	Located on AB Roof. Manual Operation to fill the Demineralizers from the Resin Fill Tank. Requires connection of flex hoses. Non-Nuclear Safety Related System	
2	PTN	4	CVCS / 047	5614-M-3047 Sh. 1	-		-		-	-		-	All piping, except as marked, is located in Containment or in the Auxiliary Building (P&V Room, Charging Pump Room, Monitor Tank Room, Reactor Coolant Filter Room). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building).	

5	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	1	Piping	4" Pipe	Yes	VCT to Charging Pumps (NNS)	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 1" Insulation to prevent >25% Freezing 3. Protect - Heat Trace & 1" Insulation for <2% feezing.	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
6	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	2	Vents / Drains / Misc. Connections	1" Drain	No	CVCS Boundary (NNS)	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
7	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	3	Piping	2" Pipe	No	VCT Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 4" Insulation to protect against >25% freezing. 3. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
8	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	3	Vents / Drains / Misc. Connections	3/8" Drains	No	VCT Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
9	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	3	Instr. Control / Protection	LTs	Yes	Flow to/from the VCT	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
10	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	4	Piping	1" Pipe	Yes	Inlet to the VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
11	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	5	Piping	2" Pipe	Yes	Inlet to the VCT both from Letdown from Reactor Coolant Filters and Pump Recirculation Line	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 4" Insulation to prevent >25% Freezing 3. Protect - Heat Trace & 1" Insulation for <2% feezing.	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
12	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	6	Piping	2" Pipe	No	RV line and pipe from VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 4" Insulation to prevent >25% Freezing 3. Protect - Heat Trace & 1" Insulation for <2% feezing.	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
13	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	7	Piping	3/4" Pipe	No	VCT Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
14	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	8	Piping	2" Pipe	No	RV Discharge from VCT	-	None	No protection required downstream of RV	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
15	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	9	Vents / Drains / Misc. Connections	1/4" Drain	No	VCT Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
16	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	9	Instr. Local	1/4" PI	Yes	VCT Pressure Boundary	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
17	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	10	Piping	3/4" Pipe	Yes	VCT Pressure Boundary	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
18	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	11	Instr. Control / Protection	3/4" Pipe to PT (Control & Alarm) and PI (Local)	Yes	Signal to SPDS/SAS	Dead Leg	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	

19	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	12	Piping	3" Pipe	Yes	Inlet to the VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - 2" Insulation to prevent >25% Freezing 3. Protect - Heat Trace & 1" Insulation for <2% feezing.	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
20	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	13	Piping	3/4" Pipe	Yes	Inlet to the VCT	-	Mitigate	Options: 1. Mitigate - Global Strategy using space heater(s) in the AB Roof VCT Enclosure to protect against freezing this pipe. 2. Protect - Heat Trace & 1" Insulation	Assumed to be in the VCT Enclosure on the AB Roof. Should be walked down to make sure it's not exposed outside the walls.	
3	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	-		-		-	-		-	All piping, except as marked, is located in Containment or in the Auxiliary Building (P&V Room, Charging Pump Room, Gas Stripper Room, Boric Acid Tank Room, etc.). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building).	
4	PTN	4	CVCS / 047	5614-M-3047 Sh. 2	-	Outdoor Tanks	Volume Control Tank	Yes	Quality Related per NAMS. Used to provide flow to the Charging Pumps of the CVCS for injection to the RCS per UFSAR 9.2.1	CVCS protection	None	No protection required, tank and contents will not freeze.	The VCT is located on the roof of the Auxiliary Building; however, it is enclosed in a concrete enclosure to be protected from missiles. A global strategy is recommended for the enclosure for the VCT, like the Auxilliliary Building, where space heaters can be deployed as necessary.	
21	PTN	4	CVCS / 047	5614-M-3047 Sh. 3	-		-		-	-		-	All piping is located in Containment or in the Auxiliary Building (P&V Room and Charging Pump Room). This piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building).	
1	PTN	4	RHR / 050	5614-M-3050 Sh. 1	All		-		-	-	None	No protection recommended	All portions of this drawing are located inside the Auxiliary Building or Containment. All piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building).	
1	PTN	4	053	5614-M-3053	1	Piping	Piping for containment penetrations for air systems (purge, ILRT pressure test connections, personnel & escape hatch & appurtenances)	No	None	Not required for power operation	None	None (Air penetrations are isolated for normal operation.)		
2	PTN	4	053	5614-M-3053	1	Ducting	Containment purge ducting	No	None	Not required for power operation	None	None		
3	PTN	4	053	5614-M-3053	1	Filter Train	Purge roughing filters	No	None	Not required for power operation	None	None		
4	PTN	4	053	5614-M-3053	1	Fan	Containment purge supply and exhaust fans	No	None	Not required for power operation	None	None		
5	PTN	4	053	5614-M-3053	1	Motor Operated Damper	Motor operated purge supply and exhaust fan dampers	No	None	Not required for power operation	None	None		
6	PTN	4	053	5614-M-3053	1	Ventilation Dampers	Piston-operated purge supply and exhaust containment isolation dampers	No	Normally closed; closure capability required for TS 3/4.6.4	Purge not required for power generation; dampers already in position for containment isolation	None	None		
7	PTN	4	053	5614-M-3053	1	Instr. Annunciation / Indication	Remote valve position indication for containment purge isolation valves	Yes	Required for Control Room indication of containment isolation status	Purge isolation valves normally closed, expected to stay closed; position indication not affected by cold temperatures	None	None		
8	PTN	4	053	5614-M-3053	1	Instr. Local	Local pressure indication at personnel and escape hatch	Yes	None	Not required for power operation	None	None		
9	PTN	4	053	5614-M-3053	2	Piping	2" & 1/2" Instr Air Bleed Line	Yes	TS 3/4.6.1.4 -- Containment internal pressure to be maintained between -2 and +1 psig	None required since Instr air bleed line is located inside the Aux Bldg. See remarks.	None	None	IA bleed line is normally open to vent off instrument air leakage in containment to prevent excessive ambient pressure buildup. The bleed line passes from containment, through the Aux Bldg, then through the Aux Bldg roof to the purge exhaust duct. The air passing through this line is at containment temperature, so any moisture entrained in the air is not subject to freezing in the portion of the line beyond the Aux Bldg roof penetration.	
10	PTN	4	053	5614-M-3053	2	Instr. Annunciation / Indication	Remote valve position indication for instrument air bleed	Yes	Required for control room indication of containment isolation status	Located inside Aux Bldg	None	None		
11	PTN	4	053	5614-M-3053	2	Vents / Drains / Misc. Connections	3/4" drain line (dead leg) on bleed line	No	None	Located inside Aux Bldg	None	None		

12	PTN	4	053	5614-M-3053	3	Fan	Cooling fans for high-temperature containment penetrations for main steam (MS), main feed (MF), and letdown.	Yes	Normally operating to provide cooling to containment penetrations over 150 °F; MS and MF penetration fans can be OOC for up to 7 days before repairs are required to be initiated; Letdown penetration fans, up to 30 days.	Allowable OOC time exceeds postulated 4-day freeze	None	None	Fans are normally operating; cold weather event is not expected to interrupt operation. No impact on operations even if fans are lost.	4-NOP-057 Sec 2.2, Step 5
13	PTN	4	053	5614-M-3053	3	Ducting	Supply to penetration cooling	Yes	None	Ductwork not affected by freezing temperatures	None	None		
14	PTN	4	053	5614-M-3053	3	Motor Operated Damper	Main steam penetration fan supply valve to west electrical penetration room	Yes	MS penetration fans can be OOC for up to 7 days before repairs are required to be initiated	Allowable OOC time exceeds postulated 4-day freeze	None	None	Cold weather is not expected to impact motorized damper operation.	4-NOP-057 Sec 2.2, Step 5
25	PTN	4	SIS / 062	5614-M-3062, Sh. 1	1	Piping	16" Pipe	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Provide flow path for ECCS.	Protect	Options: 1. 3" Insulation (<2% freezing), or 2. Heat Trace & 1" Insulation. Possible need to evaluate heat trace/insulation or possible enclose with heater if water in pipe needs to be maintained greater than 39F.	Full flow path (less than 2% freezing criteria) assumed to be required for Tech Specs; however, could evaluate if a lower flow is allowed. A portion of this pipe is in a trench to the Aux Bldg. Does the pipe need to be 39F or greater to comply with the Tech Spec? Not clear in the Tech Specs, and no temperature instrumentation on the piping.	
26	PTN	4	SIS / 062	5614-M-3062, Sh. 1	1	Motor Operator Valve	2 MOVs	No	Operable ECCS Flowpath	Provide ability to isolate RWT to go into Recirculation		Evaluate further if the MOVs require protection from cold weather (operating temperatures qualified to, internal heater, etc.) and determine a strategy if required.		
27	PTN	4	SIS / 062	5614-M-3062, Sh. 1	2	Piping	8" Pipe	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Provide flow path for ECCS.	Protect	Heat Trace & 1" Insulation. Possible need to evaluate heat trace/insulation or possible enclose with heater if water in pipe needs to be maintained greater than 39F.	Full flow path (less than 2% freezing criteria) assumed to be required for Tech Specs; however, could evaluate if a lower flow is allowed. A portion of this pipe is in a trench to the HHSI Pump Room. Does the pipe need to be 39F or greater to comply with the Tech Spec? Not clear in the Tech Specs, and no temperature instrumentation on the piping.	
28	PTN	4	SIS / 062	5614-M-3062, Sh. 1	2	Vents / Drains / Misc. Connections	3/4" Vent	No	RWST Pressure Boundary	Maintain pressure boundary for the piping, Dead Legs	Protect	Provide 1" insulation & heat tracing.	With no protection the piping will freeze and there is a potential the piping and/or valve could crack when water freezes. This will only be known once it begins to thaw. Conservatively recommend protecting to prevent potential system leakage.	
29	PTN	4	SIS / 062	5614-M-3062, Sh. 1	3	Piping	16" Pipe	Standby	TS 3.5.2.d - ECCS Flowpath to RHR and CS Pumps. **Action**: With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Operable ECCS	Protect	Options: 1. Use global heating strategy for the U4 CCW Pump Room to prevent freezing 2. 1" Insulation (no freezing >25%) 3. Heat Trace & 1" Insulation (no freezing or maintain temp in pipe >39F	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
30	PTN	4	SIS / 062	5614-M-3062, Sh. 1	4	Piping	4" Pipe	No	T.S. 3.1.2.5 - Available RWST with solution temperature above 39F. **Action**: With the RWST inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	Maintain RWST pressure boundary and have a flow path for the CVCS.	Protect	Options: 1. 1" insulation on 4" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation Possible need to evaluate heat trace/insulation or possible enclose with heater if water in pipe needs to be maintained greater than 39F.	Full flow path (less than 2% freezing criteria) assumed to be required for Tech Specs; however, could evaluate if a lower flow is allowed. A portion of this pipe is in a trench to the Aux Bldg. Does the pipe need to be 39F or greater to comply with the Tech Spec? Not clear in the Tech Specs, and no temperature instrumentation on the piping.	
31	PTN	4	SIS / 062	5614-M-3062, Sh. 1	5	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation		
32	PTN	4	SIS / 062	5614-M-3062, Sh. 1	6	Piping	6" Pipe	No	RWST Pressure Boundary	-	Protect	1" Insulation	Protects against >25% freezing in the pipe	
33	PTN	4	SIS / 062	5614-M-3062, Sh. 1	7	Piping	6" Pipe	No	CSP Full Flow Recirculation Line, Class B (SR) Piping	-	Protect	1" Insulation	Located in Aux Bldg Room per NAMS. Piping is normally isolated on both sides, so protection may not be required. If line is not utilized, a break or freeze of the line does not require a shutdown. Insulation size recommended to prevent >25% freezing since full flow is not required. Operator action needed to use the line.	
34	PTN	4	SIS / 062	5614-M-3062, Sh. 1	7	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Dead Leg	Protect	Heat Trace & 1" Insulation	See Segment 7, Piping for discussion of location and if protection is necessary.	

35	PTN	4	SIS / 062	5614-M-3062, Sh. 1	8	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation		
36	PTN	4	SIS / 062	5614-M-3062, Sh. 1	9	Piping	2" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. Use global heating strategy for the U4 CCW Pump Room to prevent freezing 2. 4" Insulation (no freezing >25%) 3. Heat Trace & 1" Insulation (no freezing or maintain temp in pipe >39F	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
37	PTN	4	SIS / 062	5614-M-3062, Sh. 1	9	Motor Operator Valve	2 MOVs	Standby	-	-		Evaluate further if the MOVs require protection from cold weather (operating temperatures qualified to, internal heater, etc.) and determine a strategy if required.	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
38	PTN	4	SIS / 062	5614-M-3062, Sh. 1	9	Vents / Drains / Misc. Connections	3/4" Drain	No	Class B (SR) Piping	Dead Leg	Protect	Heat Trace & 1" Insulation	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
39	PTN	4	SIS / 062	5614-M-3062, Sh. 1	10	Piping	2" Pipe	Yes	RWST Pressure Boundary & pipe to LT	Dead Leg	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation		
40	PTN	4	SIS / 062	5614-M-3062, Sh. 1	10	Piping	3/8" Pipe	Yes	RWST Pressure Boundary & pipe to LT	Dead Leg	Protect	Heat Trace & 1" Insulation		
41	PTN	4	SIS / 062	5614-M-3062, Sh. 1	10	Instr. Control / Protection	LT	Yes	T.S. 3.5.4 - A minimum contained volume 320,000 gallons of borated water when in Modes 1-4 **ACTION:** With the refueling water tank inoperable, restore the tank to OPERABLE status within **1 hour** or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours. T.S. 3.1.2.5 has the same LCO and action.	Required to know level in the RWST. Dead Leg	Protect	Provide insulation (1") & heat tracing for the level instruments and piping.		
42	PTN	4	SIS / 062	5614-M-3062, Sh. 1	10	Vents / Drains / Misc. Connections	Test Connection	No	RWST Pressure Boundary	Dead Leg	Protect	Heat Trace & 1" Insulation		
43	PTN	4	SIS / 062	5614-M-3062, Sh. 1	10	Vents / Drains / Misc. Connections	1/4" Drain	No	RWST Pressure Boundary	Dead Leg	Protect	Heat Trace & 1" Insulation		
44	PTN	4	SIS / 062	5614-M-3062, Sh. 1	11	Piping	3/4" Pipe	No	RWST Pressure Boundary	-	Protect	Options: 1. Use global heating strategy for the U4 CCW Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
45	PTN	4	SIS / 062	5614-M-3062, Sh. 1	12		HHSI pumps suction and discharge flow paths, cross connects with U4 piping, recirculation and test lines	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Operable ECCS	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Insulation and/or Heat Trace individual piping and components.	Located in HHSI Pump Room, which is fully enclosed by concrete, but doors are louvered, there is no HVAC, and room is open to the CCW Pump Rooms, which is open to the environment. Recommend covering door louvers and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
46	PTN	4	SIS / 062	5614-M-3062, Sh. 1	13		HHSI Pumps and associated cooling	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Operable ECCS	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Insulation and/or Heat Trace individual piping and components.	Located in HHSI Pump Room, which is fully enclosed by concrete, but doors are louvered, there is no HVAC, and room is open to the CCW Pump Rooms, which is open to the environment. Recommend covering door louvers and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	

47	PTN	4	SIS / 062	5614-M-3062, Sh. 1	14	Piping	3" Pipe	Standby	T.S. 3.5.2.a & d - Operable flow path taking suction from RWST to RCS Cold Legs **ACTION:** With the suction flow path from the refueling water storage tank inoperable, restore the suction flow path to OPERABLE status within **1 hour** or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Operable ECCS	Protect	Options: 1. Use global heating strategy for the U4 CCW Pump Room to prevent freezing 2. 2" Insulation (no freezing >25%) 3. Heat Trace & 1" Insulation (no freezing or maintain temp in pipe >39F	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
48	PTN	4	SIS / 062	5614-M-3062, Sh. 1	14	Vents / Drains / Misc. Connections	3/4" Drain	No	SI Pressure Boundary	Operable ECCS	Protect	Heat Trace & 1" Insulation	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
49	PTN	4	SIS / 062	5614-M-3062, Sh. 1	15	Piping	3/4" Pipe	No	SI Pressure Boundary	Operable ECCS	Protect	Heat Trace & 1" Insulation	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
50	PTN	4	SIS / 062	5614-M-3062, Sh. 1	16	Piping	1/2" Pipe	No	None	-	None	No Protection Required	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides (except large doorway), but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and doorway, and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
18	PTN	4	SIS / 062	5614-M-3062, Sh. 1	-	Outdoor Tanks	Refueling Water Storage Tank (RWST)	Yes	T.S. 3.5.4 - Min Temp of 39F when in Modes 1-4 **ACTION**: With the refueling water tank inoperable, restore the tank to OPERABLE status within **1 hour** or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours. T.S. 3.1.2.5 has the same LCO and action.	Maintain ability for Emergency Core Cooling and Boration	Protect	Need to perform further evaluation if the min volume (320,000 gal) in the RWST will be lowered to 39F based on new temperature profile. If RWST could reach 39F, then some options include insulating, adding recirculation heater(s) as a temporary skid design/installation/operation, permanent immersion heater(s), etc.	Currently per 0-ONOP-103.2, the only action is to refer to T.S. 3.5.4 if temperature is dropping. Temperature can be measured by placing the RWST on recirculation via 4-NOP-033, but the procedure does not use this stratgey to consider raising the RWST temperature.	0-ONOP-103.2 4-NOP-033
19	PTN	4	SIS / 062	5614-M-3062, Sh. 1	-	Vents / Drains / Misc. Connections	Vents to atmosphere (unclear of size and it there is a loop seal via the P&ID)	No	Operable RWST	Allow for tank venting and prevent vacuum generation	Protect	Insulate vent to prevent vacuum forming in the tank when draining (thickness to be determined based on pipe size)		
20	PTN	4	SIS / 062	5614-M-3062, Sh. 1	-	Instr. Control / Protection	2" & 3/8" Piping to LT with associated test connection and drain	Yes	T.S. 3.5.4 - A minimum contained volume 320,000 gallons of borated water when in Modes 1-4 **ACTION:** With the refueling water tank inoperable, restore the tank to OPERABLE status within **1 hour** or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours. T.S. 3.1.2.5 has the same LCO and action.	Required to know level in the RWST. Dead Leg	Protect	Provide insulation (1") & heat tracing for the level instruments and piping.		
21	PTN	4	SIS / 062	5614-M-3062, Sh. 1	-	Vents / Drains / Misc. Connections	2" Pipe to 1" Drain and 3/8" connection to sample sink	No	RWST Pressure Boundary	Dead Leg	Protect	Options: 1. 4" insulation on 2" piping through safety boundary change (protect against >25% freezing) 2. Heat Trace & 1" Insulation	Protection only required through the safety boundary change of B to D, the remainder of the piping is not required to be protected. Downstream of the locked closed valve, the system can be opened to protect damage to piping and components.	
22	PTN	4	SIS / 062	5614-M-3062, Sh. 1	-	Vents / Drains / Misc. Connections	1" Pipe, 3/8" Pipe	No	RWST Pressure Boundary	Dead Leg	Protect	Heat Trace & 1" Insulation through 4-897D	Protection only required through the safety boundary change of B to D, the remainder of the piping is not required to be protected. Downstream of the locked closed valve, the system can be opened to protect damage to piping and components.	
23	PTN	4	SIS / 062	5614-M-3062, Sh. 1	-	Vents / Drains / Misc. Connections	4" Pipe	No	RWST Pressure Boundary	Dead Leg	Protect	1" Insulation on 4" Pipe through 4-894R	Protection only required through the safety boundary change of B to D, the remainder of the piping is not required to be protected. Downstream of the locked closed valve, the system can be opened to protect damage to piping and components.	
24	PTN	4	SIS / 062	5614-M-3062, Sh. 1	-	Vents / Drains / Misc. Connections	Overflow piping	No	None	-	None	No Protection Required.		

8	PTN	4	SIS / 062	5614-M-3062, Sh. 2	1	Piping	4" Pipe	Standby	TS 3.5.2 - The following Emergency Core Cooling System (ECCS) equipment and flow paths shall be OPERABLE: Four Safety Injection (SI) pumps, each capable of being powered from its associated OPERABLE diesel generator, with discharge flow paths aligned to the RCS cold legs.	Maintain flowpath	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Located in HHSI Pump Room, which is fully enclosed by concrete, but doors are louvered, there is no HVAC, and room is open to the CCW Pump Rooms, which is open to the environment. Recommend covering door louvers and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
9	PTN	4	SIS / 062	5614-M-3062, Sh. 2	1	Instr. Control / Protection	PI	Yes	See Segment 1, Piping	Control	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	See Segment 1, Piping	
10	PTN	4	SIS / 062	5614-M-3062, Sh. 2	1	Instr. Control / Protection	FI	Yes	See Segment 1, Piping	Control	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	See Segment 1, Piping	
11	PTN	4	SIS / 062	5614-M-3062, Sh. 2	2	Piping	4" Pipe	Standby	TS 3.5.2 - The following Emergency Core Cooling System (ECCS) equipment and flow paths shall be OPERABLE: Four Safety Injection (SI) pumps, each capable of being powered from its associated OPERABLE diesel generator, with discharge flow paths aligned to the RCS cold legs.	Maintain flowpath	Protect	Options: 1. Use global heating strategy for the U4 CCW Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Located in U4 CCW Pump Room, which is enclosed by concrete on the sides, but roof is all grating/open to outside atmosphere and there is no HVAC. Recommend using tarps to cover grating and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
12	PTN	4	SIS / 062	5614-M-3062, Sh. 2	3	Piping	4" Pipe	Standby	TS 3.5.2 - The following Emergency Core Cooling System (ECCS) equipment and flow paths shall be OPERABLE: Four Safety Injection (SI) pumps, each capable of being powered from its associated OPERABLE diesel generator, with discharge flow paths aligned to the RCS cold legs.	Maintain flowpath	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Located in HHSI Pump Room, which is fully enclosed by concrete, but doors are louvered, there is no HVAC, and room is open to the CCW Pump Rooms, which is open to the environment. Recommend covering door louvers and installing space heater(s) to protect area. If this cannot be performed than individual heating strategies for all piping/components will be required.	
13	PTN	4	SIS / 062	5614-M-3062, Sh. 2	3	Vents / Drains / Misc. Connections	3/4" Drain	No	See Segment 3, Piping	Dead Leg	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	See Segment 3, Piping	
14	PTN	4	SIS / 062	5614-M-3062, Sh. 2	4	Piping	3/4" & 1/2" Pipe	No	See Segment 1, Piping	-	Protect	Options: 1. Use global heating strategy for the HHSI Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	See Segment 1, Piping	
15	PTN	4	SIS / 062	5614-M-3062, Sh. 2	5	Piping	1/2" Pipe	No	None	-	None	No Protection Required		
16	PTN	4	SIS / 062	5614-M-3062, Sh. 2	6	Piping	3/4" Pipe	No	SI Pressure Boundary	-	Protect	Options: 1. Use global heating strategy for the U4 CCW Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Stated to be in the RHR Pipe Tunne, Unclear if it's in the Aux Bldg or U4 CCW Pump Room. See Segment 2, Piping	
17	PTN	4	SIS / 062	5614-M-3062, Sh. 2	6	Vents / Drains / Misc. Connections	3/4" Drain	No	SI Pressure Boundary	Dead Leg	Protect	Options: 1. Use global heating strategy for the U4 CCW Pump Room to prevent freezing 2. Heat Trace & 1" Insulation	Stated to be in the RHR Pipe Tunne, Unclear if it's in the Aux Bldg or U4 CCW Pump Room. See Segment 2, Piping	
7	PTN	4	SIS / 062	5614-M-3062, Sh. 2	All but 1-6		-		-	-	None	No protection recommended	All portions of this drawing, except Segments 1-6, are located inside the Auxiliary Building or Containment. All piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building).	
2	PTN	4	SIS / 064	5614-M-3064 Sh. 1	All		-		-	-	None	No protection recommended	All portions of this drawing are located inside Containment. All piping is assumed to be protected from weather either by the building protection and ambient heat sources. No global strategy assumed to be required.	
4	PTN	4	CS / 068	5614-M-3068, Sh. 1	1	Piping	6" Pipe	No	CSP Full Flow Recirculation Line, Class B (SR) Piping	-	Protect	1" Insulation	Located on Aux Bldg Room per NAMS. Piping is normally isolated on both sides, so protection may not be required. If line is not utilized, a break or freeze of the line does not require a shutdown. Insulation size recommended to prevent >25% freezing since full flow is not required. Operator action needed to use the line.	
5	PTN	4	CS / 068	5614-M-3068, Sh. 1	1	Instr. Local	Flow element	Yes	None	Dead Leg	Protect	Heat Trace & 1" Insulation	See Segment 1 piping for discussion of location and if protection is necessary.	
6	PTN	4	CS / 068	5614-M-3068, Sh. 1	1	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Dead Leg	Protect	Heat Trace & 1" Insulation	See Segment 1 piping for discussion of location and if protection is necessary.	
3	PTN	4	CS / 068	5614-M-3068, Sh. 1	All but 1		-		-	-	None	No protection recommended	All portions of this drawing, except Segment 1, are located inside the Auxiliary Building or Containment. All piping is assumed to be protected from weather either by the building protection or through a global strategy as needed (space heaters deployed in rooms in the Auxiliary Building).	

1	PTN	4	070	5614-M-3070, Sh. 1 TB Ventilation, Load Center & SWGR Rooms Chilled Water System - Train A	1	Piping	Small-bore pipe, Air Handling Units. Equipment located on Ground Floor EL 18'-0" and EL 30'-0" LC/Switchgear Enclosure	Yes	Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken as noted to open doors and fans to provide cooling in the event of loss of A/C system.	N/A	Mitigate	Add Glycol to chillers for low temperature operation or provide operator action to open doors and provide fans to cool Load Center and Switchgear Rooms.	Chilled Water System not safety related and if rendered non-functional, operator action to open doors and start fan locally to provide once-through ventilation can provide adequate room cooling (UFSAR 9.16.3). Based on "Turkey Point Extreme Temperature Reassessment, March 2021", Chillers can trip off on Low Ambient Lockout (35.1 F). Load Center/Switchgear Enclosures are reinforced concrete Class I structures (UFSAR 5.3.2). The UFSAR design limit for equipment in the LC/Switchgear Rooms is 104 deg F. The administrative limit temperature alert is 95 deg F. Chiller alarm limits are 36 deg F, with glycol 12.6 deg F. Note that one chiller in a single train may provide adequate cooling for 7 days during emergency operations with operator action. (UFSAR 9.16)	UFSAR 9.16, UFSAR 5.3.2, Turkey Point Extreme Temperature Reassessment p.7
2	PTN	4	070	5614-M-3070, Sh. 1 TB Ventilation, Load Center & SWGR Rooms Chilled Water System - Train A	2	Piping	Small Bore Piping, Chillers, Pumps, transfer pump, Expansion tank. Turbine Building from outside LC/SWGR room up TB EL. 44'-6 1/4"	Yes	Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken as noted to open doors and fans to provide cooling in the event of loss of A/C system.	N/A	Mitigate	Add Glycol to chillers for low temperature operation or provide operator action to open doors and provide fans to cool Load Center and Switchgear Rooms.	Chilled Water System not safety related and if rendered non-functional, operator action to open doors and start fan locally to provide once-through ventilation can provide adequate room cooling (UFSAR 9.16.3). Based on "Turkey Point Extreme Temperature Reassessment, March 2021", Chillers can trip off on Low Ambient Lockout (35.1 F). Load Center/Switchgear Enclosures are reinforced concrete Class I structures (UFSAR 5.3.2). The UFSAR design limit for equipment in the LC/Switchgear Rooms is 104 deg F. The administrative limit temperature alert is 95 deg F. Chiller alarm limits are 36 deg F, with glycol 12.6 deg F. Note that one chiller in a single train may provide adequate cooling for 7 days during emergency operations with operator action. (UFSAR 9.16)	UFSAR 9.16, UFSAR 5.3.2, Turkey Point Extreme Temperature Reassessment p.7
3	PTN	4	070	5614-M-3070, Sh. 2 TB Ventilation, Load Center & SWGR Rooms Chilled Water System - Train B	1	Piping	Small-bore pipe, Air Handling Units. Equipment located on Ground Floor EL 18'-0" and EL 30'-0" LC/Switchgear Enclosure	Yes	Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken as noted to open doors and fans to provide cooling in the event of loss of A/C system.	N/A	Mitigate	Add Glycol to chillers for low temperature operation or provide operator action to open doors and provide fans to cool Load Center and Switchgear Rooms.	Chilled Water System not safety related and if rendered non-functional, operator action to open doors and start fan locally to provide once-through ventilation can provide adequate room cooling (UFSAR 9.16.3). Based on "Turkey Point Extreme Temperature Reassessment, March 2021", Chillers can trip off on Low Ambient Lockout (35.1 F). Load Center/Switchgear Enclosures are reinforced concrete Class I structures (UFSAR 5.3.2). The UFSAR design limit for equipment in the LC/Switchgear Rooms is 104 deg F. The administrative limit temperature alert is 95 deg F. Chiller alarm limits are 36 deg F, with glycol 12.6 deg F. Note that one chiller in a single train may provide adequate cooling for 7 days during emergency operations with operator action. (UFSAR 9.16)	UFSAR 9.16, UFSAR 5.3.2, Turkey Point Extreme Temperature Reassessment p.7
4	PTN	4	070	5614-M-3070, Sh. 2 TB Ventilation, Load Center & SWGR Rooms Chilled Water System - Train B	2	Piping	Small Bore Piping, Chillers, Pumps, transfer pump, Expansion tank. Turbine Building from outside LC/SWGR room up TB EL. 44'-6 1/4"	Yes	Normally operating to provide room cooling to maintain 100% power generation, however operator action can be taken as noted to open doors and fans to provide cooling in the event of loss of A/C system.	N/A	Mitigate	Add Glycol to chillers for low temperature operation or provide operator action to open doors and provide fans to cool Load Center and Switchgear Rooms.	Chilled Water System not safety related and if rendered non-functional, operator action to open doors and start fan locally to provide once-through ventilation can provide adequate room cooling (UFSAR 9.16.3). Based on "Turkey Point Extreme Temperature Reassessment, March 2021", Chillers can trip off on Low Ambient Lockout (35.1 F). Load Center/Switchgear Enclosures are reinforced concrete Class I structures (UFSAR 5.3.2). The UFSAR design limit for equipment in the LC/Switchgear Rooms is 104 deg F. The administrative limit temperature alert is 95 deg F. Chiller alarm limits are 36 deg F, with glycol 12.6 deg F. Note that one chiller in a single train may provide adequate cooling for 7 days during emergency operations with operator action. (UFSAR 9.16)	UFSAR 9.16, UFSAR 5.3.2, Turkey Point Extreme Temperature Reassessment p.7
1	PTN	4	MSS / 072	5614-M-3072 SH 1	1	Piping	26" main steam line (x3); 30" main steam header	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		
2	PTN	4	MSS / 072	5614-M-3072 SH 1	1	Instr. Control / Protection	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated. Continued implementation of Section 3.2, Step 6.E of Procedure 0-ONOP-103.2 applies.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	

3	PTN	4	MSS / 072	5614-M-3072 SH 1	1	Instr. Control / Protection	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated. Continued implementation of Section 3.2, Step 6.E of Procedure 0-ONOP-103.2 applies.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
4	PTN	4	MSS / 072	5614-M-3072 SH 1	1	Motor Operator Valve	MSIV Bypass (2" MOV) (normaly closed; one per MSIV) Includes position switch	No	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Likely to be mounted in close proximity to MSIVs such that normal process flow will keep 2" line and MOV warm. Include with global freeze evaluation for MOVs	
5	PTN	4	MSS / 072	5614-M-3072 SH 1	1	Instr. Control / Protection	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated. Continued implementation of Section 3.2, Step 6.E of Procedure 0-ONOP-103.2 applies.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
6	PTN	4	MSS / 072	5614-M-3072 SH 1	1	Vents / Drains / Misc. Connections	capped pipe (x2, each MS line)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Likely to be mounted in close proximity to MS lines such that normal process flow will keep the capped line warm.	
7	PTN	4	MSS / 072	5614-M-3072 SH 1	2	Piping	6", 10", 14", 30" piping Main Steam Lines to atmos dump valves, and silencer	Standby	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. 6" portion upstream of atmos steam dump expected to be short. Main steam piping will be hot.	
8	PTN	4	MSS / 072	5614-M-3072 SH 1	3	Piping	14", 12", 10", 8", 6" piping	Standby	**TS 3.7.1.1 - All MS safety valves shall be operable (4hr LCO)** MS Safety valves must be available for passive plant cooldown following closures of MSIVs and/or seismic event.	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Branches to safety valves from MS piping are large piping. With MS process flow (hot), and large piping, MS safety valves are at low to no risk of freezing or failure.	
9	PTN	4	MSS / 072	5614-M-3072 SH 1	3	Relief Valves	MS Safety relief valves (x4 per steam line)	Standby	**TS 3.7.1.1 - All MS safety valves shall be operable (4hr LCO)** MS Safety valves must be available for passive plant cooldown following closures of MSIVs and/or seismic event.	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Branches to safety valves from MS piping are large piping. With MS process flow (hot), and large piping, MS safety valves are at low to no risk of freezing or failure.	
10	PTN	4	MSS / 072	5614-M-3072 SH 1	4	Piping	1/2" and 1 1/2" piping MSIV leakoff drain and steam trap (x1 per MSIV)	Yes	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)** Provides a drain path for collected condensate in the MSIV	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	Protect	Ensure 1/2" and 1 1/2" piping and steam trap are insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping and MSIV will be hot.	
11	PTN	4	MSS / 072	5614-M-3072 SH 1	4	Strainers	1/2" steam trap (x1 per line)	Yes	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)** Class B pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	Protect	Ensure steam trap is insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping and MSIV will be hot.	
12	PTN	4	MSS / 072	5614-M-3072 SH 1	4	Piping	Steam trap bypass	No	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)** Class B pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	Protect	Ensure Steam trap bypass is insulated	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. MSIV and MSIV drain will be hot.	
13	PTN	4	MSS / 072	5614-M-3072 SH 1	4	Vents / Drains / Misc. Connections	Drain from 1/2" line w/ 2 closed root valves. Strainer Drain w/ 1 closed root valve.	No	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)** Provides a drain path for collected condensate in the MSIV	Dead Leg	Protect	Ensure drain is insulated	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. MSIV and MSIV drain will be hot.	

14	PTN	4	MSS / 072	5614-M-3072 SH 1	5	Piping	3" piping (x1 per main steam line) "to AFW System"	Yes	**TS 3.7.1.2 - two independent AFW Trains, including 3 steam supply flowpaths, 3 pumps, and associated water discharge flowpaths shall be OPERABLE** steam supply to turbine driven AFW pump.	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Minimum steam flow through this 3" line, then 2" steam trap line to condenser keep line warm when Aux Feedwater steam supply valves are closed.	5614-M-3075 SH 1
15	PTN	4	MSS / 072	5614-M-3072 SH 1	6	Piping	30" main steam supply piping to turbine stop valves (x2)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		5614-M-3089 SH 1
16	PTN	4	MSS / 072	5614-M-3072 SH 1	6	Instr. Local	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated. Continued implementation of Section 3.2, Step 6.E of Procedure 0-ONOP-103.2 applies.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
17	PTN	4	MSS / 072	5614-M-3072 SH 1	7	Piping	24" and 8" main steam supply to Steam Dump Header and MSR reheaters (tubeside)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		5614-M-3072 SH 2
18	PTN	4	MSS / 072	5614-M-3072 SH 1	8	Piping	Size unknown - estimate 1" or 2" Tubine stop valve steam supply condensate drain.	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. Process fluid will be flowing and hot.	5614-M-3014 SH 1
19	PTN	4	MSS / 072	5614-M-3072 SH 1	8	Strainers	steam trap (x1 per line)	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. Process fluid will be flowing and hot.	
20	PTN	4	MSS / 072	5614-M-3072 SH 1	8	Piping	Size unknown - estimate 1" or 2" Steam trap bypass	No	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of pipe in proximity to active process line. Process fluid will be flowing and hot.	
21	PTN	4	MSS / 072	5614-M-3072 SH 1	8	Vents / Drains / Misc. Connections	Drains from steam traps and active line closed root valves.	No	Maintain Steam Boundary	Dead Leg	Protect	Ensure drains are insulated	Inspect during walkdown, insulation may already be present. Evaluate length of drain against dead leg freeze criteria. Process fluid will be flowing and hot.	
22	PTN	4	MSS / 072	5614-M-3072 SH 1	9	Piping	1" piping Drains from turbine stop valves - return to steam header	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Inspect during walkdown, insulation may already be present. Process fluid will be flowing and hot.	5614-M-3089 SH 1
23	PTN	4	MSS / 072	5614-M-3072 SH 1	10	Piping	4" steam supply to Auxiliary Steam Header	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		5614-M-3084 SH 2
24	PTN	4	MSS / 072	5614-M-3072 SH 1	11	Piping	3/4" piping; 3/8" tubing Main steam to Secondary sample coolers (x3)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. However, small dia pipe/tube should be insulated	Protect	Ensure pipe and tubing are insulated. This is likely on a lower level of the TB and so a global strategy of enclosing the area with tarps and using space heaters may be taken.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Process fluid will be flowing and hot.	5614-M-3032 SH 2
25	PTN	4	MSS / 072	5614-M-3072 SH 1	12	Piping	3/4" piping (x3) Main steam to Wet Layup System	No	None - not active during normal operation Main steam pressure boundary	Dead Leg	Protect	Insulate 3/4" piping that may be exposed to outdoor conditions.	MS supply to wet layup system is isolated during normal operation. Downsteam valves SGWL-3-024, -022, -028, -030, -046, and -048 are locked closed during normal operation. See Dwg 5613-N-3078 SH 1, Note 4.	5614-N-3078 SH 1, Note 4
26	PTN	4	MSS / 072	5614-M-3072 SH 2	1	Piping	24" Steam dump header	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		

27	PTN	4	MSS / 072	5614-M-3072 SH 2	1	Vents / Drains / Misc. Connections	misc vent (assume 3/4")(closed root valve)	No	Main Steam pressure boundary	Dead Leg	Protect	Ensure vent and vent valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent piping and distance of valve to the active process line. Main line will be flowing and hot.	
28	PTN	4	MSS / 072	5614-M-3072 SH 2	2	Piping	10", 8" Main steam piping to MSRs (x4)	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None		
29	PTN	4	MSS / 072	5614-M-3072 SH 2	2	Instr. Local	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Main line will be flowing and hot.	
30	PTN	4	MSS / 072	5614-M-3072 SH 2	2	Instr. Local	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Main line will be flowing and hot.	
31	PTN	4	MSS / 072	5614-M-3072 SH 2	2	Motor Operator Valve	8" MOV primary steam inlet to MSRs. MOV-4-1431, -1432, -1433, -1434	Yes	None	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Include with global freeze evaluation for MOVs.	
32	PTN	4	MSS / 072	5614-M-3072 SH 2	2	Vents / Drains / Misc. Connections	3/4" vent one per MSR inlet	No	None	Dead Leg	Protect	Ensure vent and vent valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent piping and distance of valve to the active process line. Main line will be flowing and hot.	
33	PTN	4	MSS / 072	5614-M-3072 SH 2	3	Piping	8" piping "Timing Loop" (MOV bypass) Contains temperature control valve (MSR inlet) one per MSR	No	None	Stagnant line, connected to flowing steam line.	Mitigate	Consider cycling the control valve periodically (once per 24 hours) to keep line warm [2% freeze criteria].	Inspect during walkdown, insulation may already be present. Main line will be flowing and hot.	
34	PTN	4	MSS / 072	5614-M-3072 SH 2	3	Vents / Drains / Misc. Connections	Drain (size unkown - estimate 3/4") one per timing loop	No	None	Dead Leg	Protect	Ensure drain and drain valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of drain piping and distance of valve to the active process line. Main line likely to be warm with intermitent operation and connection to main steam line to MSR.	
35	PTN	4	MSS / 072	5614-M-3072 SH 2	4	Piping	1" piping "purge loop" (MOV bypass) Contains air operated control valve (MSR inlet) one per MSR	No	None	Stagnant line, connected to flowing steam line.	Mitigate	Given small diameter of pipe (1") ensure line is insulated. Consider cycling the control valve periodically (every 4-6 hours) to keep line warm [2% freeze criteria].	Inspect during walkdown, insulation may already be present. Main line will be flowing and hot.	
38	PTN	4	MSS / 072	5614-M-3072 SH 2	5	Piping	4" piping (x2) (MSR B to A supply crosstie, MSR D to C supply crosstie) 1/2" piping with steam traps (x10)	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Process fluid will be flowing and hot.	
39	PTN	4	MSS / 072	5614-M-3072 SH 2	5	Strainers	Steam trap branches from main supply lines (x10)	Yes	Maintain Steam Boundary	Normal Steam flow adequate to prevent freezing.	None	Ensure each steam trap bypass (isolated) is insulated to prevent freezing. Insulate drain connection from each steam trap.	Inspect during walkdown, insulation may already be present. Evaluate length of drain piping and distance of valve to the active process line. Process fluid will be flowing and hot.	
40	PTN	4	MSS / 072	5614-M-3072 SH 2	5	Instr. Local	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	Yes	None	Dead Leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of intrument tubing, valve, and port in proximity to active process line. Main line will be flowing and hot.	

41	PTN	4	MSS / 072	5614-M-3072 SH 2	5	Vents / Drains / Misc. Connections	misc drains upstream of steam traps	No	None	Dead Leg	Protect	Ensure drain and drain valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of drain piping and distance of valve to the active process line. Main line likely to be warm with steam flow.	
42	PTN	4	MSS / 072	5614-M-3072 SH 2	6	Piping	12", 10", 18" Piping Includes 10" hydraulic steam dump valves. Steam dump header to steam dump valves, and discharge to condensers (x4)	Standby	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Steam dump valves closed during normal operation, but minimum steam flow through dump valve leakoffs keep line warm and prevent freezing. Expect that steam dump lines are already insulated and in lower levels of the TB (partially enclosed.	
43	PTN	4	MSS / 072	5614-M-3072 SH 2	6	Vents / Drains / Misc. Connections	3/4" Drain (upstream of CV-3-2827)	No	Maintain Steam Boundary	Dead Leg	Protect	Ensure drain and drain valve are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of drain piping and distance of valve to the active process line. Main line likely to be warm with steam flow.	
44	PTN	4	MSS / 072	5614-M-3072 SH 2	7	Piping	Size unknown - estimate 1" or 2" Valve leakoff drain lines from steam dump valves to main condenser.	Yes	None	Normal Steam flow adequate to prevent freezing. Steam Lines already insulated.	None	None	Steam dump valves closed during normal operation, but minimum steam flow through dump valve leakoffs keep line warm and prevent freezing. Expect that steam dump lines are already insulated and in lower levels of the TB (partially enclosed).	
45	PTN	4	MSS / 072	5614-M-3072 SH 2	8	Piping	Hydraulic oil lines for steam dump valve actuator.	Standby	None	Hydraulic oil likely has very low (below 0°F) freezing point. Freezing of valve hydraulics unlikely.	None	None	Inspect during walkdown for exposure of hydraulic lines to extreme outdoor conditions. The valves are likely in lower level of TB (partially enclosed), and close to condensers. Steam dump valve opening time is not critical to plant operation or safety function. No concern if hydraulic fluid is slightly more viscous because of low outdoor temperatures.	
36	PTN	4	MSS / 072	5614-M-3072 SH 2	A, B, C, ar	Heat Exchangers	MSR A, B, C, and D	Yes	Requied for Power Generation; Main Steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, expect MSR is fully insulated. MSR will be hot, and not susceptible to freezing.	
37	PTN	4	MSS / 072	5614-M-3072 SH 2	A, B, C, ar	Instr. Control / Protection	Temperature Element (TE), temperature measurement is used as input into temperature control valve on "timing loop" (MSR steam inlet)	Yes	Requied for Power Generation; Main Steam pressure boundary	Dead Leg	Protect	Ensure temperature element is insulated.	Inspect during walkdown, expect MSR is fully insulated. Ensure temperature element is insulated. MSR will be hot, and not susceptible to freezing.	
46	PTN	4	MSS / 072	5614-M-3072 SH 3	1	Piping	1" instrument air piping, and MSIV valve hold open components	Standby	**TS 3.7.1.5 - Each MSIV shall be operable (24hr LCO)**	Instrument air lines will not freeze/fail	None	None	No components on this drawing are susceptible to moisture accumulation and freezing. Inst Air lines (dry air) MSIV body and valve stem - warm due to flowing steam.	
1	PTN	4	C / 12	5614-M-3073, Sh. 1	1	Piping	30" condensate suction Piping, pumps A, B, C	Yes	Required for power generation	Normally flowing	None	None		
2	PTN	4	C / 12	5614-M-3073, Sh. 1	1	Vents / Drains / Misc. Connections	manual vent, drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
3	PTN	4	C / 12	5614-M-3073, Sh. 1	1	Instr. Local	suction pressure gages	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
4	PTN	4	C / 12	5614-M-3073, Sh. 1	1	Relief Valves	relief valve	No	N/A	None	None	None		
5	PTN	4	C / 12	5614-M-3073, Sh. 1	2	Piping	1" & 1/2" condensate recirc to pump seals	Yes	Required for power generation	Normally flowing	None	None		
6	PTN	4	C / 12	5614-M-3073, Sh. 1	2	Vents / Drains / Misc. Connections	manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
7	PTN	4	C / 12	5614-M-3073, Sh. 1	2	Strainers	condensate pump seal supply strainers	Yes	Required for power generation	None	None	None	Normally flowing	
8	PTN	4	C / 12	5614-M-3073, Sh. 1	2	Instr. Local	condensate pump seal supply pressure gages	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
9	PTN	4	C / 12	5614-M-3073, Sh. 1	2	Instr. Local	condensate pump seal supply flow indicator	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
10	PTN	4	C / 12	5614-M-3073, Sh. 1	3	Piping	18", 20" & 24" condensate discharge piping,	Yes	Required for power generation	None	None	None: lines normally flowing		
11	PTN	4	C / 12	5614-M-3073, Sh. 1	3	Instr. Annunciation / Indication	Condensate Pumps discharge line flow transmitter / indication	Yes	Required for power generation	Condensate flow control and annunciation in control room	Protect	Insulate and heat trace flow transmitter sensing lines		
12	PTN	4	C / 12	5614-M-3073, Sh. 1	3	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
13	PTN	4	C / 12	5614-M-3073, Sh. 1	3	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		

14	PTN	4	C / 12	5614-M-3073, Sh. 1	3	Vents / Drains / Misc. Connections	bypass/warmup valves around main isolation gate valves (x3)	No	N/A	A break at the bypass valves could compromise operating condensate header	Protect	Insulate and heat trace		
15	PTN	4	C / 12	5614-M-3073, Sh. 1	3	Instr. Local	local condensate pump discharge pressure instruments	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
16	PTN	4	C / 12	5614-M-3073, Sh. 1	4	Piping	1" & 2" condensate pump casing vent return to hotwell	Yes	N/A	Normally flowing	None	None		
17	PTN	4	C / 12	5614-M-3073, Sh. 1	5	Piping	10" condensate pump recirc lines upstream of normally closed isolation	No	N/A	Break in these legs could compromise operating condensate header (upstream side of isolation valve) or condenser vacuum (downstream side)	Protect	Insulate, 2"	Condensate lines are likely insulated already	
18	PTN	4	C / 12	5614-M-3073, Sh. 1	5	Instr. Annunciation / Indication	Condensate Pumps recirc. line flow transmitter / indication	Standby	N/A	Dead Leg	Protect	Insulate and heat trace.		
19	PTN	4	C / 12	5614-M-3073, Sh. 1	5	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
20	PTN	4	C / 12	5614-M-3073, Sh. 1	5	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
21	PTN	4	C / 12	5614-M-3073, Sh. 1	6	Piping	1/2", 3/8" & 1/4" condensate header sample lines	No	N/A	Breaks in these legs could compromise operating condensate header and preclude sampling capability	Protect	Insulate and heat trace Alternative: maintain trickle flow to sampling panel		
22	PTN	4	C / 12	5614-M-3073, Sh. 1	6	Instr. Local	local condensate discharge sample line pressure instruments and test point	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
23	PTN	4	C / 12	5614-M-3073, Sh. 1	7	Piping	1" condensate pump seal supply from condensate header	Yes	Required for power generation	None	None	None: lines normally flowing		
24	PTN	4	C / 12	5614-M-3073, Sh. 1	8	Piping	1/4", 1/2", & 1" hotwell sample pumps seal supply from condensate storage & condensate header	No	N/A	Break in this dead leg could compromise operating condensate header, CST inventory, and preclude sample pump operation.	Protect	Insulate and heat trace		
25	PTN	4	C / 12	5614-M-3073, Sh. 1	9	Piping	2" LP turbine steam exhaust hood spray	No	N/A	Breaks in this line could compromise operating condensate header or condenser vacuum.	Protect	Insulate and heat trace		
26	PTN	4	C / 12	5614-M-3073, Sh. 2	1	Piping	24" condensate line from the main condensate header to the LP heaters	Yes	Required for power generation	Normally flowing	None	None		
27	PTN	4	C / 12	5614-M-3073, Sh. 2	1	Vents / Drains / Misc. Connections	manual vent, drain, & abandoned lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
28	PTN	4	C / 12	5614-M-3073, Sh. 2	1	Instr. Local	temperature & pressure gages	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
29	PTN	4	C / 12	5614-M-3073, Sh. 2	1	Instr. Annunciation / Indication	Condensate line flow transmitter / indication	Yes	Required for power generation	Condensate flow control and annunciation in control room	Protect	Insulate and heat trace flow transmitter sensing lines		
30	PTN	4	C / 12	5614-M-3073, Sh. 2	2	Piping	16" condensate line from heater drains to LP heaters bypass and FW pump discharge	Yes	Required for power generation	Normally flowing	None	None		
31	PTN	4	C / 12	5614-M-3073, Sh. 2	3	Piping	14" condensate bypass line to LP heaters bypass and FW pump discharge	No	N/A	Breaks in this line could compromise operating condensate header or condenser vacuum.	Protect	Insulate and heat trace		
32	PTN	4	C / 12	5614-M-3073, Sh. 2	3	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
33	PTN	4	C / 12	5614-M-3073, Sh. 2	4	Piping	1/2" condensate line to SJAE loop seal fill	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		

34	PTN	4	C / 12	5614-M-3073, Sh. 2	5	Piping	2" condensate line for surge tank makeup	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
35	PTN	4	C / 12	5614-M-3073, Sh. 2	5	Piping	1" condensate line to desuperheater valve (abandoned) and chem. addition	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
36	PTN	4	C / 12	5614-M-3073, Sh. 2	6	Piping	1/2" & 4" abandoned line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
37	PTN	4	C / 12	5614-M-3073, Sh. 2	7	Piping	6" wet layup line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
38	PTN	4	C / 12	5614-M-3073, Sh. 2	8	Piping	4" condensate line to discharge canal	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.	Entire line is outside the TB. A portion of the line is buried.	
39	PTN	4	C / 12	5614-M-3073, Sh. 2	8	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.	Entire line is outside the TB.	
40	PTN	4	C / 12	5614-M-3073, Sh. 2	9	Piping	4" condensate line to heater drain pump suction	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
41	PTN	4	C / 12	5614-M-3073, Sh. 2	10	Piping	14" condensate line through the gland steam condenser	Yes	Required for power generation	Normally flowing	None	None		
42	PTN	4	C / 12	5614-M-3073, Sh. 2	10	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
43	PTN	4	C / 12	5614-M-3073, Sh. 2	10	Relief Valves	3/4" Relief valve off a 1" line	Standby	N/A	Dead Leg	Protect	Insulate and heat trace.		
44	PTN	4	C / 12	5614-M-3073, Sh. 2	11	Piping	6" condensate line to DWST (capped)	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
45	PTN	4	C / 12	5614-M-3073, Sh. 2	11	Vents / Drains / Misc. Connections	manual drain lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
46	PTN	4	C / 12	5614-M-3073, Sh. 2	11	Instr. Local	pressure gage	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
47	PTN	4	C / 12	5614-M-3073, Sh. 2	12	Piping	4" condensate line to FW pump seals	Yes	Required for power generation	Normally flowing	None	None		
48	PTN	4	C / 12	5614-M-3073, Sh. 2	13	Piping	10" & 18" condensate line to condenser	Yes	Required for power generation	Normally flowing	None	None		
49	PTN	4	C / 12	5614-M-3073, Sh. 2	13	Piping	18" condensate branch line to condenser (downstream of valve 4-20-009)	Yes	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
50	PTN	4	C / 12	5614-M-3073, Sh. 2	13	Piping	8" control valve bypass	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
51	PTN	4	C / 12	5614-M-3073, Sh. 2	14	Piping	1/2" chemical injection line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
52	PTN	4	C / 12	5614-M-3073, Sh. 2	15	Piping	1/2" chemical injection line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
53	PTN	4	C / 12	5614-M-3073, Sh. 2	16	Piping	18"SJAE condenser bypass line	No	N/A	Breaks in this line could compromise operating condensate header .	Protect	Insulate and heat trace.		
54	PTN	4	C / 12	5614-M-3073, Sh. 3	1	Piping	24" main condensate header upstream of feed heaters	Yes	Required for power generation	None	None	None: lines normally flowing		
55	PTN	4	C / 12	5614-M-3073, Sh. 3	2	Piping	18" condensate through LP heaters 1A, 2A, 3A, 4A, 5A	Yes	Required for power generation	Normally flowing	None	None		
56	PTN	4	C / 12	5614-M-3073, Sh. 3	2	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		

57	PTN	4	C / 12	5614-M-3073, Sh. 3	2	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
58	PTN	4	C / 12	5614-M-3073, Sh. 3	2	Vents / Drains / Misc. Connections	Pressure test connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
59	PTN	4	C / 12	5614-M-3073, Sh. 3	2	Vents / Drains / Misc. Connections	Pressure instruments and temperature elements	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
60	PTN	4	C / 12	5614-M-3073, Sh. 3	2	Relief Valves	LP heater condensate side relief valves	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.	Relief valve not required at power	
61	PTN	4	C / 12	5614-M-3073, Sh. 3	3	Piping	18" condensate through LP heaters 1B, 2B, 3B, 4B, 5B	Yes	Required for power generation	Normally flowing	None	None		
62	PTN	4	C / 12	5614-M-3073, Sh. 3	3	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
63	PTN	4	C / 12	5614-M-3073, Sh. 3	3	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
64	PTN	4	C / 12	5614-M-3073, Sh. 3	3	Vents / Drains / Misc. Connections	Pressure test connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
65	PTN	4	C / 12	5614-M-3073, Sh. 3	3	Vents / Drains / Misc. Connections	Pressure instruments and temperature elements	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
66	PTN	4	C / 12	5614-M-3073, Sh. 3	3	Relief Valves	LP heater condensate side relief valves	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.	Relief valve not required at power	
67	PTN	4	C / 12	5614-M-3073, Sh. 3	4	Piping	14" FWH 1A, 1B, 2A, 2B bypass	No	N/A	Break in this line could compromise main condensate supply line	Protect	Insulate, 1"	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
68	PTN	4	C / 12	5614-M-3073, Sh. 3	5	Piping	2" and 3" connection to wet layup system (condensate side of isolation)	No	N/A	Break in this leg could compromise operating condensate header	Protect	Insulate and heat trace, up through first isolation valve		
69	PTN	4	C / 12	5614-M-3073, Sh. 3	6	Piping	14" bypass lines around LP htrs 3A, 3B, 4A, 4B, 5A, and 5B	No	N/A	Break in these leg could compromise operating feedwater header	Protect	Insulate, 1" (see remarks)	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
70	PTN	4	C / 12	5614-M-3073, Sh. 3	6	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
71	PTN	4	C / 12	5614-M-3073, Sh. 3	6	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
72	PTN	4	C / 12	5614-M-3073, Sh. 3	7	Piping	12" and 16" heater drain tank pump discharge line	Yes	Required for power generation	Normally flowing	None	None		
1	PTN	4	FWS / 074	5614-M-3074, Sh. 1	1	Piping	14" & 20" FW pump suction line	Yes	Required for power generation	Normally flowing	None	None		
2	PTN	4	FWS / 074	5614-M-3074, Sh. 1	1	Instr. Local	Feed pump suction local pressure gages	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
3	PTN	4	FWS / 074	5614-M-3074, Sh. 1	1	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
4	PTN	4	FWS / 074	5614-M-3074, Sh. 1	1	Instr. Control / Protection	Feedwater suction line pressure transmitters	Yes	Required for power generation	Feedwater suction pressure signal to DCS	Protect	Insulate and heat trace pressure transmitter sensing line		
5	PTN	4	FWS / 074	5614-M-3074, Sh. 1	1	Instr. Control / Protection	Feedwater suction line flow transmitters	Yes	Required for power generation	Feedwater suction flow signal to ADC	Protect	insulate and heat trace flow transmitter sensing lines		
6	PTN	4	FWS / 074	5614-M-3074, Sh. 1	2	Piping	18" FW pump discharge	Yes	Required for power generation	Normally flowing	None	None		
7	PTN	4	FWS / 074	5614-M-3074, Sh. 1	2	Instr. Control / Protection	Feed pump discharge pressure transmitter to recirc. CV	Yes	N/A	Feedwater discharge pressure signal to ADC	Protect	Insulate and heat trace.		
8	PTN	4	FWS / 074	5614-M-3074, Sh. 1	2	Motor Operator Valve	Feed pump discharge isolation MOVs	Yes	Close on SIAS	Normally open with process fluid flowing	None	None	Include with global freeze evaluation for MOVs	
9	PTN	4	FWS / 074	5614-M-3074, Sh. 1	2	Piping	14" FW pump discharge crosstie	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
10	PTN	4	FWS / 074	5614-M-3074, Sh. 1	3	Piping	8" FW recirc line back to FW pump suction	Standby	N/A	Break in this leg could compromise operating feedwater header	Protect	Insulate, 1" (see remarks)	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
11	PTN	4	FWS / 074	5614-M-3074, Sh. 1	3	Instr. Control / Protection	Recirc line flow transmitter	Standby	N/A	Feedwater recirc. flow signal to ADC	Protect	insulate and heat trace flow transmitters		
12	PTN	4	FWS / 074	5614-M-3074, Sh. 1	3	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		

13	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Piping	6" & 8" FW recirc line back to condenser	Standby	N/A	Break in this leg could compromise operating feedwater line or condenser vacuum	Protect	Insulate, 1" (see remarks) Alternative: Pipe geometry may result in this line being normally drained of liquid.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
14	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Instr. Control / Protection	Recirc line flow transmitter	Standby	N/A	Feedwater recirc. flow signal to ADC	Protect	insulate and heat trace flow transmitters		
15	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
16	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
17	PTN	4	FWS / 074	5614-M-3074, Sh. 1	5	Piping	14" line from heater drain system	No	N/A	Break in this leg could compromise operating feedwater line	Protect	Insulate, 1" (see remarks)	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
18	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Piping	18" & 24" FW pump discharge to HP FWH	Yes	Required for power generation	Normally flowing	None	None	All FW pump lube oil lines assumed to be impervious to freezing effects.	
19	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
20	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Vents / Drains / Misc. Connections	Bypass/warmup valves around FWH 3-way valves	No	N/A	A break at the bypass valves could compromise operating FW header	Protect	Insulate and heat trace Alternative: routing through warm regions of the TB or proximity of isolation valve to flowing FW header may preclude freezing		
21	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Instr. Local	Pressure & temperature indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
22	PTN	4	FWS / 074	5614-M-3074, Sh. 2	2	Piping	18" & 24" feedwater bypass around HP heaters 6A/6B	No	N/A	Break in this leg could compromise operating feedwater header	Protect	Insulate, 1"	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
23	PTN	4	FWS / 074	5614-M-3074, Sh. 2	3	Piping	FW pump lube oil cooler cooling water	Yes	Required for power generation	Normally flowing	None	None		
24	PTN	4	FWS / 074	5614-M-3074, Sh. 2	4	Piping	12" branch line off main FW header	No	N/A	Break in this leg could compromise operating feedwater header	Protect	Insulate and heat trace		
25	PTN	4	FWS / 074	5614-M-3074, Sh. 2	4	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
26	PTN	4	FWS / 074	5614-M-3074, Sh. 2	5	Piping	10" line to the condenser	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
27	PTN	4	FWS / 074	5614-M-3074, Sh. 2	6	Piping	10" line to the condenser	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
28	PTN	4	FWS / 074	5614-M-3074, Sh. 2	7	Piping	6" line to wet layup	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line is isolated and capped.	
29	PTN	4	FWS / 074	5614-M-3074, Sh. 2	8	Piping	10" line to circ water and the discharge canal	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
30	PTN	4	FWS / 074	5614-M-3074, Sh. 2	8	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
31	PTN	4	FWS / 074	5614-M-3074, Sh. 2	9	Piping	4" FW pump seal water return	Yes	N/A	Normally flowing	None	None		
32	PTN	4	FWS / 074	5614-M-3074, Sh. 2	9	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
33	PTN	4	FWS / 074	5614-M-3074, Sh. 2	9	Instr. Local	Temperature indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
34	PTN	4	FWS / 074	5614-M-3074, Sh. 2	9	Tank	FW Pump seal water tank	Yes	N/A	Normally flowing	None	None		
35	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Piping	2", 3" & 4" FW pump seal water supply	Yes	N/A	Normally flowing	None	None		
36	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
37	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Instr. Local	Pressure & diff. pressure indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
38	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Piping	2" & 3" FW pump seal water return to heater drain tank	Yes	N/A	Normally flowing	None	None		

39	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Instr. Local	Pressure & temperature indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
40	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
41	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Piping	3" CV bypass line	No	N/A	Break in this leg could compromise FW pump operation	Protect	Insulate and heat trace.		
42	PTN	4	FWS / 074	5614-M-3074, Sh. 2	12	Piping	3" FW pump seal water crosstie line	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
43	PTN	4	FWS / 074	5614-M-3074, Sh. 2	13	Piping	3" & 4" seal water tank level control line to the condenserFW pump seal water crosstie line	Yes	N/A	Normally flowing	None	None		
44	PTN	4	FWS / 074	5614-M-3074, Sh. 2	13	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
45	PTN	4	FWS / 074	5614-M-3074, Sh. 2	14	Piping	1/2" chemical injection lines	No	N/A	Dead Leg	Protect	Insulate and heat trace.	No longer in service.	
46	PTN	4	FWS / 074	5614-M-3074, Sh. 2	15	Piping	6" Standby FW pump line	Standby	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
47	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Piping	14" & 24" FW headers, including feed reg valves, LEFM and feed isolation valves	Yes	Required for power generation	Normally flowing	None	None		
48	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Motor Operator Valve	motor-operated FRV isolation valve	No	N/A - not required to reposition for normal or accident	Remains open	None	None	Include with global freeze evaluation for MOVs	
49	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Instr. Control / Protection	LEFM pressure transmitters	Yes	Required for power generation	Ensure LEFM input to continuous calorimetric analysis	Protect	insulate and heat trace LEFM pressure transmitter sensing lines		
50	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Instr. Control / Protection	Venturi flow transmitters	Yes	N/A	backup to LEFM, input to DCS	Protect	insulate and heat trace venturi flow transmitters		
51	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Instr. Annunciation / Indication	Feed header pressure control room indication	Yes	N/A	Preserve control room feedwater pressure indication	Protect	Insulate and heat trace pressure transmitter sensing lines		
52	PTN	4	FWS / 074	5614-M-3074, Sh. 3	2	Piping	6" line from condensate transfer pumps	No	N/A	A break in this line could compromise operating FW header	Protect	Insulate and heat trace		
53	PTN	4	FWS / 074	5614-M-3074, Sh. 3	3	Piping	6" FW motor-operated FRV bypass	No	N/A	Break in this leg could compromise operating feedwater header	Protect	Insulate and heat trace	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
54	PTN	4	FWS / 074	5614-M-3074, Sh. 3	4	Piping	4" AFW piping connected to main feed headers	Standby	T.S. 3.7.1.2 - All 3 AFW pumps and two independent flow paths to remain operable. **Action:** Allowable time to restore varies by equipment inoperable: -Restore to both flow paths within 72 hrs. -Restore to one flow path within 2 hrs. -Restore single steam driven pump: 4 hrs.	Maintain aux feedwater injection capability after reactor trip for sensible and decay heat removal to achieve cold shutdown.	Protect	Insulate / Heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
55	PTN	4	FWS / 074	5614-M-3074, Sh. 3	5	Piping	1/2" Piping (hydrazine injection)	Yes	N/A	Normally flowing	None	None		
56	PTN	4	FWS / 074	5614-M-3074, Sh. 3	6	Piping	2" line to/from wet layup	No	N/A	A break at the bypass valves could compromise operating FW header	Protect	Insulate and heat trace		
57	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Piping	6" blowdown piping	Yes	Required for power generation	Normally flowing	None	None		
58	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Vents / Drains / Misc. Connections	3/4" test connections	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
59	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Vents / Drains / Misc. Connections	3/4" manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
60	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Instr. Control / Protection	Flow transmitters	Yes	N/A	Blowdown flow signal to ADC	Protect	Insulate and heat trace.		
61	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Instr. Local	Temperature indication	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
62	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Piping	3/4" & 2" CV bypass line	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
63	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Tank	7250 gal. SG Blowdown Tank	Yes	N/A	Normally flowing, maintained at >350 F	None	None		

64	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Piping	6", 8" & 14" Blowdown Tank relief lines	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
65	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Piping	8" & 10" Blowdown Tank relief valve discharge lines	No	N/A	Open to drain	None	None		
66	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Instr. Control / Protection	Blowdown Tank level instrumentation lines	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
67	PTN	4	FWS / 074	5614-M-3074, Sh. 4	3	Piping	6", 8", & 10" SG Blowdown Tank discharge line	Yes	N/A	Normally flowing	None	None		
68	PTN	4	FWS / 074	5614-M-3074, Sh. 4	3	Vents / Drains / Misc. Connections	Manual vents & drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
69	PTN	4	FWS / 074	5614-M-3074, Sh. 4	3	Piping	6" isolated abandoned HX line	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
70	PTN	4	FWS / 074	5614-M-3074, Sh. 4	3	Vents / Drains / Misc. Connections	Relief Valve	No	N/A	Dead Leg	Protect	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
71	PTN	4	FWS / 074	5614-M-3074, Sh. 4	3	Instr. Local	Flow transmitter	Yes	N/A	Dead Leg	Protect	Insulate and heat trace.		
72	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	Piping	1 1/2" & 2" blowdown tank steam discharge to the condenser	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
73	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	Vents / Drains / Misc. Connections	Manual drains	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
74	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	Piping	3/4" strainer bypass	No	N/A	Dead Leg	None	Insulate and heat trace.		
75	PTN	4	FWS / 074	5614-M-3074, Sh. 4	5	Piping	12", 16", & 20" blowdown tank steam discharge to extraction steam	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
76	PTN	4	FWS / 074	5614-M-3074, Sh. 4	5	Vents / Drains / Misc. Connections	Manual vents	No	N/A	Dead Leg	Protect	Insulate and heat trace.		
77	PTN	4	FWS / 074	5614-M-3074, Sh. 4	6	Piping	1" SG Blowdown sample system return	Yes	N/A	Normally flowing	None	None		
78	PTN	4	FWS / 074	5614-M-3074, Sh. 4	7	Piping	2 1/2" waste holdup tank connection	No	N/A	Dead Leg	None	Insulate and heat trace.	This line should already be insulated, so protection should be limited to verifying insulation is installed / intact.	
79	PTN	4	FWS / 074	5614-M-3074, Sh. 4	8	Piping	2" wet layup line	No	N/A	Dead Leg	None	Insulate and heat trace.		
80	PTN	4	FWS / 074	5614-M-3074, Sh. 4	9	Piping	20" Blowdown Tank exhaust to atmosphere	No	N/A	Line is void of water due to open drain	None	None		
1	PTN	4	FWS / 074	5614-M-3074, Sh. 5	1	Instr. Control / Protection	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	Yes	Required for power generation	Ensure LEFM input to continuous calorimetric analysis	Protect	Heat Trace and Insulate LEFM instrument transmitter sensing lines.		
2	PTN	4	FWS / 074	5614-M-3074, Sh. 5	2	Instr. Control / Protection	Air and instrument electrical lines for FW Regulating Valve Positioners	Yes	Required for power generation	Ensure required air for FCV positioning	None	No Protection Recommended	No protection required for the FW Reg Vlv Positioners - fully controlled by instrument air and instrument electrical, which is not subject to freezing or adverse impact by cold weather.	
1	PTN	4	AFWS / 075	5614-M-3075 Sh 1	1	Piping	3" steam piping up to AFW steam supply MOV	Yes	Tech Spec 3.7.1.2 requires 2 independent AFW trains including 3 steam supplies, 3 pumps and discharge flowpaths	Maintain steam supply to AFW for decay heat removal	none	Piping is insulated and maintained at steam-filled conditions on standby with condensate traps on service.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
2	PTN	4	AFWS / 075	5614-M-3075 Sh 1	1	Vents / Drains / Misc. Connections	3/4" Test Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location. Not required if upward-oriented.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
3	PTN	4	AFWS / 075	5614-M-3075 Sh 1	1	Motor Operator Valve	MOVS from Main Steam to Steam Turbines, normally closed	No	Tech Spec 3.7.1.2	Maintain steam supply to AFW for decay heat removal		Determine if MOV is susceptible to be adversely impacted by cold weather and if protection is required.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
4	PTN	4	AFWS / 075	5614-M-3075 Sh 1	2	Piping	3" steam drain trap piping upstream of AFW steam supply MOV	Yes	Tech Spec 3.7.1.2	Maintain steam supply to AFW for decay heat removal	none	Trap drain piping is continually supplied from on-service steam trap from steam-filled AFW supply lines.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
5	PTN	4	AFWS / 075	5614-M-3075 Sh 1	3	Piping	manual drain trap piping, 1/2"	No	N/A	AFW steam supply pressure boundary (dead leg, manual steam trap drain)	none	Piping is insulated and maintained at steam-filled conditions on standby with condensate traps on service.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
6	PTN	4	AFWS / 075	5614-M-3075 Sh 1	4	Piping	4" steam piping, downstream of steam supply MOV to AFW pump turbines	No	Tech Spec 3.7.1.2	Maintain steam supploy to AFW for decay heat removal	protect	Check insulation status and routing. Determine how much residual water can be held in the piping, if that would be subject to freezing. If already insulated and minimal amount of water could freeze in line, no additional protection required.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	

7	PTN	4	AFWS / 075	5614-M-3075 Sh 1	4	Vents / Drains / Misc. Connections	3/4" and 1/2" connections	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Check if insulated and routing. Determine how much residual water can be held in the piping, if that would be subject to freezing. If already insulated and minimal amount of water could freeze in line, no additional protection required. Verify no downward-oriented dead-end connections	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
8	PTN	4	AFWS / 075	5614-M-3075 Sh 1	5	Piping	1/2" steam trap drain lines	Yes	None	-	none	No protection required, steam trap drain normally on service providing drain path back to condenser		
9	PTN	4	AFWS / 075	5614-M-3075 Sh 1	6	Piping	1/2" bypass pipe, SR side	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
10	PTN	4	AFWS / 075	5614-M-3075 Sh 1	7	Piping	1/2" bypass pipe, NNS side	No	None	Pressure boundary for condenser vacuum	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
11	PTN	4	AFWS / 075	5614-M-3075 Sh 1	8	Piping	4" & 6" piping from aux steam, NNS	No	None	-	none	check insulated; piping is maintained at steam-filled conditions in standby, should provide sufficient heat, verifiy via walkdown that closed valve would not collect condensate		
12	PTN	4	AFWS / 075	5614-M-3075 Sh 1	9	Piping	1" drain on line to steam trap drain header	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
13	PTN	4	AFWS / 075	5614-M-3075 Sh 1	10	Piping	AFW steam supply trap bypass line	No	Tech Spec 3.7.1.2	AFW and/or condenser vacuum pressure boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
14	PTN	4	AFWS / 075	5614-M-3075 Sh 1	11	Piping	1/2" AFW supply steam trap drain manual discharge tailpieces	No	None	None	None	Normally isolated, not required for power operation, normally drains to floor drains		
15	PTN	4	AFWS / 075	5614-M-3075 Sh 1	12	Piping	1/2" drain from isolated Aux Stm supply check valve	No	Tech Spec 3.7.1.2	AFW Steam Supply Pressure Boundary	Protect	Check if insulated and routing. Determine how much residual water can be held in the piping. Upstream line is not normally pressurized / steam filled, so steam trap is not normally passing hot condensate, and any residual liquid could be subject to freezing. If orientation precludes collection of condensate, no action required.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
16	PTN	4	AFWS / 075	5614-M-3075 Sh 1	13	Piping	1/2" bypass around drain from isolated Aux Stm supply check valve	No	Tech Spec 3.7.1.2	AFW Steam Supply Pressure Boundary	Protect	Check if insulated and routing. Determine how much residual water can be held in the piping. Upstream line is not normally pressurized / steam filled, so steam trap is not normally passing hot condensate, and any residual liquid could be subject to freezing. If orientation precludes collection of condensate, no action required.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
17	PTN	4	AFWS / 075	5614-M-3075 Sh 1	14	Piping	1/2" condensate drain path from isolated Aux Stm supply check valve steam trap	No	None	None	none	None -- steam piping is not normally pressurized, so condensate is not expected to collect in the steam trap tailpiece		
18	PTN	4	AFWS / 075	5614-M-3075 Sh 1	15	Piping	1/2" bypass around drain from isolated Aux Stm supply check valve (downstream side of closed bypass valve)	No	None	None	none	None -- steam piping is not normally pressurized, so condensate is not expected to collect in the steam trap tailpiece		
19	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	Piping	4" and 6" AFW piping, up to control valve	No	Tech Spec 3.7.1.2 requires 2 independent AFW trains including 3 steam supplies, 3 pumps and discharge flowpaths	maintain AFW capability for decay heat removal	protect	Possible insulate / heat trace to maintain full flow (<2% freezing), depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
20	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	Vents / Drains / Misc. Connections	3/4" Vent & 1" Connection	No	Tech Spec 3.7.1.2	AFW Pressure Boundary/dead leg	protect	Possible insulate / heat trace to maintain pressure boundary, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
21	PTN	4	AFWS / 075	5614-M-3075 Sh 2	2	Piping	4" AFW piping, downstream control valve	No	Tech Spec 3.7.1.2	maintain AFW capability for decay heat removal	protect	Possible insulate / heat trace to maintain full flow, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
22	PTN	4	AFWS / 075	5614-M-3075 Sh 2	3	Piping	1/2" and 3/8" tubing for air / N2 for AFW control valve positioner	No	Tech Spec 3.7.1.2		none	Air/N2 not susceptable to freezing.	N2 and air tubing for control of AFW flow. N2 and air not susceptable to freezing.	
23	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	Instr. Control / Protection	1/2" tubing for AFW flow element / transmitter	No	Tech Spec 3.7.1.2	maintain AFW capability for decay heat removal	protect	Possible insulate / heat trace, depending on routing configuration and location.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
24	PTN	4	AFWS / 075	5614-M-3075 Sh 3	1	Piping	N2 tubing and instrumentation	No			None	N2 not susceptable to freezing.	0-ONOP-103.2 acknowledges AFW is subject to cold weather and may require additional mitigation.	
1	PTN	4	SGWLU / 078	5614-M-3078, Sh. 1	1	Piping	1" Pipe up to normally closed valve SGWL-4-002	No	Primary Makeup Water System Pressure Boundary (NNS)	Dead leg	None	No Protection Required	No adverse impact on unit operation or required TS action for break in this pipe	
2	PTN	4	SGWLU / 078	5614-M-3078, Sh. 1	2	Piping	2" Pipe up to locked closed valves during normal operation SGWL-4-011, -031, -049	No	FW System Pressure Boundary (SR)	Dead leg	Protect	Options: 1. 4" Insulation to prevent >25% freezing for the piping 2. Heat Trace & Insulate		
3	PTN	4	SGWLU / 078	5614-M-3078, Sh. 1	3	Piping	1" Pipe up to normally closed valve SGWL-4-006	No	Nitrogen line (NNS)	Dead leg	None	No Protection Required	Air line, not subject to freezing	

4	PTN	4	SGWLU / 078	5614-M-3078, Sh. 1	4	Piping	2" Pipe up to locked closed valves during normal operation SGWL-4-007, -025, -042	No	FW System Pressure Boundary (SR)	Dead leg	Protect	Options: 1. 4" Insulation to prevent >25% freezing for the piping 2. Heat Trace & Insulate		
5	PTN	4	SGWLU / 078	5614-M-3078, Sh. 1	5	Piping	3/4" Pipe to SGWL-4-022, -028, -046	No	FW System Pressure Boundary (SR)	Dead leg	Protect	Heat Trace & Insulate		
6	PTN	4	SGWLU / 078	5614-M-3078, Sh. 1	6	Piping	IA to PICs		IA Pressure Boundary	Dead leg	None	No Protection Required	Air line, not subject to freezing	
7	PTN	4	SGWLU / 078	5614-M-3078, Sh. 1	-		-		-	-		-	The SG Wet Layup System is used during RFO conditions only. Equipment is isolated during normal operation via closed valves and spectacle flanges. Segments connected to other systems up to isolation points are evaluated, but everything inside the isolation points for the SGWL System are not evaluated.	
1	PTN	4	080	5614-M-3080 SH 1	1	Piping	3" piping from gland seal condenser drain	Yes	None	Not required for Power operation; no safety function	None	None	Gland steam condenser and condenser receiver are located on ground floor of TB (partially enclosed). A break in this line should not effect power operation, since the condensate collected is ultimately dumped to waste drains.	
2	PTN	4	080	5614-M-3080 SH 1	2	Piping	2", 3" piping, check valve, reducer Gland Steam Condenser Drain Pump (Gland Steam Condenser Receiver to Condensate Recovery Tank)	Standby	None	Not required for Power operation; no safety function	None	None	Gland steam condenser and condenser receiver are located on ground floor of TB (partially enclosed). A break in this line should not effect power operation, since the condensate collected is ultimately dumped to waste drains.	
3	PTN	4	080	5614-M-3080 SH 1	2	Instr. Control / Protection	Level switches for Gland Steam Condenser Drain Pump Start/stop control of pump and control room annunciation (high level).	Standby	Transfer gland steam condensate to larger condensate recovery tank.	Dead Leg	Protect	Suggest insulating level switches and instrument tubing. Alternate option would be take actions to enclose and heat the general area.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria.	
4	PTN	4	080	5614-M-3080 SH 1	3	Piping	3" overflow piping from condensate recovery tank	Standby	None	Not required for Power operation; no safety function	None	None	Gland steam condenser and condenser receiver are located on ground floor of TB (partially enclosed). A break in this line should not effect power operation, since the condensate collected is ultimately dumped to waste drains.	
8	PTN	4	080	5614-M-3080 SH 1	4	Piping	4", 6" piping Condenser Pit Sump	Standby	None	Ground floor of TB (partially enclosed)	Mitigate	Recommend evaluate as part of general approach for TB ground floor. Possible mitigating action is further enclose area and add space heaters.	Condenser sump pit located on ground floor of TB, and partially enclosed. Evaluate as part of overall approach for the TB ground floor.	
9	PTN	4	080	5614-M-3080 SH 1	4	Vents / Drains / Misc. Connections	1" vent	No	None	Dead Leg	Mitigate	Recommend evaluate as part of general approach for TB ground floor. Possible mitigating action is further enclose area and add space heaters.	Condenser sump pit located on ground floor of TB, and partially enclosed. Evaluate as part of overall approach for the TB ground floor.	
10	PTN	4	080	5614-M-3080 SH 1	4	Instr. Control / Protection	Level switch for condenser pit sump pump with control room annunciation and alarm (high)	Yes	None	Dead Leg	Mitigate	Recommend evaluate as part of general approach for TB ground floor. Possible mitigating action is further enclose area and add space heaters.	Condenser sump pit located on ground floor of TB, and partially enclosed. Evaluate as part of overall approach for the TB ground floor.	
5	PTN	4	080	5614-M-3080 SH 1	ate Recov	Outdoor Tanks	Condensate Recovery Tank	Yes	None	Process fluid is likely warm. Tank has no safety function.	None	None	The Condensate Recovery Tank is located outside between the Diesel Generator Buildling and RX buildling (more exposed to extreme cold). The tank does not have a safety function or power operation function. It holds gland steam condensate which is then drained to waste drains.	
6	PTN	4	080	5614-M-3080 SH 1	ate Recov	Instr. Local	Local level gauge	Yes	None	Tank has no safety function	None	None	Freezing or failure of the level gauge may cause condnesate in tank to spill. No consequence on power generation on loss of tank. Recommend evaluating potential flooding consequenses/risks based on surrounding area and size of tank (# of gal).	
7	PTN	4	080	5614-M-3080 SH 1	ate Recov	Vents / Drains / Misc. Connections	4" vents (x2)	Yes	None	Tank has no safety function	None	None	Freezing failure of the vents would have no consequence.	
1	PTN	4	081	5614-M-3081 SH 1	1	Piping	4" Piping from MSR 4B to RHTR Drain Tk 4A (Vent) [4-4"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
2	PTN	4	081	5614-M-3081 SH 1	1	Vents / Drains / Misc. Connections	1/2" Vent; capped pipe	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Inspect during walkdown. Configuration/location of vent is unknown. Expected to be short runs of pipe and potentially insulated already. Main piping will be hot.	

3	PTN	4	081	5614-M-3081 SH 1	2	Piping	12" and 8" Piping to RHTR Drain Tk 4A (Drain) [4-12"-2-C, 4-8"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
4	PTN	4	081	5614-M-3081 SH 1	2	Vents / Drains / Misc. Connections	Test Connection (PX) and 1/2 piping	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm on system side of isolation valve. Configuration/location components is unknown. Inspect during walkdown to determine if actions are required.	Expected to be short runs of pipe in close proximity to hot piping.	
5	PTN	4	081	5614-M-3081 SH 1	3	Piping	3" and 4" piping from MSR 25B to 6A FW HTR [4"-5CM, 3"-4CM] Includes manual throttled valve 4-30-1130	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
6	PTN	4	081	5614-M-3081 SH 1	3	Instr. Local	PI & associated 3/4" pipe & Valve	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
7	PTN	4	081	5614-M-3081 SH 1	3	Vents / Drains / Misc. Connections	1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
8	PTN	4	081	5614-M-3081 SH 1	3	Vents / Drains / Misc. Connections	3/4" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
9	PTN	4	081	5614-M-3081 SH 1	3	Vents / Drains / Misc. Connections	(5) Blind flanged or capped sections	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
11	PTN	4	081	5614-M-3081 SH 1	5	Piping	3" piping to 4B Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Not used in normal operation. Chain operated isolation valve.	
12	PTN	4	081	5614-M-3081 SH 1	5	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
13	PTN	4	081	5614-M-3081 SH 1	5	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally open to condenser side up to isolation valve. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
14	PTN	4	081	5614-M-3081 SH 1	6	Piping	8" piping to Ext Steam/ 6A FW HTR [8"-5CM]	Yes	FW Heater Drain system flowpath to 6A HW HTR	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
15	PTN	4	081	5614-M-3081 SH 1	6	Vents / Drains / Misc. Connections	Blind flange/ connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Assumed to be right off main pipe section and will likely not require additional measures - but configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
16	PTN	4	081	5614-M-3081 SH 1	7	Piping	8" Piping from MSDT 4B Shell Side Drain Tank to HTR Drain Tk 4A [4-8"-5-CM]	Yes	Flowpath to 4A HTR Drain Tank	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
17	PTN	4	081	5614-M-3081 SH 1	7	Piping	Control Valve CV-4-1503A	Yes	Control Shell Side drain tank flow to maintain HDT level (with CV-4-1503B)	Pressure Boundary/ Flow Control	None	None. Normal operation will keep valve body/ piping warm and well above freezing.		

18	PTN	4	081	5614-M-3081 SH 1	7	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1503A	Yes	CV-3-1504A control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
19	PTN	4	081	5614-M-3081 SH 1	7	Vents / Drains / Misc. Connections	3/4" Drain/connection, Blind Flanged pipe section	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve/blind flange. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
20	PTN	4	081	5614-M-3081 SH 1	8	Piping	1/2" pipe - 1/4 SS Tubing to Sample System	Yes	Provide required sampling flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Insulate and heat trace as appropriate.	Uninsulated and non heat-traced tubing may freeze/ dead legs may burst.	
21	PTN	4	081	5614-M-3081 SH 1	8	Vents / Drains / Misc. Connections	Test Connection (PX) and associated piping (3/8")	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Insulate and heat trace as appropriate.	Uninsulated and non heat-traced tubing may freeze/ dead legs may burst.	
22	PTN	4	081	5614-M-3081 SH 1	9	Piping	10" piping [4-10"-5-D; 4-10"-5-SM]	Yes	Flowpath to 4B Condenser	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
23	PTN	4	081	5614-M-3081 SH 1	9	Piping	Control Valve CV-4-1503B	Yes	Control Shell Side drain tank flow to maintain HDT level (with CV-4-1503A)	Pressure Boundary/ Flow Control	None	None. Normal operation will keep valve body/ piping warm and well above freezing.		
24	PTN	4	081	5614-M-3081 SH 1	9	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1503B	Yes	CV-4-1503B control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
25	PTN	4	081	5614-M-3081 SH 1	9	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
26	PTN	4	081	5614-M-3081 SH 1	10	Piping	8" Pipe to 4B Condenser [4-8"-5-D] [Bypass CV-4-1503B]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
27	PTN	4	081	5614-M-3081 SH 1	10	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
28	PTN	4	081	5614-M-3081 SH 1	11	Piping	10" Piping from Drain Tks outlet control valves [CV-4-1503B, -1523B) to 4B Condenser	Yes	Flowpath to 4B Condenser	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
29	PTN	4	081	5614-M-3081 SH 1	12	Instr. Control / Protection	Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
30	PTN	4	081	5614-M-3081 SH 1	12	Vents / Drains / Misc. Connections	MSR 4B - 1" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. (shown as inside MSR on P&ID) Inspect during walkdown to determine if actions are required.	Location/configuration unclear.	
31	PTN	4	081	5614-M-3081 SH 1	12	Vents / Drains / Misc. Connections	MSR 4B - 1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Location/configuration unclear.	
32	PTN	4	081	5614-M-3081 SH 1	13	Piping	4" Piping from MSR 4A to RHTR Drain Tk 4A (Vent) [4-4"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
33	PTN	4	081	5614-M-3081 SH 1	13	Vents / Drains / Misc. Connections	3/4" Vent; capped pipe	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Inspect during walkdown. Configuration/location of vent is unknown. Expected to be short runs of pipe and potentially insulated already. Main piping will be hot.	

34	PTN	4	081	5614-M-3081 SH 1	14	Piping	12" and 8" Piping to RHTR Drain Tk 4A (Drain) [4-12"-2-C, 4-8"-2-C]	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
35	PTN	4	081	5614-M-3081 SH 1	14	Vents / Drains / Misc. Connections	Test Connection (PX) and 1/2 piping	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm on system side of isolation valve. Configuration/location components is unknown. Inspect during walkdown to determine if actions are required.	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	
36	PTN	4	081	5614-M-3081 SH 1	15	Piping	3" and 4" piping from MSR 25A to 6A FW HTR [4"-5CM, 3"-4CM] Includes manual throttled valve 4-30-1129	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
37	PTN	4	081	5614-M-3081 SH 1	15	Instr. Local	PI & associated 3/4" pipe & Valve	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
38	PTN	4	081	5614-M-3081 SH 1	15	Vents / Drains / Misc. Connections	1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
39	PTN	4	081	5614-M-3081 SH 1	15	Vents / Drains / Misc. Connections	3/4" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
40	PTN	4	081	5614-M-3081 SH 1	15	Vents / Drains / Misc. Connections	(4) Blind flanged sections and (2) welded caps	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
42	PTN	4	081	5614-M-3081 SH 1	17	Piping	3" piping to 4A Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Not used in normal operation.	
43	PTN	4	081	5614-M-3081 SH 1	17	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
44	PTN	4	081	5614-M-3081 SH 1	17	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally open to condenser side up to isolation valve. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
45	PTN	4	081	5614-M-3081 SH 1	17	Vents / Drains / Misc. Connections	(4) Blind flanged connections	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally open to condenser side up to isolation valve. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
46	PTN	4	081	5614-M-3081 SH 1	18	Piping	8" & 10" Piping from MSDT 4A Shell Side Drain Tank to HTR Drain Tk 4A [4-8"-5-CM, 4-10"-5-CM]	Yes	Flowpath to 4A HTR Drain Tank	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
47	PTN	4	081	5614-M-3081 SH 1	18	Piping	Control Valve CV-4-1523A	Yes	Control Shell Side drain tank flow to maintain HDT level (with CV-4-1523A)	Pressure Boundary/ Flow Control	None	None. Normal operation will keep valve body/ piping warm and well above freezing.		
48	PTN	4	081	5614-M-3081 SH 1	18	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1523A	Yes	CV-4-1523A control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	

49	PTN	4	081	5614-M-3081 SH 1	18	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
50	PTN	4	081	5614-M-3081 SH 1	18	Vents / Drains / Misc. Connections	Blind flange/ connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
51	PTN	4	081	5614-M-3081 SH 1	19	Piping	1/2" pipe - 1/4 SS Tubing to Sample System	Yes	Provide required sampling flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Insulate and heat trace as appropriate.	Uninsulated and non heat-traced tubing may freeze/ dead legs may burst.	
52	PTN	4	081	5614-M-3081 SH 1	19	Vents / Drains / Misc. Connections	Test Connection (PX) and associated piping (3/8")	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Insulate and heat trace as appropriate.	Uninsulated and non heat-traced tubing may freeze/ dead legs may burst.	
53	PTN	4	081	5614-M-3081 SH 1	20	Piping	10" piping [4-10"-5-D]	Standby	Flowpath to 4B Condenser	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
54	PTN	4	081	5614-M-3081 SH 1	20	Piping	Control Valve CV-4-1523B	Yes	Control Shell Side drain tank flow to maintain HDT level (with CV-4-1523A)	Pressure Boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.	Valve fails open	
55	PTN	4	081	5614-M-3081 SH 1	20	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1523B	Yes	CV-4-1523B control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
56	PTN	4	081	5614-M-3081 SH 1	20	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
57	PTN	4	081	5614-M-3081 SH 1	20	Vents / Drains / Misc. Connections	Blind flange/ connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
58	PTN	4	081	5614-M-3081 SH 1	21	Piping	8" Pipe to 4B Condenser [4-8"-5-D] [Bypass CV-4-1523B]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
59	PTN	4	081	5614-M-3081 SH 1	21	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
60	PTN	4	081	5614-M-3081 SH 1	22	Piping	10" Piping from Drain Tks outlet control valve [CV-4-1523B) to 4B Condenser	No	Flowpath to 4B Condenser	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Pipe is open to condenser and piping from CV-4-1503B, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
61	PTN	4	081	5614-M-3081 SH 1	23	Instr. Control / Protection	Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
62	PTN	4	081	5614-M-3081 SH 1	23	Vents / Drains / Misc. Connections	MSR 4A - 1" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. (shown as inside MSR on P&ID) Inspect during walkdown to determine if actions are required.	Location/configuration unclear. Loss of integrity of drain/vent may impact level controls.	

63	PTN	4	081	5614-M-3081 SH 1	23	Vents / Drains / Misc. Connections	MSR 4A - 1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Location/configuration unclear. Loss of integrity of drain/vent may impact level controls.	
41	PTN	4	081	5614-M-3081 SH 1	6 (not used)								#16 not used for this markup	
10	PTN	4	081	5614-M-3081 SH 1	4 (not used)								#4 not used for this markup	
64	PTN	4	081	5614-M-3081 SH 2	1	Piping	2" vent RHTR Drain Tank 4A to ES system/ FW HTR 6A [4-2"-2-C]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve (which is not shown on this P&ID) Piping should be insulated. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
65	PTN	4	081	5614-M-3081 SH 2	2	Piping	8" & 4" Drains/Vents from MSRs A/B to RHTR Drain Tank 4A [4-8"-2-C, 4-4"-2-C]	Yes	FW Heater Drain system flowpath	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
66	PTN	4	081	5614-M-3081 SH 2	3	Instr. Control / Protection	RHTR Drain Tank 4A Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
67	PTN	4	081	5614-M-3081 SH 2	3	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
68	PTN	4	081	5614-M-3081 SH 2	4	Piping	10" piping from RHTR Drain Tank 3A to 6A FW HTR [4-10"-2-C, 4-10"-5-D]	Yes	None	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
69	PTN	4	081	5614-M-3081 SH 2	4	Piping	Control valve CV-4-1505	Yes	Controls flow from RHTR Drain Tank to maintain FW HTR 6A level	Pressure Boundary/ Flow Control	None	None. Normal operation should keep valve body/ piping warm and well above freezing.		
70	PTN	4	081	5614-M-3081 SH 2	4	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1505	Yes	CV-4-1505 Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
71	PTN	4	081	5614-M-3081 SH 2	4	Instr. Annunciation / Indication	Flow indication and associated valves, 1/2" tubing. [FE/FI 4-5120] [4-1/2"-2-C]	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
72	PTN	4	081	5614-M-3081 SH 2	4	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
73	PTN	4	081	5614-M-3081 SH 2	4	Vents / Drains / Misc. Connections	3/4" vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
74	PTN	4	081	5614-M-3081 SH 2	4	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
75	PTN	4	081	5614-M-3081 SH 2	5	Piping	10" piping/ bypass FE-4-5120 [4-10"-2-C]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
76	PTN	4	081	5614-M-3081 SH 2	5	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

77	PTN	4	081	5614-M-3081 SH 2	6	Piping	8" piping/ bypass CV-4-1505 [4-8"-2-C, 4-8"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained/vented.		
78	PTN	4	081	5614-M-3081 SH 2	6	Vents / Drains / Misc. Connections	3/4"drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Potential deadleg based on installed configuration.	
79	PTN	4	081	5614-M-3081 SH 2	7	Piping	10" piping to 4B Condenser [4-10"-2-C, 4-10"-5-E]	Standby	FW Heater Drain system flowpath; divert RHTR tank drains to 4B Condenser based on 6A FW HTR level	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
80	PTN	4	081	5614-M-3081 SH 2	7	Piping	Control valve CV-4-1515	Yes	Control flow - divert to 4B condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
81	PTN	4	081	5614-M-3081 SH 2	7	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1515	Yes	CV-4-1515 control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
82	PTN	4	081	5614-M-3081 SH 2	7	Vents / Drains / Misc. Connections	3/4"drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
83	PTN	4	081	5614-M-3081 SH 2	7	Vents / Drains / Misc. Connections	Blind Flange/ connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
84	PTN	4	081	5614-M-3081 SH 2	8	Piping	8" piping/ bypass CV-4-1515 [4-8"-2-C, 4-8"-5-E]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
85	PTN	4	081	5614-M-3081 SH 2	8	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
86	PTN	4	081	5614-M-3081 SH 2	9	Piping	2" vent RHTR Drain Tank 4B to ES system/ FW HTR 6B [4-2"-2-C]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve (which is not shown on this P&ID) Piping should be insulated. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
87	PTN	4	081	5614-M-3081 SH 2	10	Piping	8" & 4" Drains/Vents from MSRs C/D to RHTR Drain Tank 4B [4-8"-2-C, 4-4"-2-C]	Yes	FW Heater Drain system flowpath	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
88	PTN	4	081	5614-M-3081 SH 2	11	Instr. Control / Protection	RHTR Drain Tank 4B Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
89	PTN	4	081	5614-M-3081 SH 2	11	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	

90	PTN	4	081	5614-M-3081 SH 2	12	Piping	10" piping from RHTR Drain Tank 4B to 6B FW HTR [4-10"-2-C, 4-10"-5-D]	Yes	None	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
91	PTN	4	081	5614-M-3081 SH 2	12	Piping	Control valve CV-4-1506	Yes	Controls flow from RHTR Drain Tank to maintain FW HTR 6B level	Pressure Boundary/ Flow Control	None	None. Normal operation should keep valve body/ piping warm and well above freezing.		
92	PTN	4	081	5614-M-3081 SH 2	12	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1506	Yes	CV-4-1506 Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
93	PTN	4	081	5614-M-3081 SH 2	12	Instr. Annunciation / Indication	Flow indication and associated valves, 1/2" tubing. [FE/FI 4-5121] [4-1/2"-2-C]	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
94	PTN	4	081	5614-M-3081 SH 2	12	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
95	PTN	4	081	5614-M-3081 SH 2	12	Vents / Drains / Misc. Connections	3/4" vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
96	PTN	4	081	5614-M-3081 SH 2	12	Vents / Drains / Misc. Connections	Blind Flange/ connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
97	PTN	4	081	5614-M-3081 SH 2	13	Piping	10" piping/ bypass FE-4-5121 [4-10"-2-C]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
98	PTN	4	081	5614-M-3081 SH 2	13	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
99	PTN	4	081	5614-M-3081 SH 2	14	Piping	8" piping/ bypass CV-4-1505 [4-8"-2-C, 4-8"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained/vented.		
100	PTN	4	081	5614-M-3081 SH 2	14	Vents / Drains / Misc. Connections	3/4"drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Potential deadleg based on installed configuration.	
101	PTN	4	081	5614-M-3081 SH 2	15	Piping	10" piping to 4B Condenser [4-10"-2-C, 4-10"-5-E]	Standby	FW Heater Drain system flowpath; divert RHTR tank drains to 4B Condenser based on 6A FW HTR level	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
102	PTN	4	081	5614-M-3081 SH 2	15	Piping	Control valve CV-4-1516	Yes	Control flow - divert to 4B condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
103	PTN	4	081	5614-M-3081 SH 2	15	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1516	Yes	CV-4-1516 control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	

104	PTN	4	081	5614-M-3081 SH 2	15	Vents / Drains / Misc. Connections	3/4"drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
105	PTN	4	081	5614-M-3081 SH 2	15	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
106	PTN	4	081	5614-M-3081 SH 2	16	Piping	8" piping/ bypass CV-4-1516 [4-8"-2-C, 4-8"-5-E]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. **P&ID does not show a drain valve in between closed valves.** if appropriate, ensure pipe section is drained.		
110	PTN	4	081	5614-M-3081 SH 3	1	Instr. Control / Protection	6A FW HTR Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
111	PTN	4	081	5614-M-3081 SH 3	1	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
112	PTN	4	081	5614-M-3081 SH 3	2	Piping	10" piping from RHTR Drain Tank 4A to 6A FW HTR [4-10"-5-D]	Yes	FW Drain system flowpath	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
113	PTN	4	081	5614-M-3081 SH 3	3	Piping	1" Piping from 6A FW HTR to 4B Condenser [4-1"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components is unknown. Confirm expected flow and temperatures in system and determine if actions are required.		
114	PTN	4	081	5614-M-3081 SH 3	3	Piping	1" piping - bypass Orifice	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required.		
115	PTN	4	081	5614-M-3081 SH 3	4	Piping	1" and 1 1/2" piping from 6A FW HTR to 4B Condenser [4-1"-5-E, 4-1 1/2"-5-E]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components if unknown. Confirm expected flow and temperatures in system and determine is actions are required.		
116	PTN	4	081	5614-M-3081 SH 3	5	Piping	14" and 10" piping from 6A FW HTR to 5A FW HTR [4-14"-5-D, 4-10"-5-D]	Yes	None	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
117	PTN	4	081	5614-M-3081 SH 3	5	Piping	Control valve CV-4-1517A	Yes	Flowpath from 6A to 5A FW HTR	Pressure boundary/ Flow Control	None	None. Normal operation should keep valve body/ piping warm and well above freezing.	Valve Fails Open	
118	PTN	4	081	5614-M-3081 SH 3	5	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1517A	Yes	CV-4-1517A Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
119	PTN	4	081	5614-M-3081 SH 3	5	Vents / Drains / Misc. Connections	1/2" and 3/4" connections; Various test connections [PX, TX, FX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
120	PTN	4	081	5614-M-3081 SH 3	5	Vents / Drains / Misc. Connections	Flange connection/ drains [4-1/2"-5-D]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

121	PTN	4	081	5614-M-3081 SH 3	6	Piping	8" piping/ bypass CV-4-1517A [4-8"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg. **P&ID does not show a drain valve on this section of pipe.** Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained/vented.		
122	PTN	4	081	5614-M-3081 SH 3	7	Piping	10" piping from 6A FW HTR to 4A Condenser [4-10"-5-D, 4-10"-5-E]	Standby	FW Heater Drain system flowpath; divert 6A FW HTR drain to 4A Condenser based on HTR level	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
123	PTN	4	081	5614-M-3081 SH 3	7	Piping	Control valve CV-4-1517B	Yes	Control flow - divert to 4A condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
124	PTN	4	081	5614-M-3081 SH 3	7	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1517B	Yes	CV-4-1517B control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
125	PTN	4	081	5614-M-3081 SH 3	7	Vents / Drains / Misc. Connections	3/4" drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
126	PTN	4	081	5614-M-3081 SH 3	7	Vents / Drains / Misc. Connections	Blind Flange/ connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
127	PTN	4	081	5614-M-3081 SH 3	8	Piping	8" piping/ bypass CV-4-1517B [4-8"-5-D, 4-8"-5-E]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
128	PTN	4	081	5614-M-3081 SH 3	8	Vents / Drains / Misc. Connections	3/4" Drain/connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
131	PTN	4	081	5614-M-3081 SH 3	9	Instr. Control / Protection	5A FW HTR Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
132	PTN	4	081	5614-M-3081 SH 3	9	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
133	PTN	4	081	5614-M-3081 SH 3	10	Piping	1" & 1 1/2" pipe - vent from 5A FW HTR shell to 4B condenser [4-1"-5-D, 4-1 1/2"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components is unknown. Confirm expected flow and temperatures in system and determine is actions are required.		
134	PTN	4	081	5614-M-3081 SH 3	11	Piping	1" pipe - Bypass flow orifice	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required.		

135	PTN	4	081	5614-M-3081 SH 3	12	Piping	10" piping - Vent line from 5A FW HTR to HTR Drain Tanks [4-10"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
136	PTN	4	081	5614-M-3081 SH 3	13	Piping	24" & 16" piping - Drain from 5A FW HTR to HTR Drain Tanks [4-24"-5-D, 4-16"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
137	PTN	4	081	5614-M-3081 SH 3	13	Vents / Drains / Misc. Connections	Test connections [TX, PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
138	PTN	4	081	5614-M-3081 SH 3	13	Vents / Drains / Misc. Connections	1" cap/drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
139	PTN	4	081	5614-M-3081 SH 3	14	Piping	3" piping for SWLU connection to 5A FW HTR drain line 4-3"-5-D	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evaluate configuration for dead-leg potential, determine if actions are required.		
143	PTN	4	081	5614-M-3081 SH 3	15	Instr. Control / Protection	6B FW HTR Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
144	PTN	4	081	5614-M-3081 SH 3	15	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
145	PTN	4	081	5614-M-3081 SH 3	16	Piping	10" piping from RHTR Drain Tank 4B to 6B FW HTR [4-10"-5-D]	Yes	FW Drain system flowpath	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
146	PTN	4	081	5614-M-3081 SH 3	17	Piping	1" Piping from 6B FW HTR to 4B Condenser [4-1"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components if unknown. Confirm expected flow and temperatures in system and determine is actions are required.		
147	PTN	4	081	5614-M-3081 SH 3	17	Piping	1" piping - bypass Orifice	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required.		
148	PTN	4	081	5614-M-3081 SH 3	18	Piping	14" and 10" piping from 6B FW HTR to 5B FW HTR [4-14"-5-D, 4-10"-5-D, 4-10"-5-CM]	Yes	None	FW Drain system flowpath	None	None. Normal operation should keep piping and components warm and well above freezing.	Piping is expected to be insulated.	
149	PTN	4	081	5614-M-3081 SH 3	18	Piping	Control valve CV-4-1518A	Yes	Flowpath from 6B to 5B FW HTR	Pressure boundary/ Flow Control	None	None. Normal operation should keep valve body/ piping warm and well above freezing.	Valve Fails Open	
150	PTN	4	081	5614-M-3081 SH 3	18	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1518A	Yes	CV-4-1518A Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
151	PTN	4	081	5614-M-3081 SH 3	18	Vents / Drains / Misc. Connections	1/2" and 3/4" connections; Various test connections [PX, TX, FX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
152	PTN	4	081	5614-M-3081 SH 3	18	Vents / Drains / Misc. Connections	Flange connection/ drain [4-1/2"-5-D]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

153	PTN	4	081	5614-M-3081 SH 3	19	Piping	8" piping/ bypass CV-4-1518A [4-8"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg. Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained/vented.		
154	PTN	4	081	5614-M-3081 SH 3	20	Piping	10" piping from 6B FW HTR to 4B Condenser [4-10"-5-D, 4-10"-5-E]	Standby	FW Heater Drain system flowpath; divert 6B FW HTR drain to 4B Condenser based on HTR level	Pressure boundary/ system integrity	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation will keep piping and components warm up to control valve; downstream is condenser, but configuration and location of piping is unknown. Line should be insulated. Need to walkdown to determine if action is required.	P&ID indicates this flowpath not normally used, but control valves controls flow. Need to confirm whether line is normally active.	
155	PTN	4	081	5614-M-3081 SH 3	20	Piping	Control valve CV-4-1518B	Yes	Control flow - divert to 4A condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown/ verify normal flow with operations. Normal operation should keep valve body/ piping warm and well above freezing.		
156	PTN	4	081	5614-M-3081 SH 3	20	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1518B	Yes	CV-4-1518B control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
157	PTN	4	081	5614-M-3081 SH 3	20	Vents / Drains / Misc. Connections	3/4" drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
158	PTN	4	081	5614-M-3081 SH 3	20	Vents / Drains / Misc. Connections	Blind Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
159	PTN	4	081	5614-M-3081 SH 3	21	Piping	8" piping/ bypass CV-4-1518B [4-8"-5-D, 4-8"-5-E]]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
160	PTN	4	081	5614-M-3081 SH 3	21	Vents / Drains / Misc. Connections	3/4" Drain/connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
163	PTN	4	081	5614-M-3081 SH 3	22	Instr. Control / Protection	5B FW HTR Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
164	PTN	4	081	5614-M-3081 SH 3	22	Vents / Drains / Misc. Connections	1" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
165	PTN	4	081	5614-M-3081 SH 3	23	Piping	1" & 1 1/2" pipe - vent from 5B FW HTR shell to 4B condenser [4-1"-5-D, 4-1 1/2"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm and well above freezing; Configuration/location of components is unknown. Confirm expected flow and temperatures in system and determine is actions are required.		
166	PTN	4	081	5614-M-3081 SH 3	24	Piping	1" pipe - Bypass flow orifice	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm on both sides of isolation valve. Configuration/location/ length of pipe is unknown - potential deadleg Inspect during walkdown to determine if actions are required.		
167	PTN	4	081	5614-M-3081 SH 3	25	Piping	10" piping - Vent line from 5A FW HTR to HTR Drain TBnks [3-10"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		

168	PTN	4	081	5614-M-3081 SH 3	26	Piping	24" piping - Drain from 5B FW HTR to HTR Drain Tanks [4-24"-5-D]	Yes	FW Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
169	PTN	4	081	5614-M-3081 SH 3	26	Vents / Drains / Misc. Connections	Test connections [TX, PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
170	PTN	4	081	5614-M-3081 SH 3	26	Vents / Drains / Misc. Connections	Cap/ 1" drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
171	PTN	4	081	5614-M-3081 SH 3	27	Piping	3" piping for SWLU connection to 5B FW HTR drain line [4-3"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evaluate configuration for dead-leg potential, determine if actions are required.		
129	PTN	4	081	5614-M-3081 SH 3	5A FW HTR	Heat Exchangers	5A FW HTR	Yes	Secondary system flowpath/ required for 100% power	N/A	None	None. Normal System flow will keep tank well above freezing.		
130	PTN	4	081	5614-M-3081 SH 3	5A FW HTR	Relief Valves	5A FWHTR Tank Relief Valve RV-4-3422	Standby	Overpressure relief for FW HTR	Pressure boundary/ Tank pressure relief	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
161	PTN	4	081	5614-M-3081 SH 3	5B FW HTR	Heat Exchangers	5B FW HTR	Yes	Secondary system flowpath/ required for 100% power	N/A	None	None. Normal System flow will keep tank well above freezing.		
162	PTN	4	081	5614-M-3081 SH 3	5B FW HTR	Relief Valves	5B FWHTR Tank Relief Valve RV-4-3423	Standby	Overpressure relief for FW HTR	Pressure boundary/ Tank pressure relief	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
107	PTN	4	081	5614-M-3081 SH 3	6A FW HTR	Heat Exchangers	6A FW HTR	Yes	Secondary system flowpath/ required for 100% power	N/A	None	None. Normal System flow will keep tank well above freezing.		
108	PTN	4	081	5614-M-3081 SH 3	6A FW HTR	Vents / Drains / Misc. Connections	6A FWHTR 1 1/2" drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
109	PTN	4	081	5614-M-3081 SH 3	6A FW HTR	Relief Valves	6A FWHTR Tank Relief Valve RV-4-3424	Standby	Overpressure relief for FW HTR	Pressure boundary/ Tank pressure relief	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
140	PTN	4	081	5614-M-3081 SH 3	6B FW HTR	Heat Exchangers	6B FW HTR	Yes	Secondary system flowpath/ required for 100% power	N/A	None	None. Normal System flow will keep tank well above freezing.		
141	PTN	4	081	5614-M-3081 SH 3	6B FW HTR	Vents / Drains / Misc. Connections	6B FWHTR 1 1/2" tank drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
142	PTN	4	081	5614-M-3081 SH 3	6B FW HTR	Relief Valves	6B FWHTR Tank Relief Valve RV-4-3425	Standby	Overpressure relief for FW HTR	Pressure boundary/ Tank pressure relief	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
172	PTN	4	081	5614-M-3081 SH 4	1	Piping	10" piping to 4A HDT from MSR A Drain [4-10"-5-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
173	PTN	4	081	5614-M-3081 SH 4	2	Piping	8" piping to 4A HDT from MSR B Drain [4-8"-5-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
174	PTN	4	081	5614-M-3081 SH 4	3	Piping	16" piping from 5A FW HTR Drain to 4A HDT [4-16"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
175	PTN	4	081	5614-M-3081 SH 4	4	Piping	Piping from Seal Water to 4A HDT	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.	Assume 3" (ref. P&ID 5614-M-3074 Sh 2)	

176	PTN	4	081	5614-M-3081 SH 4	5	Piping	6", 16", 24" piping from 5A FW HTR and Seal Water to 4A HDT [4-6"-5-D, 4-16"-5-D, 4-24"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
177	PTN	4	081	5614-M-3081 SH 4	5	Vents / Drains / Misc. Connections	Cap & 3/4" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Configuration unclear from P&ID.	
178	PTN	4	081	5614-M-3081 SH 4	5	Vents / Drains / Misc. Connections	Welded pipe cap	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Configuration unclear from P&ID.	
179	PTN	4	081	5614-M-3081 SH 4	6	Piping	10" piping from 5B FW HTR vent to 4A HDT [4-10"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
180	PTN	4	081	5614-M-3081 SH 4	6	Vents / Drains / Misc. Connections	Connection (size not marked)	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Closed valve 4-30-593	
181	PTN	4	081	5614-M-3081 SH 4	7	Piping	10" piping from 5A FW HTR vent to 5B HDT [4-10"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
182	PTN	4	081	5614-M-3081 SH 4	7	Vents / Drains / Misc. Connections	Connection (size not marked)	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Closed valve 4-30-591	
183	PTN	4	081	5614-M-3081 SH 4	8	Piping	12" cross-connect piping 5A/5B FW HTR to 4A/4B HDT [4-12"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
184	PTN	4	081	5614-M-3081 SH 4	9	Instr. Control / Protection	4A HDT Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
185	PTN	4	081	5614-M-3081 SH 4	9	Vents / Drains / Misc. Connections	1" and 1/2" Vents and drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
186	PTN	4	081	5614-M-3081 SH 4	10	Instr. Control / Protection	4B HDT Level transmitters and associated piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
187	PTN	4	081	5614-M-3081 SH 4	10	Vents / Drains / Misc. Connections	1" and 1/2" Vents and drains, capped pipe section	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Loss of integrity of drain/vent may impact level controls.	
188	PTN	4	081	5614-M-3081 SH 4	11	Vents / Drains / Misc. Connections	4B HDT capped connections	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
189	PTN	4	081	5614-M-3081 SH 4	12	Piping	10" piping to 4B HDT from MSR C Drain [4-10"-5-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
190	PTN	4	081	5614-M-3081 SH 4	13	Piping	8" piping to 4B HDT from MSR D Drain [4-8"-5-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
191	PTN	4	081	5614-M-3081 SH 4	14	Piping	16" piping from 5B FW HTR Drain to 4B HDT [4-16"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
192	PTN	4	081	5614-M-3081 SH 4	15	Piping	Piping from Seal Water to 4B HDT	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.	Assume 3" (ref. P&ID 5613-M-3074 Sh 2)	
193	PTN	4	081	5614-M-3081 SH 4	16	Piping	6", 16", 24" piping from 5B FW HTR and Seal Water to 4B HDT [4-6"-5-D, 4-16"-5-D, 4-24"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		
194	PTN	4	081	5614-M-3081 SH 4	16	Vents / Drains / Misc. Connections	Cap & 3/4" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Configuration unclear from P&ID.	
195	PTN	4	081	5614-M-3081 SH 4	16	Vents / Drains / Misc. Connections	Welded pipe cap	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Configuration unclear from P&ID.	
196	PTN	4	081	5614-M-3081 SH 4	17	Piping	14", 16", and 18" pipe from HDTs to HDPumps A and B [4-14"-5-D, 4-16"-5-D, 4-18"-5-D]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		

197	PTN	4	081	5614-M-3081 SH 4	17	Instr. Local	Local Pressure Indicator PI-4-6695	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
198	PTN	4	081	5614-M-3081 SH 4	17	Vents / Drains / Misc. Connections	Various test connections	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
199	PTN	4	081	5614-M-3081 SH 4	17	Vents / Drains / Misc. Connections	1" drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
200	PTN	4	081	5614-M-3081 SH 4	18	Piping	12" piping from HDT 4A/4B to 4B condenser [4-12"-5-D, 4-12"-5-CM]	No	Flowpath from HDTs to 4B condenser	Pressure boundary/ Flow Control	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve (w HDT upsteam and open to Condenser on the other). However, configuration/location of components is unknown. Inspect during walkdown to determine if actions are required and whether dead leg sections of pipe is a concern.	Flowpath for HD pump trip?	
201	PTN	4	081	5614-M-3081 SH 4	18	Piping	Control valve CV-4-1510B	Standby	Flowpath from HDTs to 4B condenser	Pressure boundary/ Flow Control	None	Inspect during walkdown. Normal operation should keep the valve warm (w HDT on one side and condenser on the other). However, configuration/location of components is unknown. Inspect during walkdown to determine if actions are required and whether dead leg sections of pipe is a concern.	Valve Normally closed; Fails Open	
202	PTN	4	081	5614-M-3081 SH 4	18	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1510B	Standby	CV-4-1510B Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.		
203	PTN	4	081	5614-M-3081 SH 4	18	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation points. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
204	PTN	4	081	5614-M-3081 SH 4	19	Piping	10" piping from HDT 4A/4B to 4B condenser/ bypass control valve CN-4-1510B [4-10"-5-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. (unlikely a concern for 10" piping) if appropriate, ensure pipe section is drained.		
205	PTN	4	081	5614-M-3081 SH 4	19	Vents / Drains / Misc. Connections	Connection (size not marked)	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
206	PTN	4	081	5614-M-3081 SH 4	20	Piping	4" piping from Main Condensate Header to HD Pump suction header [4-4"-3-D]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve (w HD header upsteam and to Condensate systen on the other). However, configuration/location of components is unknown. Inspect during walkdown to determine if actions are required and whether dead leg sections of pipe is a concern.		
207	PTN	4	081	5614-M-3081 SH 4	20	Piping	Control valve CV-4-1900	Standby	None	Pressure boundary/ Flow Control	Protect	Inspect during walkdown. Normal operation should keep the valve warm (w HD header on one side and condensate system on the other). However, configuration/location of components is unknown. Inspect during walkdown to determine if actions are required and whether dead leg sections of pipe is a concern.	Valve normally closed; fails closed	
208	PTN	4	081	5614-M-3081 SH 4	20	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1900	Standby	CV-4-1900 Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.		

209	PTN	4	081	5614-M-3081 SH 4	20	Vents / Drains / Misc. Connections	3/4" drain/connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
210	PTN	4	081	5614-M-3081 SH 4	21	Piping	3" piping from Condensate Header to HD pump suction header - Bypass control valve CV-4-1900 [4-3"-3-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate, ensure pipe section is drained.		
211	PTN	4	081	5614-M-3081 SH 4	21	Vents / Drains / Misc. Connections	3/4" drain	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
212	PTN	4	081	5614-M-3081 SH 4	22	Piping	3" piping to SWLU connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evaluate configuration for dead-leg potential, determine if actions are required.		
213	PTN	4	081	5614-M-3081 SH 4	23	Piping	1" piping; HD Pump vent to 4A HDT [4-1"-5-D]	Yes	Vent for HD pump	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/ routing of piping is unknown. Potentially a long run of 1" pipe. Inspect during walkdown to determine if actions are required.	Discuss with operations to determine the amount of flow these vents see.	
214	PTN	4	081	5614-M-3081 SH 4	24	Piping	1/2" to 1/4" SS tubing from A HD Pump discharge to sample system	Yes	Monitoring, sampling, and secondary system	Local Sampling Requirement, pressure boundry	Protect	Insulate and Heat Trace Ensure Small Bore Piping/Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.	Unclear whether flow is continuous or drawn as needed from sample sink	
215	PTN	4	081	5614-M-3081 SH 4	24	Instr. Local	Local Pressure Indicator PI-4-1437	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
216	PTN	4	081	5614-M-3081 SH 4	24	Vents / Drains / Misc. Connections	Test connection [PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
217	PTN	4	081	5614-M-3081 SH 4	25	Piping	1/2" to 1/4" SS tubing from B HD Pump discharge to sample system	Yes	Monitoring, sampling, and secondary system	Local Sampling Requirement, pressure boundry	Protect	Insulate and Heat Trace Ensure Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.	Unclear whether flow is continuous or drawn as needed from sample sink	
218	PTN	4	081	5614-M-3081 SH 4	25	Instr. Local	Local Pressure Indicator PI-4-1438	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
219	PTN	4	081	5614-M-3081 SH 4	25	Vents / Drains / Misc. Connections	Test connection [PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
220	PTN	4	081	5614-M-3081 SH 4	26	Piping	3" piping from HD Pump Discharge to 4B HDT - Recirc piping [4-3"-3-D, 4-3"-3-CM, 4-4"-3-CM, 4-4"-3-D]	Yes	Heater Drain pump recirc flowpath	Required for HD pump operation/ pressure boundary	Protect	Inspect during walkdown. Assuming continuous recirc flow, normal operation should keep piping and components warm and well above freezing. Discuss normal flowrate with operations. Confirm that piping is insulated.	Confirm with operations that recirc is continuous flow.	
221	PTN	4	081	5614-M-3081 SH 4	27	Piping	12" and 16" HD Pump A and B Discharge piping [4-12"-3-D, 4-16"-3-D, 4-16"-3-CM]	Yes	Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation should keep piping and components warm and well above freezing.		

222	PTN	4	081	5614-M-3081 SH 4	27	Piping	Control valve CV-4-1510A	Yes	Heater Drain system flowpath	Pressure boundary/ Flow Control	None	None. Normal operation should keep piping and components warm and well above freezing.	Valve normally open; fails open	
223	PTN	4	081	5614-M-3081 SH 4	27	Instr. Control / Protection	Instrument air tubing/ controller for CV-4-1510A	Standby	CV-4-1510A Control	Flow Control	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, controller, and, connected control wiring are adequately insulated/protected from elements.		
224	PTN	4	081	5614-M-3081 SH 4	27	Vents / Drains / Misc. Connections	Test connection [PX]	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Expected to be in close proximity to hot piping. Inspect during walkdown to determine if actions are required.		
225	PTN	4	081	5614-M-3081 SH 4	27	Vents / Drains / Misc. Connections	Vents and drains (2 of each)	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Vents/drains are exposed to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
226	PTN	4	081	5614-M-3081 SH 4	28	Piping	3/4" piping - bypass HD pump A/B discharge check valves	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. if appropriate/possible, ensure pipe section is drained.		
227	PTN	4	081	5614-M-3081 SH 4	29	Instr. Annunciation / Indication	Piping/ Tubing/ valves associated with FIT-3-1404	Yes	Flow indication/ transmitter	Flow indication/ pressure boundary	Protect	Insulate and Heat Trace Ensure Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.		
228	PTN	4	081	5614-M-3081 SH 4	29	Vents / Drains / Misc. Connections	Test points associated with FIT-4-1404	No	None	Pressure boundary/ system integrity	Protect	Insulate and Heat Trace Ensure Tubing Above Freezing Options Insulate and heat trace – Insulate and heat trace the dead legs of piping susceptible to freezing.		
229	PTN	4	081	5614-M-3081 SH 4	30	Piping	12" piping from A/B HD Pumps to FW PP suction/ bypass control valve CN-4-1510A [4-12"-3-D]	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm outside isolation valves. Configuration/location/ length of pipe b/t valves is unknown - potential deadleg Inspect during walkdown to determine if actions are required. (unlikely a concern for 12" piping) if appropriate, ensure pipe section is drained.		
230	PTN	4	081	5614-M-3081 SH 4	30	Vents / Drains / Misc. Connections	Connection (size not marked)	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Drain located on normally isolated section of pipe. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
231	PTN	4	081	5614-M-3081 SH 4	31	Instr. Control / Protection	Flex tubing installed to either side of CV-4-1510A; HD pump interlock	Yes	HD pump interlock	Pressure boundary/ Pump interlock function	Protect	Configuration is unknown. Insulate and Heat Trace to ensure Tubing Above Freezing. Walkdown to confirm location.		
242	PTN	4	081	5614-M-3081 Sh. 5	1	Piping	2" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
243	PTN	4	081	5614-M-3081 Sh. 5	2	Piping	2.5" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
244	PTN	4	081	5614-M-3081 Sh. 5	3	Piping	6" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
245	PTN	4	081	5614-M-3081 Sh. 5	3	Instr. Local	PX & FX	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		

246	PTN	4	081	5614-M-3081 Sh. 5	3	Vents / Drains / Misc. Connections	1" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
247	PTN	4	081	5614-M-3081 Sh. 5	3	Vents / Drains / Misc. Connections	6" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the flange. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
248	PTN	4	081	5614-M-3081 Sh. 5	4	Piping	3" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
249	PTN	4	081	5614-M-3081 Sh. 5	5	Piping	4" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
250	PTN	4	081	5614-M-3081 Sh. 5	5	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
251	PTN	4	081	5614-M-3081 Sh. 5	6	Piping	6" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
252	PTN	4	081	5614-M-3081 Sh. 5	6	Vents / Drains / Misc. Connections	6" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
253	PTN	4	081	5614-M-3081 Sh. 5	7	Piping	3" Pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 2" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
254	PTN	4	081	5614-M-3081 Sh. 5	7	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
255	PTN	4	081	5614-M-3081 Sh. 5	8	Piping	4" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
256	PTN	4	081	5614-M-3081 Sh. 5	8	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		

267	PTN	4	081	5614-M-3081 Sh. 5	9	Piping	8" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
268	PTN	4	081	5614-M-3081 Sh. 5	9	Instr. Local	PX & FX	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
269	PTN	4	081	5614-M-3081 Sh. 5	9	Vents / Drains / Misc. Connections	1" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
270	PTN	4	081	5614-M-3081 Sh. 5	9	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
271	PTN	4	081	5614-M-3081 Sh. 5	9	Vents / Drains / Misc. Connections	8" Flange	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the flange. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
272	PTN	4	081	5614-M-3081 Sh. 5	10	Piping	6" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
273	PTN	4	081	5614-M-3081 Sh. 5	11	Piping	1.5" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required.		
274	PTN	4	081	5614-M-3081 Sh. 5	12	Piping	8" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
275	PTN	4	081	5614-M-3081 Sh. 5	12	Vents / Drains / Misc. Connections	8" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
276	PTN	4	081	5614-M-3081 Sh. 5	13	Piping	6" Pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
277	PTN	4	081	5614-M-3081 Sh. 5	13	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		

278	PTN	4	081	5614-M-3081 Sh. 5	14	Piping	6" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
279	PTN	4	081	5614-M-3081 Sh. 5	14	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
280	PTN	4	081	5614-M-3081 Sh. 5	15	Piping	1.5" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
281	PTN	4	081	5614-M-3081 Sh. 5	16	Piping	1.5" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require heat trace to prevent freezing.		
282	PTN	4	081	5614-M-3081 Sh. 5	17	Piping	2" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
283	PTN	4	081	5614-M-3081 Sh. 5	18	Piping	1" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
284	PTN	4	081	5614-M-3081 Sh. 5	19	Piping	1" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require heat trace to prevent freezing.		
285	PTN	4	081	5614-M-3081 Sh. 5	20	Piping	1.5" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
235	PTN	4	081	5614-M-3081 Sh. 5	21	Piping	1.5" Instrument Piping	Yes	Piping to all of the Instruments associated with Heatert Drains for the FWHs	Pressure boundary/ system integrity/ deadleg/instrument loop	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
236	PTN	4	081	5614-M-3081 Sh. 5	21	Instr. Local	LG	Yes	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
237	PTN	4	081	5614-M-3081 Sh. 5	21	Instr. Annunciation / Indication	LS	Yes	CR Annunciator	Pressure boundary/ system integrity/ deadleg/instrument alarm	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended due to unknown length.		
238	PTN	4	081	5614-M-3081 Sh. 5	21	Instr. Control / Protection	LS & LC	Yes	Control to CVs for flow for FWHs 3E3A/B and SV for Extraction Steam	Pressure boundary/ system integrity/ deadleg/instrument control	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended due to unknown length. No protection required for the airline to/from the LC, not subjected to freezing.		
239	PTN	4	081	5614-M-3081 Sh. 5	21	Vents / Drains / Misc. Connections	Vents	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
240	PTN	4	081	5614-M-3081 Sh. 5	21	Vents / Drains / Misc. Connections	Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
241	PTN	4	081	5614-M-3081 Sh. 5	21	Vents / Drains / Misc. Connections	Connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
260	PTN	4	081	5614-M-3081 Sh. 5	22	Piping	1.5" Instrument Piping	Yes	Piping to all of the Instruments associated with Heatert Drains for the FWHs	Pressure boundary/ system integrity/ deadleg/instrument loop	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
261	PTN	4	081	5614-M-3081 Sh. 5	22	Instr. Local	LG	Yes	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
262	PTN	4	081	5614-M-3081 Sh. 5	22	Instr. Annunciation / Indication	LS	Yes	CR Annunciator	Pressure boundary/ system integrity/ deadleg/instrument alarm	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended due to unknown length.		

263	PTN	4	081	5614-M-3081 Sh. 5	22	Instr. Control / Protection	LS & LC	Yes	Control to CVs for flow to FWHs and Condensers and SV for Extraction Steam	Pressure boundary/ system integrity/ deadleg/instrument control	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended due to unknown length. No protection required for the airline to/from the LC, not subjected to freezing.		
264	PTN	4	081	5614-M-3081 Sh. 5	22	Vents / Drains / Misc. Connections	Vents	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
265	PTN	4	081	5614-M-3081 Sh. 5	22	Vents / Drains / Misc. Connections	Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
266	PTN	4	081	5614-M-3081 Sh. 5	22	Vents / Drains / Misc. Connections	Connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
232	PTN	4	081	5614-M-3081 Sh. 5	-	Heat Exchangers	FWH 4E4A/B	Yes	Required for generation	Pressure boundary/ system integrity	None	None. Normal System flow will keep tank well above freezing.	FWHs will be in operation and hot which will prevent freezing. In addition, the FWHs should also be insulated already.	
233	PTN	4	081	5614-M-3081 Sh. 5	-	Relief Valves	RV (4" Inlet, 6" Outlet per NAMS)	Standby	Relieves at 100 psig for the FWHs	Prevent overpressurization of the FWHs	Protect	Inspect during walkdown, possibly already insulated. Otherwise, 1" Insulation to prevent >25% freezing.		
234	PTN	4	081	5614-M-3081 Sh. 5	-	Vents / Drains / Misc. Connections	1.5" Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
257	PTN	4	081	5614-M-3081 Sh. 5	-	Heat Exchangers	FWH 4E3A/B	Yes	Required for generation	Pressure boundary/ system integrity	None	None. Normal System flow will keep tank well above freezing.	FWHs will be in operation and hot which will prevent freezing. In addition, the FWHs should also be insulated already.	
258	PTN	4	081	5614-M-3081 Sh. 5	-	Relief Valves	RV (4" Inlet, 6" Outlet per NAMS)	Standby	Relieves at 100 psig for the FWHs	Prevent overpressurization of the FWHs	Protect	Options: 1. Inspect during walkdown, possibly already insulated 2. 1" Insulation to prevent >25% freezing.		
259	PTN	4	081	5614-M-3081 Sh. 5	-	Vents / Drains / Misc. Connections	1.5" Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
286	PTN	4	081	5614-M-3081 Sh. 6	1	Piping	8" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
296	PTN	4	081	5614-M-3081 Sh. 6	2	Piping	3" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
297	PTN	4	081	5614-M-3081 Sh. 6	3	Piping	3" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require 2" Insulation to prevent >25% freezing.		
298	PTN	4	081	5614-M-3081 Sh. 6	4	Piping	1" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
299	PTN	4	081	5614-M-3081 Sh. 6	5	Piping	1" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require heat trace to prevent freezing.		
300	PTN	4	081	5614-M-3081 Sh. 6	6	Piping	10" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required. 1" Insulation would protect against >25% freezing.		

301	PTN	4	081	5614-M-3081 Sh. 6	7	Piping	2" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required. 4" Insulation would protect against >25% freezing, or Heat Trace & 1" Insulation to prevent freezing.		
302	PTN	4	081	5614-M-3081 Sh. 6	8	Piping	10" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
303	PTN	4	081	5614-M-3081 Sh. 6	8	Vents / Drains / Misc. Connections	1" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
304	PTN	4	081	5614-M-3081 Sh. 6	8	Instr. Local	PX	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
305	PTN	4	081	5614-M-3081 Sh. 6	9	Piping	8" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
306	PTN	4	081	5614-M-3081 Sh. 6	9	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
307	PTN	4	081	5614-M-3081 Sh. 6	10	Piping	14" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
308	PTN	4	081	5614-M-3081 Sh. 6	10	Vents / Drains / Misc. Connections	14" Flange	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the flange. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
318	PTN	4	081	5614-M-3081 Sh. 6	11	Piping	8" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
319	PTN	4	081	5614-M-3081 Sh. 6	12	Piping	10" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
320	PTN	4	081	5614-M-3081 Sh. 6	12	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		

321	PTN	4	081	5614-M-3081 Sh. 6	13	Piping	12" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
322	PTN	4	081	5614-M-3081 Sh. 6	13	Vents / Drains / Misc. Connections	12" Flange	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
323	PTN	4	081	5614-M-3081 Sh. 6	14	Piping	8" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
324	PTN	4	081	5614-M-3081 Sh. 6	14	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
325	PTN	4	081	5614-M-3081 Sh. 6	15	Piping	1.5" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
326	PTN	4	081	5614-M-3081 Sh. 6	16	Piping	1.5" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require heat trace to prevent freezing.		
327	PTN	4	081	5614-M-3081 Sh. 6	17	Piping	4" Pipe	Yes	FW Heater Drain system vent flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
328	PTN	4	081	5614-M-3081 Sh. 6	18	Piping	4" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If length of bypass is short, may not require more than insulation. If long or water can gather in pipe, could require 1" Insulation to prevent >25% freezing.		
329	PTN	4	081	5614-M-3081 Sh. 6	19	Piping	12" Pipe	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
330	PTN	4	081	5614-M-3081 Sh. 6	19	Vents / Drains / Misc. Connections	3/4" & 1" Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
331	PTN	4	081	5614-M-3081 Sh. 6	19	Instr. Local	PX	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
332	PTN	4	081	5614-M-3081 Sh. 6	19	Vents / Drains / Misc. Connections	12" Flange	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the flange. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		

333	PTN	4	081	5614-M-3081 Sh. 6	20	Piping	10" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., 1" Insulation needed to keep piping from >25% freezing).		
334	PTN	4	081	5614-M-3081 Sh. 6	21	Piping	12" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
335	PTN	4	081	5614-M-3081 Sh. 6	22	Piping	8" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing. Another option is to mitigate by opening the CV valve to the Condenser flow path so there is flow in this piping on a periodic basis to prevent freezing.		
336	PTN	4	081	5614-M-3081 Sh. 6	22	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
337	PTN	4	081	5614-M-3081 Sh. 6	23	Piping	10" Pipe	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
338	PTN	4	081	5614-M-3081 Sh. 6	23	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Configuration/location of components is unknown. Inspect during walkdown to verify that piping is insulated already. If not, 1" Insulation needed to keep piping from >25% freezing.		
339	PTN	4	081	5614-M-3081 Sh. 6	24	Piping	12" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required. 1" Insulation would protect against >25% freezing.		
340	PTN	4	081	5614-M-3081 Sh. 6	25	Piping	2" Pipe	No	None	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdown. This ties into SWLU connection point - which is isolated. Configuration/location of components is unknown. Inspect during walkdown, evalute configuraiton for dead-leg potential, determine if actions are required. 4" Insulation would protect against >25% freezing, or Heat Trace & 1" Insulation to prevent freezing.		
289	PTN	4	081	5614-M-3081 Sh. 6	26	Piping	1.5" Pipe	Yes	Piping to all of the Instruments associated with Heatert Drains for the FWHs	Pressure boundary/ system integrity/ deadleg/instrument loop	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
290	PTN	4	081	5614-M-3081 Sh. 6	26	Instr. Control / Protection	LC, LS	Yes	Control to CVs for flow to FWHs and Condensers	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended due to unknown length. No protection required for the airline to/from the LC, not subjected to freezing.		
291	PTN	4	081	5614-M-3081 Sh. 6	26	Instr. Annunciation / Indication	LS	Yes	CR Annunciator	Pressure boundary/ system integrity/ deadleg/instrument alarm	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended due to unknown length.		
292	PTN	4	081	5614-M-3081 Sh. 6	26	Instr. Local	LI, LGs	Yes	None	Pressure boundary/ system integrity/ deadleg/instrument control	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		

293	PTN	4	081	5614-M-3081 Sh. 6	26	Vents / Drains / Misc. Connections	Vents	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
294	PTN	4	081	5614-M-3081 Sh. 6	26	Vents / Drains / Misc. Connections	Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
295	PTN	4	081	5614-M-3081 Sh. 6	26	Vents / Drains / Misc. Connections	3/4" Connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
311	PTN	4	081	5614-M-3081 Sh. 6	27	Piping	1.5" Pipe	Yes	Piping to all of the Instruments associated with Heatert Drains for the FWHs	Pressure boundary/ system integrity/ deadleg/instrument loop	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
312	PTN	4	081	5614-M-3081 Sh. 6	27	Instr. Control / Protection	LC, LS	Yes	Control to CVs for flow to Condensers	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended due to unknown length. No protection required for the airline to/from the LC, not subjected to freezing.		
313	PTN	4	081	5614-M-3081 Sh. 6	27	Instr. Annunciation / Indication	LS	Yes	CR Annunciator	Pressure boundary/ system integrity/ deadleg/instrument alarm	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended due to unknown length.		
314	PTN	4	081	5614-M-3081 Sh. 6	27	Instr. Local	LI, LGs	Yes	None	Pressure boundary/ system integrity/ deadleg/instrument control	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
315	PTN	4	081	5614-M-3081 Sh. 6	27	Vents / Drains / Misc. Connections	Vents	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
316	PTN	4	081	5614-M-3081 Sh. 6	27	Vents / Drains / Misc. Connections	Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
317	PTN	4	081	5614-M-3081 Sh. 6	27	Vents / Drains / Misc. Connections	3/4" Connections	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown for length. Heat Trace and 1" Insulation recommended to due to unknown length.		
287	PTN	4	081	5614-M-3081 Sh. 6	-	Heat Exchangers	FWH 4E2A/B	Yes	Required for generation	Pressure boundary/ system integrity	None	None. Normal System flow will keep tank well above freezing.	FWHs will be in operation and hot which will prevent freezing. In addition, the FWHs should also be insulated already.	
288	PTN	4	081	5614-M-3081 Sh. 6	-	Vents / Drains / Misc. Connections	1.5" Drains	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
309	PTN	4	081	5614-M-3081 Sh. 6	-	Heat Exchangers	FWH 4E1A/B	Yes	Required for generation	Pressure boundary/ system integrity	None	None. Normal System flow will keep tank well above freezing.	FWHs will be in operation and hot which will prevent freezing. In addition, the FWHs should also be insulated already.	
310	PTN	4	081	5614-M-3081 Sh. 6	-	Vents / Drains / Misc. Connections	1.5" Drain	No	None	Pressure boundary/ system integrity/ deadleg	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required (i.e., Heat Trace & 1" Insulation).		
344	PTN	4	081	5614-M-3081 Sh. 7	1	Instr. Control / Protection	Level transmitters and associated 2" piping/valves	Yes	Provide signal for control valves	System Flow control	Protect	Inspect during walkdown. Components are in close proximity to hot piping, but configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
345	PTN	4	081	5614-M-3081 Sh. 7	1	Vents / Drains / Misc. Connections	1" Vents	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Configuration/location of components is unknown. (shown as inside MSR on P&ID) Inspect during walkdown to determine if actions are required.	Location/configuration unclear.	
346	PTN	4	081	5614-M-3081 Sh. 7	1	Vents / Drains / Misc. Connections	1" Drains	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.	Location/configuration unclear.	
347	PTN	4	081	5614-M-3081 Sh. 7	2	Piping	4" Piping from MSR to RHTR Drain Tk (Vent)	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		

348	PTN	4	081	5614-M-3081 Sh. 7	2	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
349	PTN	4	081	5614-M-3081 Sh. 7	2	Vents / Drains / Misc. Connections	1" capped pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
350	PTN	4	081	5614-M-3081 Sh. 7	3	Piping	12" and 8" Piping to RHTR Drain Tk (Drain)	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
351	PTN	4	081	5614-M-3081 Sh. 7	3	Vents / Drains / Misc. Connections	Vent	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
352	PTN	4	081	5614-M-3081 Sh. 7	4	Piping	4" piping from MSR to FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
353	PTN	4	081	5614-M-3081 Sh. 7	5	Piping	3" piping from MSR to FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
354	PTN	4	081	5614-M-3081 Sh. 7	5	Instr. Local	PI	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
355	PTN	4	081	5614-M-3081 Sh. 7	5	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
356	PTN	4	081	5614-M-3081 Sh. 7	5	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
357	PTN	4	081	5614-M-3081 Sh. 7	5	Vents / Drains / Misc. Connections	3" Capped Pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
358	PTN	4	081	5614-M-3081 Sh. 7	6	Piping	2" piping from MSR to FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
359	PTN	4	081	5614-M-3081 Sh. 7	7	Piping	3" piping from MSR to FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
360	PTN	4	081	5614-M-3081 Sh. 7	7	Vents / Drains / Misc. Connections	Flanges	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
361	PTN	4	081	5614-M-3081 Sh. 7	7	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
362	PTN	4	081	5614-M-3081 Sh. 7	7	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		

363	PTN	4	081	5614-M-3081 Sh. 7	7	Vents / Drains / Misc. Connections	3" Capped Pipe	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
364	PTN	4	081	5614-M-3081 Sh. 7	8	Piping	4" piping from MSR to 6B FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
365	PTN	4	081	5614-M-3081 Sh. 7	8	Vents / Drains / Misc. Connections	Flanges	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
366	PTN	4	081	5614-M-3081 Sh. 7	8	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
367	PTN	4	081	5614-M-3081 Sh. 7	9	Piping	8" piping from MSR to FW HTR	Yes	FW Heater Drain system flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
368	PTN	4	081	5614-M-3081 Sh. 7	9	Vents / Drains / Misc. Connections	Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
369	PTN	4	081	5614-M-3081 Sh. 7	11	Piping	3" Pipe	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.	Not used in normal operation. Chain operated isolation valve.	
370	PTN	4	081	5614-M-3081 Sh. 7	11	Vents / Drains / Misc. Connections	3/4" Vent	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
371	PTN	4	081	5614-M-3081 Sh. 7	11	Vents / Drains / Misc. Connections	1" Drain	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally open to condenser side up to isolation valve. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
372	PTN	4	081	5614-M-3081 Sh. 7	11	Vents / Drains / Misc. Connections	3" Flanges	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally open to condenser side up to isolation valve. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
373	PTN	4	081	5614-M-3081 Sh. 7	12	Piping	1" Pipe	No	None	Pressure boundary/ system integrity/ Cond Vacuum	Protect	Inspect during walkdown. Segment is normally isolated from HD but open to condenser side. Configuration/location is unknown. Inspect during walkdown to determine if actions are required.		
374	PTN	4	081	5614-M-3081 Sh. 7	13	Piping	1/2" piping	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm on system side of isolation valve. Configuration/location components is unknown. Inspect during walkdown to determine if actions are required.	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	
375	PTN	4	081	5614-M-3081 Sh. 7	13	Instr. Local	Test Connection (PX) and	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation will keep piping and components warm on system side of isolation valve. Configuration/location components is unknown. Inspect during walkdown to determine if actions are required.	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	

376	PTN	4	081	5614-M-3081 Sh. 7	14	Piping	8" Pipe	Yes	Flowpath to 3B HTR Drain Tank & Condenser	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
377	PTN	4	081	5614-M-3081 Sh. 7	14	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
378	PTN	4	081	5614-M-3081 Sh. 7	14	Vents / Drains / Misc. Connections	Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
379	PTN	4	081	5614-M-3081 Sh. 7	15	Piping	1/4", 3/8", 1/2" to sample system	Yes	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
380	PTN	4	081	5614-M-3081 Sh. 7	15	Instr. Local	Pressure Test Connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
381	PTN	4	081	5614-M-3081 Sh. 7	16	Piping	10" Pipe	Yes	Condenser Flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
382	PTN	4	081	5614-M-3081 Sh. 7	16	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
383	PTN	4	081	5614-M-3081 Sh. 7	17	Piping	6" Pipe and CV	Yes	Condenser Flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
384	PTN	4	081	5614-M-3081 Sh. 7	18	Piping	10" Pipe	Yes	Condenser Flowpath	Pressure boundary/ system integrity	None	None. Normal operation will keep piping and components warm and well above freezing.		
385	PTN	4	081	5614-M-3081 Sh. 7	18	Vents / Drains / Misc. Connections	Flange	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
386	PTN	4	081	5614-M-3081 Sh. 7	19	Piping	8" Pipe	No	Bypass to Condenser	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
387	PTN	4	081	5614-M-3081 Sh. 7	19	Vents / Drains / Misc. Connections	3/4" Connection	No	None	Pressure boundary/ system integrity	Protect	Inspect during walkdown. Normal operation should keep piping and components warm up to the isolation valve. Configuration/location of components is unknown. Inspect during walkdown to determine if actions are required.		
341	PTN	4	081	5614-M-3081 Sh. 7	-	Heat Exchangers	MSR 4T25C/D	Yes	MSR	-	None	None. Normal System flow will keep tank well above freezing.	MSR is already insulated and is hot	
342	PTN	4	081	5614-M-3081 Sh. 7	-	Outdoor Tanks	Shell Side Drain Tank	Yes	Drain Tank	-	None	No protection recommended	MSR is already insulated and is hot	
343	PTN	4	081	5614-M-3081 Sh. 7	-	Vents / Drains / Misc. Connections	Drain Tank Connections	No	Drain Tank Pressure Boundary	Pressure boundary/ system integrity/ dead leg	Protect	Inspect during walkdwon to determine if already insulated, lentth and if add'l protection is required. If short and/or insulated, no protection should be needed		
1	PTN	4	084	5614-M-3084 SH 1	0	N/A Remark only	N/A Remark only	N/A Remark only	N/A Remark only	N/A Remark only	N/A Remark only	N/A Remark only	This evaluation is performed assuming the U4 steam reducing station is NOT in service, and AS is supplied from U3 (as shown on P&ID's). Discuss with operations regarding usual line-up. Both U3 and U4 should be prepared for either operating configuration.	

2	PTN	4	084	5614-M-3084 SH 1	1	Piping	Piping from MS to AS. Pipe sections: [4-4"-2-C, 4-3"-2-C, 4-6"-4-C, 4-1"-2-C, 4-3/4"-2-C] Check valve 4-10-077	No	When in service: flowpath to Aux Priming Ejectors (CW - waterbox vacuum) Alternate supply to AFW pumps	Pressure boundary/ deadleg	Protect	Inspect during walkdown. Configuration/location of piping is unknown. Inspect/evaluate pipe sections between closed valves, as well as piping between closed control valves and check valve 4-10-077.	Either U3 or U4 reducing station will be in service. AFW pumps supply - unable to determine if/where this path is credited	
3	PTN	4	084	5614-M-3084 SH 1	1	Piping	Aux Steam Reducing Station control valves CV-4-1601, 1601A	No	Flow Controlled by CV-4-1601; Either U3 or U4 supply is in service. (P&ID shows U3 in service)	Pressure boundary/ Flow control	Protect	Inspect during walkdown. Configuration/location of piping is unknown. Inspect/evaluate pipe sections between closed valves, as well as piping between closed control valves and check valve 4-10-077.		
4	PTN	4	084	5614-M-3084 SH 1	1	Instr. Control / Protection	Instrument Air Tubing / position controller to valves CV-4-1601, 1601A	No	When in service: CV-4-1601 control (flowpath to Aux Priming Ejectors)	Flow control/ Valve fails closed on loss of signal	Protect	Inspect during walkdown. Air lines not subject to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.		
5	PTN	4	084	5614-M-3084 SH 1	1	Instr. Control / Protection	PC-4-1601 and associated piping	No	None	Pressure boundary; Condenser Performance	Protect	Inspect during walkdown. Connects to dead leg of pipe (when U4 not in service as shown on P&ID).	Either U3 or U4 reducing station will be in service.	
6	PTN	4	084	5614-M-3084 SH 1	1	Instr. Annunciation / Indication	PI-4-1717 and associated piping.	No	None	Pressure boundary	Protect	Inspect during walkdown. Connects to dead leg of pipe (when U4 not in service as shown on P&ID).		
7	PTN	4	084	5614-M-3084 SH 1	1	Vents / Drains / Misc. Connections	Valves/ drains/ Steam Trap [ST-4-54, -56]	Yes	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
8	PTN	4	084	5614-M-3084 SH 1	1	Vents / Drains / Misc. Connections	Valves/ drains/ Steam Trap [ST-4-15]	No	None	Pressure boundary	Protect	Inspect during walkdown. Steam trap and associated piping/ valves/ connections connect to isolated section of pipe. Walkdown configuration/location to determine whether any actions are required.		
9	PTN	4	084	5614-M-3084 SH 1	2	Piping	Piping [4-6"-2-C] Valves [SLWU-4-001, SLWU-4-002 (check vlv)]	No		Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing (on steam side). Potential dead leg concern between isolation valve and check valve.	Pipe section used for WLU only. Pipe will be filled to check valve. Configuration between isolation and check valve is unknown; confirm no dead leg concern.	
10	PTN	4	084	5614-M-3084 SH 1	3	Piping	Piping from the U4 AS HDR to class boundry. [6"-6-D, 4-10-078, 4-6"-6-D, 4-4"-6-D]	Yes	None	Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing. Header should be hot to the U4 isolation valve		
11	PTN	4	084	5614-M-3084 SH 1	3	Relief Valves	Relief valves [RV-4-6264, RV-4-1422]	Standby	Overpressure control for AS	Overpressure relief	Protect	Inspect during walkdown. Ensure operability of relief valve. Normal flow should keep components warm, exhaust configuration is unknown.	Location and configuration is unknown. Walkdown to evaluate whether additional measures are required.	
12	PTN	4	084	5614-M-3084 SH 1	3	Vents / Drains / Misc. Connections	Drain 4-10-41B Capped pipe sections [4-4"-6-D, 4-3"-6-D, piping to LC valve 10-259] Steam Trap	Yes	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
13	PTN	4	084	5614-M-3084 SH 1	4	Piping	Piping to AFW pumps [4-4"-6-D]	Yes	Flowpath is not normally used and leads to locked closed valve. Unable to determine if/where this path is credited.	Pressure boundary	None	Normal operation will keep piping and components warm and well above freezing.		
14	PTN	4	084	5614-M-3084 SH 1	5	Piping	Piping to Aux Priming Ejectors [4-2"-6-D]	Yes	Flowpath to Aux Priming Ejectors (Circ water)	Pressure boundary; Condenser Performance	None	Normal operation will keep piping and components warm and well above freezing.		
15	PTN	4	084	5614-M-3084 SH 1	6	Piping	Piping from MS to Turbine Gland Seal [4-2 1/2"-2-C]	Yes	None	Provide Gland Seal Steam	None	Normal operation will keep piping and components warm and well above freezing.		
16	PTN	4	084	5614-M-3084 SH 1	7	Piping	Piping to Steam Jet Air Ejectors [4-2"-2-C]	Yes	Provide steam for SJAE	Condenser Performance	None	Normal operation will keep piping and components warm and well above freezing.	SJAEs on TB Op floor	
17	PTN	4	084	5614-M-3084 SH 1	8	Piping	Piping to Hogging Ejectors [4-2"-2-C]	No	Hogging Ejectors Isolated during operation	None	None	Normal operation will keep piping and components warm and well above freezing.		
18	PTN	4	084	5614-M-3084 SH 1	9	Piping	Piping to Main Priming Ejectors	No	Main Priming Ejectors Isolated during operation	None	None	Normal operation will keep piping and components warm and well above freezing.		
19	PTN	4	085	5614-M-3085 SH 1	1	Piping	ES from HP turbine exhaust to 5A/5B FW HTRS [4-16"-4-CM]	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
20	PTN	4	085	5614-M-3085 SH 1	1	Piping	Control Valves [BTV-4-1518, -1520]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		

21	PTN	4	085	5614-M-3085 SH 1	1	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-4-1518, -1520	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Inspect during walkdown. Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
22	PTN	4	085	5614-M-3085 SH 1	1	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
23	PTN	4	085	5614-M-3085 SH 1	1	Vents / Drains / Misc. Connections	Steam traps [ST-4-19,-20,-21,-22]	Yes	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
24	PTN	4	085	5614-M-3085 SH 1	2	Piping	ES from HP turbine exhaust to 6A/6B FW HTRS [4-12"-4-CM] Connections to Condenser Drains, SWLU, MSR Drains [4-1"-4-U, 4-2"-4-C, 4-1 1/2"-4-D, 8"-5CM]	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no valves shown on this P&ID). Therefore, assumed warm and above freezing.	
25	PTN	4	085	5614-M-3085 SH 1	2	Piping	Connection to RHTR Drain Tank vent [4-2"-2-C]	No	None	Pressure Boundary	Protect	Inspect during walkdown. Normal operation will keep piping on steam side of isolation valve warm and well above freezing. Configuration/location of piping is unknown. Inspect during walkdown to determine if actions are required.		
26	PTN	4	085	5614-M-3085 SH 1	2	Piping	Control Valves [BTV-4-1522, -1524]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
27	PTN	4	085	5614-M-3085 SH 1	2	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-4-1522, -1524	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Inspect during walkdown. Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
28	PTN	4	085	5614-M-3085 SH 1	2	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
29	PTN	4	085	5614-M-3085 SH 1	2	Vents / Drains / Misc. Connections	Steam traps [ST-4-17,-18]	Yes	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
30	PTN	4	085	5614-M-3085 SH 1	3	Piping	Piping from Condenser to 3B FW HTR Connection to Turbine Cold Reheat STM Line DRN	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no closed valves shown on this P&ID). Therefore, assumed warm and above freezing.	
31	PTN	4	085	5614-M-3085 SH 1	3	Piping	Control Valves [BTV-4-1509, -1510]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
32	PTN	4	085	5614-M-3085 SH 1	3	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-4-1509, -1510	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Inspect during walkdown. Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
33	PTN	4	085	5614-M-3085 SH 1	3	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
34	PTN	4	085	5614-M-3085 SH 1	3	Vents / Drains / Misc. Connections	Steam traps [ST-4-27,-28, -31, -32]	Yes	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	

35	PTN	4	085	5614-M-3085 SH 1	4	Piping	Piping from Condenser to 4B FW HTR Connections to SWLU, SG Blowdown Recovery System	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no closed valves shown on this P&ID). Therefore, assumed warm and above freezing.	
36	PTN	4	085	5614-M-3085 SH 1	4	Piping	Control Valves [BTV-4-1514]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
37	PTN	4	085	5614-M-3085 SH 1	4	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-4-1514	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Inspect during walkdown. Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
38	PTN	4	085	5614-M-3085 SH 1	4	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
39	PTN	4	085	5614-M-3085 SH 1	4	Vents / Drains / Misc. Connections	Steam trap [ST-3-24]	Yes	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
40	PTN	4	085	5614-M-3085 SH 1	5	Piping	Piping from Condenser to 3A FW HTR Connection to Turbine Cold Reheat STM Line DRN	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no closed valves shown on this P&ID). Therefore, assumed warm and above freezing.	
41	PTN	4	085	5614-M-3085 SH 1	5	Piping	Control Valves [BTV-4-1507, -1508]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
42	PTN	4	085	5614-M-3085 SH 1	5	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-4-1507, -1508	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Inspect during walkdown. Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
43	PTN	4	085	5614-M-3085 SH 1	5	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
44	PTN	4	085	5614-M-3085 SH 1	5	Vents / Drains / Misc. Connections	Steam traps [ST-4-25,-26, -29, -30]	Yes	None	Pressure boundary	Protect	Inspect during walkdown. Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
45	PTN	4	085	5614-M-3085 SH 1	6	Piping	Piping from Condenser to 4A FW HTR Connections to SWLU, SG Blowdown Recovery System	Yes	Steam to FW HTRs	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.	Connections shown are piping only (no valves shown on this P&ID). Therefore, assumed warm and above freezing.	
46	PTN	4	085	5614-M-3085 SH 1	6	Piping	Control Valves [BTV-4-1512]	Yes	FW HTR level control	N/A	None	Normal steam flow will keep piping and components warm and well above freezing.		
47	PTN	4	085	5614-M-3085 SH 1	6	Instr. Control / Protection	Instrument air tubing/ solenoid/ controller for BTV-4-1512	Yes	FW HTR level control	Maintain FW HTR level control	Protect	Inspect during walkdown. Air system not susceptible to freezing. Ensure valve actuator, solenoid valve, and, connected control wiring are adequately insulated/protected from elements.	Components should be in close proximity to hot piping. Walkdown to determine if measures are required.	
48	PTN	4	085	5614-M-3085 SH 1	6	Vents / Drains / Misc. Connections	PX test points; Various vents/drains	No	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/location of drains is unknown. Inspect during walkdown.	
49	PTN	4	085	5614-M-3085 SH 1	6	Vents / Drains / Misc. Connections	Steam trap [ST-4-23]	Yes	None	Pressure boundary	Protect	Normal operation will keep piping and components warm and well above freezing. Configuration/location of drains is unknown. Inspect during walkdown to determine if actions are required.	Configuration/lo+A38:N50cation of drains is unknown. Inspect during walkdown.	
1	PTN	4	087	5614-M-3087, Sh. 1 Turbine Lube Oil System - Lube Oil Reservoir	N/A	Piping	3", 6" pipe, small-bore pipe, Lube Oil Resevoir, Lube Oil Coolers. Equipment located on Ground Floor EL 18' - 0" Turbine Building	Yes	While in cold weather procedure, frequently check that secondary parameters are stable. This includes Turbine Generator Parameters for lube oil, seal oil, and vibration. Required for power generation.	N/A	None	No Protection Required	System lubrication for normal operation. Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F.	FSAR p.10.2-3, Procedure 0-ONOP-103.2, p12,13, Turkey Point Extreme Temperature Reassessment p.14

2	PTN	4	087	5614-M-3087, Sh. 2 Turbine Lube Oil System - Lube Oil Reservoir	N/A	Piping	2", 3 " Pipe, Lube Oil Conditioner, heaters, transfer pump, Lube Oil Storage Tank	Yes	While in cold weather procedure, frequently check that secondary parameters are stable. This includes Turbine Generator Parameters for lube oil, seal oil, and vibration. Required for power generation.	N/A	None	No Protection Required	System lubrication for normal operation. Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F.	FSAR p.10.2-3, Procedure 0-ONOP-103.2, p12,13, Turkey Point Extreme Temperature Reassessment p.14
3	PTN	4	087	5614-M-3087, Sh. 3 Turbine Lube Oil System - Lube Oil Reservoir	N/A	Piping	3", 4", small bore pipe, Oil defoaming tank, Loop Seal Tank, Seal Oil Coolers, Seal Oil Pumps	Yes	While in cold weather procedure, frequently check that secondary parameters are stable. This includes Turbine Generator Parameters for lube oil, seal oil, and vibration. Required for power generation.	N/A	None	No Protection Required	Used to Prevent Hydrogen leakage from Generator. Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F.	FSAR p.10.2-3, Procedure 0-ONOP-103.2, p12,13, Turkey Point Extreme Temperature Reassessment p.14
1	PTN	4	089	5614-M-3089 SH 1	1	Piping	30" piping, Turbine stop valves (x2) (from Main Steam Header to HP Turbine)	Yes	Requied for Power Generation	Normal Steam flow adequate to prevent freezing.	None	None		
2	PTN	4	089	5614-M-3089 SH 1	1	Piping	4" turbine stop valve bypass (normally closed) (x2)	Yes	Requied for Power Generation; Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	No strategy expected. Normal steam flow will keep both sides of closed valve warm.	
3	PTN	4	089	5614-M-3089 SH 1	1	Piping	18" piping (x4), Turbine control valves (x4) (from Main Steam Header to HP Turbine)	Yes	Requied for Power Generation	Normal Steam flow adequate to prevent freezing.	None	None	Turbine Control valves have Electro-Hydraulic Control (EHC) acuator. Hydraulic oil and electrical components not suseptable to freezing.	
4	PTN	4	089	5614-M-3089 SH 1	1	Instr. Control / Protection	1", 1 1/2" instrument line to Pressure Transmitter (x2) (for steam break protection and control; control of steam dump valves)	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
5	PTN	4	089	5614-M-3089 SH 1	1	Instr. Control / Protection	1", 1 1/2" instrument line to Pressure Indication & Transmitter (x4) (Pressure reading controls turbine control valve position based on turb inlet pressure; control room indication of HP turbine supply pressure)	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
6	PTN	4	089	5614-M-3089 SH 1	1	Vents / Drains / Misc. Connections	1/2" drains (closed) off of PIT instrument lines	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	Protect	Ensure instrument drain is insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
7	PTN	4	089	5614-M-3089 SH 1	2	Piping	32" & 45" Steam piping (from HP Turbine to 4 MSRs)	Yes	Requied for Power Generation	Normal Steam flow adequate to prevent freezing.	None	None		
8	PTN	4	089	5614-M-3089 SH 1	2	Instr. Annunciation / Indication	PI and PT instruments 1/2" instrument tubing	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
9	PTN	4	089	5614-M-3089 SH 1	2	Instr. Local	Temporary Instrument ports: PX (x2) SN (x1) with closed root valve	No	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
10	PTN	4	089	5614-M-3089 SH 1	2	Vents / Drains / Misc. Connections	1/2" instrument tubing w/ closed root valve (no instrument) (x2)	No	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	Protect	Ensure valve and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument pipe/tube against dead leg freeze criteria. Main steam piping will be hot.	
11	PTN	4	089	5614-M-3089 SH 1	2	Vents / Drains / Misc. Connections	Misc expansion joints, and manways (blind flanged).	No	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None		
17	PTN	4	089	5614-M-3089 SH 1	3	Piping	36" & 60" Steam piping (from 4 MSRs to 2 LP Turbines)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None		
18	PTN	4	089	5614-M-3089 SH 1	3	Piping	Reheat stop valves (x4); interceptor valves (x4) (from 4 MSRs to 2 LP Turbines)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Reheat stop valves and interceptor valves have Electro-Hydraulic Control (EHC) acuator. Hydraulic oil and electrical components not suseptable to freezing.	
19	PTN	4	089	5614-M-3089 SH 1	3	Vents / Drains / Misc. Connections	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	No	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	

20	PTN	4	089	5614-M-3089 SH 1	3	Instr. Annunciation / Indication	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	Yes	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
21	PTN	4	089	5614-M-3089 SH 1	3	Instr. Local	Temporary Instrument ports: TX (x4) and tubing (no root valve - thermowell?) downstream of reheat stop valves	No	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. MSR will be hot.	
22	PTN	4	089	5614-M-3089 SH 1	3	Instr. Annunciation / Indication	PT and PI (active) plus 3/4" tubing (x2); PX with 3/8" tubing (closed root valve)(x2)	Yes	Maintain steam pressure boundary.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
23	PTN	4	089	5614-M-3089 SH 1	3	Instr. Control / Protection	PIT (x3) (pressure indicator and transmitter) (input to Turbine Control System)	Yes	Maintain steam pressure boundary.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
24	PTN	4	089	5614-M-3089 SH 1	4	Piping	1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" piping and reducers. (Valve leakoffs to Gland Steam Cond or South Cond)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None		5614-M-3014 SH 1 5614-M-3089 SH 2
25	PTN	4	089	5614-M-3089 SH 1	5	Piping	1" and 1 1/2" piping, flow control valves (normally closed, fail open) HP steam supply drains to the South Condenser. These drains are used to direct condensate to condenser.	Yes	None	Likely located on TB Mezz level between HP turbine and south condenser	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. Main steam piping and condenser will be hot. Assume FCVs on these lines are not opened during normal operation. However orifice plate keeps constant flow open in one leg (bypassing HP turbine.)	5614-M-3014 SH 1
26	PTN	4	089	5614-M-3089 SH 1	5	Instr. Local	Temporary Instrument ports: PX (x3) (closed root valve)	No	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. Main steam line will be hot.	
27	PTN	4	089	5614-M-3089 SH 1	5	Instr. Annunciation / Indication	PI and PT instruments and instrument tubing	Yes	Main steam pressure boundary	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of instrument tube against dead leg freeze criteria. Main steam piping will be hot.	
28	PTN	4	089	5614-M-3089 SH 1	5	Vents / Drains / Misc. Connections	closed vent on active PI/PT instrument line	No	Main steam pressure boundary	Dead leg	Protect	Ensure vent valve and tube are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
29	PTN	4	089	5614-M-3089 SH 1	6	Piping	1 1/2" piping Turbine stop valve leakoffs to HP turbine cylinder heating	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown. May be insulated already. Main steam piping will be hot.	5614-M-3089 SH 2
30	PTN	4	089	5614-M-3089 SH 1	7	Piping	16" piping (x2) Extraction Steam to Feedwater Heater 5A/B	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None		5614-M-3085 SH 1
31	PTN	4	089	5614-M-3089 SH 1	8	Piping	1 1/2", and 1" piping HP turbine exhaust to FW Htr 3A drain and drain to South cond.	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main steam piping will be hot.	5614-M-3014 SH 1 5614-M-3085 SH 1
32	PTN	4	089	5614-M-3089 SH 1	9	Piping	1 1/2" piping HP turbine exhaust drain to South cond.	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main steam piping will be hot.	5614-M-3014 SH 1
33	PTN	4	089	5614-M-3089 SH 1	10	Piping	1" piping HP turbine exhaust to extraction steam.	Yes	Main steam pressure boundary	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main steam piping will be hot.	5614-M-3085 SH 1
34	PTN	4	089	5614-M-3089 SH 1	11	Piping	1" piping HP turbine bypass	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Main steam piping will be hot.	
12	PTN	4	089	5614-M-3089 SH 1	--	Heat Exchangers	MSR 3A, 3B, 3C, and 3D	Yes	Requied for Power Generation	Normal Steam flow adequate to prevent freezing.	None	None		
13	PTN	4	089	5614-M-3089 SH 1	--	Instr. Local	PI (pressure indicator) (x2 per MSR) 1" and 3/8" instrument tube MSR 3A, 3B, 3C, and 3D	Yes	Requied for Power Generation	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. MSR will be hot.	

14	PTN	4	089	5614-M-3089 SH 1	--	Instr. Annunciation / Indication	TE (temperature element) (x2 per MSR) MSR 3A, 3B, 3C, and 3D	Yes	Requied for Power Generation	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. MSR will be hot.	
15	PTN	4	089	5614-M-3089 SH 1	--	Instr. Local	Temporary Instrument ports: PX (x2 per MSR) and 3/8" tubing (closed root valve) MSR 3A, 3B, 3C, and 3D	No	Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. MSR will be hot.	
16	PTN	4	089	5614-M-3089 SH 1	--	Relief Valves	One relief valve per MSR shell. MSR 3A, 3B, 3C, and 3D	Standby	Requied for Power Generation	Normal steam flow keeps line warm and well above freezing. MSRs already insulated.	None	No additional strategies - normal steam flow will keep piping and components warm and well above freezing.	Located on TB operating deck. Inspect during walkdown. MSR will be hot, unlikely to freeze. Verify close to MSR	
35	PTN	4	089	5614-M-3089 SH 2	1	Piping	2", 2 1/2", 3", 3 1/2", 4", 5", 6", 8", 10" piping, reducers, one air operated control valve (2.5") this segment is main steam supply to turbine gland seal lines (HP and LP turbines)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
36	PTN	4	089	5614-M-3089 SH 2	1	Instr. Control / Protection	Pressure Control Instrument (PC x2) plus 1/2" tubing	Yes	Maintain steam pressure boundary. Regulate gland seal supply steam conditions.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
37	PTN	4	089	5614-M-3089 SH 2	1	Instr. Local	Pressure Indicator (PI) w/ 3/8" and 1/2" instrument tubing.	Yes	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown. Expected to be short runs of pipe and potentially insulated already. Main steam piping will be hot.	
38	PTN	4	089	5614-M-3089 SH 2	1	Instr. Annunciation / Indication	Pressure Transmitter (PT) teed off of 4" pipe near HP Turb gland seal inlet. PT instrument has 1/2" tubing. PT has local/remote indication and control room alarm on low pressure.	Yes	Maintain steam pressure boundary. Regulate gland seal supply steam conditions.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Main steam piping will be hot.	
39	PTN	4	089	5614-M-3089 SH 2	1	Strainers	Wye strainers (x8)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
40	PTN	4	089	5614-M-3089 SH 2	1	Vents / Drains / Misc. Connections	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	No	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Short drain connected to hot steam pipe. Steam piping and strainer will be hot.	
41	PTN	4	089	5614-M-3089 SH 2	1	Relief Valves	relief valve (25 psig) and rupture disc (100 psig)	Standby	Provide over-pressure protection for gland seal steam piping.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Relief valve and rupture disc likely installed in close proximity to main 10" pipe. Therefore, hot process flow in main pipe will keep relief valve and rupture disc from freezing. Steam piping will be hot.	
42	PTN	4	089	5614-M-3089 SH 2	2	Piping	1", 8", 10" piping, reducers, and one air operated control valve (6") These segments are misc condensate drain lines from turbine gland seal supply lines to the South and North condensers.	Yes	Maintain turbine gland seal pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
43	PTN	4	089	5614-M-3089 SH 2	3	Piping	2 1/2", 4", 5", 8", 10" piping, reducers Turbine gland seal exhaust piping to Gland Steam Condenser	Yes	Maintain turbine gland seal pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
44	PTN	4	089	5614-M-3089 SH 2	4	Piping	1 1/4", 1 1/2", 3" piping and reducers, one air operated control valve on each main 3" line.	Yes	Maintain turbine gland seal pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
45	PTN	4	089	5614-M-3089 SH 2	4	Relief Valves	3" relief valve teed off the 4" main line (x2)	Standby	Provide over-pressure protection for cylinder heating piping	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Relief valve is likely installed in close proximity to main 4" pipe. Therefore, hot process flow in main pipe will keep relief valve from freezing. Steam piping will be hot.	

46	PTN	4	089	5614-M-3089 SH 2	4	Strainers	Wye strainers (x2)	Yes	Maintain steam pressure boundary.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation likely already be present. Steam piping will be hot.	
47	PTN	4	089	5614-M-3089 SH 2	4	Vents / Drains / Misc. Connections	3/4" drains (x2) from Wye strainers	No	Maintain steam pressure boundary.	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Short drain connected to hot steam pipe. Steam piping and strainer will be hot.	
48	PTN	4	089	5614-M-3089 SH 2	5	Vents / Drains / Misc. Connections	Pipe size not shown. LP turbine water trough drain to "Waste Drain Near Bowser Filter"	Yes	None	Dead leg	None	None	Inspect during walkdown, may actually be internal to condenser. Turbine and condenser will be hot and preclude freezing.	
49	PTN	4	089	5614-M-3089 SH 2	6	Vents / Drains / Misc. Connections	1" loop seal drains from LP Turbine gland seal exhaust to equipment drain.	Yes	None	Dead leg	None	None	Inspect during walkdown, may actually be internal to condenser. Turbine and condenser will be hot and preclude freezing.	
50	PTN	4	089	5614-M-3089 SH 2	7	Piping	6", 1" piping Turbine valves steam leakoffs to gland steam condenser	Yes	None	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Steam piping will be hot.	
51	PTN	4	089	5614-M-3089 SH 2	7	Vents / Drains / Misc. Connections	Capped pipe on 6" line	No	None	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Steam piping will be hot.	
52	PTN	4	089	5614-M-3089 SH 2	8	Piping	3" piping, loop seal Gland steam condenser drain to condensate recovery reciever	Yes	None	Normal process flow is warm. Gland steam condenser and Cond. Recovery Receiver are located on TB ground floor and partially enclosed.	None	None	Inspect during walkdown, insulation may already be present. Process piping will be hot.	5614-M-3080 SH 1
53	PTN	4	089	5614-M-3089 SH 2	8	Vents / Drains / Misc. Connections	vent and overflow pipe	Yes	None	Normal process flow is warm. Gland steam condenser and Cond. Recovery Receiver are located on TB ground floor and partially enclosed.	None	None	Inspect during walkdown, insulation may already be present. Process piping will be hot.	
54	PTN	4	089	5614-M-3089 SH 2	8	Instr. Local	Temporary Instrument port: TX	No	None	Dead leg	None	None	Inspect during walkdown. Expected to be short run of pipe and potentially insulated already. Process piping will be warm. Location is ground floor of TB (partially enclosed between condensers and Rx bldg). Location may preclude freezing.	
55	PTN	4	089	5614-M-3089 SH 2	9	Piping	6" piping disch to atmos, 1 1/2" drain piping, exhaust blower (x2) Air exhaust from Gland Steam Condenser	Yes	None	Normal process flow is warm. Gland steam condenser is located on TB ground floor and partially enclosed.	None	None	Inspect during walkdown, insulation may already be present. Process piping will be warm. Location is ground floor of TB (partially enclosed between condensers and Rx bldg). Location may preclude freezing.	
62	PTN	4	089	5614-M-3089 SH 2	Gland Steam Condenser	Heat Exchangers	Gland Steam Condenser	Yes	Condenses gland steam exhaust from turbines.	Normal Steam flow adequate to prevent freezing.	None	None	Inspect during walkdown, insulation may already be present. Gland Steam Condenser will be hot/warm. Location is ground floor of TB (partially enclosed between condensers and Rx bldg). Location may also preclude freezing. A global strategy with enclosing the area and space heating may be applied.	
63	PTN	4	089	5614-M-3089 SH 2	Gland Steam Condenser	Instr. Local	PI (pressure indicator) local indication of gland steam cond shell pressure	Yes	None	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Evaluate length of vent pipe against dead leg freeze criteria. Gland Steam Condenser will be hot/warm. Location is ground floor of TB (partially enclosed between condensers and Rx bldg). Location may also preclude freezing. A global strategy with enclosing the area and space heating may be applied.	
56	PTN	4	089	5614-M-3089 SH 2	HP Turbine	Instr. Local	Temperature Element (TE x5), Pressure indication (PI x4), 1/2" tubing and open root valve.	Yes	Requied for Power Generation; Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. HP turbine will be hot. Temp Element and pressure indicators unlikely to freeze.	

57	PTN	4	089	5614-M-3089 SH 2	HP Turbine	Vents / Drains / Misc. Connections	1/2" drains (closed) on PI insturment lines. (x4)	No	Requied for Power Generation; Main steam pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. HP turbine will be hot. Temp Element and pressure indicators unlikely to freeze.	
58	PTN	4	089	5614-M-3089 SH 2	HP Turbine	Instr. Control / Protection	DP controler (x2)	Yes	Requied for Power Generation; Main steam pressure boundary; Regulates incoming cylinder heating steam flow.	Dead leg	Protect	Ensure instrument and instrument lines are well insulated.	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. HP turbine will be hot. Connected instruments unlikely to freeze if insulated.	
59	PTN	4	089	5614-M-3089 SH 2	LP Turbine North & South	Instr. Local	Temperature Element (1 per turbine), Temperature indicator (1 per turbine),	Yes	Maintain turbine pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. LP turbine will be hot. Temp Element and indicator unlikely to freeze.	
60	PTN	4	089	5614-M-3089 SH 2	LP Turbine North & South	Instr. Local	Temporary Instrument ports: PX (x4 on each turbine) with closed root valve	No	Maintain turbine pressure boundary	Dead leg	None	None	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. LP turbine will be hot. Temp Element and indicator unlikely to freeze.	
61	PTN	4	089	5614-M-3089 SH 2	LP Turbine North & South	Instr. Control / Protection	TC (Temperature controller) one on each LP Turbine, actuates Exhaust hood sprays to regulate LP turbine exhaust temp.	Standby	Maintain turbine pressure boundary	Dead leg	Protect	Ensure capillary instrument tubing is insulated.	Inspect during walkdown, insulation may already be present. Proximity of instruments to HP Turbine. HP turbine will be hot. Temp Element and pressure indicators unlikely to freeze.	
1	PTN	4	090	5614-M-3090, Sh. 1 Generator System Hydrogen & CO2 Supply	N/A	Piping	Small bore piping, gas dryer, reactivating blower, Equipment located on Ground Floor EL 18' - 0" Turbine Building	Yes	Required to maintain 100% power generation.	N/A	None	No Protection Required - Gas system	Based on "Turkey Point Extreme Temperature Reassessment, March 2021", No effect on system is expected for 10F below all time record low of 27F. Note: Hydrogen gas leak rate changes with temperature and pressure.	FSAR 10.1.1, 10.2.2 (p. 10.2-3). Nothing in Cold Weather Procedure 0-ONOP-103.2, See Turkey Point Extreme Temperature Reassessment, Mar 2021, p.14
1	PTN	4	EDG HVAC / 108	5614-M-3108	1	Ducting	Supply and exhaust ductwork	Standby	None	Not affected by cold temperatures	None	None	Ducting is not susceptible to freezing	N/A
2	PTN	4	EDG HVAC / 108	5614-M-3108	1	Instruments - General	Temperature switches for EDG bldg. room fans	Yes	Sense high temperatures in EDG Bldg rooms to turn on ventilation fans	Not affected by cold temperatures	None	None	No instruments contain water that are susceptible to freezing	N/A
3	PTN	4	EDG HVAC / 108	5614-M-3108	1	Filter	Control panel and switchgear room fan supply filters	Standby	None	Filters are not affected by cold weather	None	None		N/A
4	PTN	4	EDG HVAC / 108	5614-M-3108	1	Fan	EDG bldg. supply and exhaust fans	Standby	Automatically turn on for high temperatures in EDG Bldg rooms	Cold weather has little to no affect on a fan or its motor.	None	None		N/A
5	PTN	4	EDG HVAC / 108	5614-M-3108	1	Air Handling Unit	EDG bldg. air conditioners for switchgear and control rooms	Yes	Maintain acceptable temperatures for safety-related equipment in the control and switchgear rooms	Motors and condensers are generally unaffected by cold weather. Likely neither will be required to operate.	None	No Action required. Cold weather should not have an adverse affect on this equipment.		N/A

ZACHRY

Attachment M

PTN Phase 1 System Walkdown Evaluation Summary

PTN Phase 1 System Walkdown Evaluation Summary

Acronym / #	System Name	Overall Strategy
-- / 015	Amertap / Tube Cleaning	• Zachry proposes isolating and draining (blowing down) the Condenser Tube Cleaning and Debris Filter Systems at the start of the cold weather period and reinstating them following temperature increase. **FPL Recommendations:** PSL Ops: Cannot drain the debris filter system. Not convinced that this is doable. This is always flowing so is this really a concern. We DO need an insulated enclosure for the instrumentation though. CER: Would like to see a Plan B on this. This could be a difficult evolution. Not often drained and the configuration may not be amenable to this. BD: Could do HT&I MC: These systems will be in service so freezing shouldn't be a concern. MC to review for portions of this system that may be stagnant. KC: All piping flow through condenser and would pick up additional heat
-- / 060	Aux Bldg. Ventilation	• In accordance with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," 1. STOP all Auxiliary Building supply fans. 2. STOP all but one Auxiliary Building exhaust fan. 3. MONITOR Auxiliary Building air temperature at least once every 2 hours. **FPL Recommendations:** CER: Agree, no issues with approach. • In accordance with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," add electric heaters to the following rooms to maintain ambient temperature ≥ 72°F. 1. Unit 3 Charging Pump Room (15 kW) 2. Unit 4 Charging Pump Room (15 kW) 3. BAST Room (30 kW) **FPL Recommendations:** CER: Agree, no issues with approach. • AB Ventilation (Electrical Equipment Room) – Non-Safety-Related Chilled Water System (V78) with chiller packages E233 & E234. No winterization action required.

Acronym / #	System Name	Overall Strategy
		• Redundant AB Ventilation (Electrical Equipment Room) HVAC is cooled by split DX air conditioning (AC) units (V76 & V77) with condensing packages E231 & E232. Direct Expansion systems not subject to freezing. No winterization action required. • AC units only active on demand. **FPL Recommendations:** MC: Supp heaters are typically staged however they are not historically used. Need to consider installing permanent power in the applicable areas to preclude the use of continuous fire watch.
AFWS / 075	Aux Feedwater	• Tarp the grating on the AFW pump missile shield enclosure and install space heaters to maintain area temperature above freezing. This will protect the AFW pumps and associated equipment. **FPL Recommendations:** CER: Is this practical? AK: This room is very tight. Will need to design and premanufacture tarping and support structure? What in this room are we concerned about? BD: Need more clarification regarding what we are protecting. Main steam line break and harsh environment concerns. PB: Potentially need a permanent ladder. TEAM: Yes, tarp. • Tarping of the grating on the CST missile shield enclosures and heating of the spaces will maintain temperatures of the AFW lines to the FW lines. **FPL Recommendations:** CER: Is this practical? HT&I would be the better option here. $$ BD: What about doing a permanent modification to create a permanent enclosure. Could be done with readily accessible materials to minimize cost. Any downside? AK: Can we tarped from the top but there is no way of getting up there. Would need a restraint system…complicated. TEAM: HT&I • Tarping of the TB exterior sides and heating of the spaces will maintain temperatures of the AFW piping above freezing.

Acronym / #	System Name	Overall Strategy
		FPL Recommendations: CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. • In accordance with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," An immersion heater is installed in the AFW pump oil reservoir and will maintain oil temperature at approximately 110°F. **FPL Recommendations:** CER: Accept – no comments. • Per Procedure 0-ONOP-103.2, check A/B/C AFW Lube Oil Reservoir piping to Turbine is warm to the touch. If not, obtain, install space heaters no closer than 3 feet from the AFW pumps. **FPL Recommendations:** CER: Accept – no comments? Have we ever had to do this? Per MC – never needed to perform. See General Note pertaining to vents, drains and instrumentation dead legs (end of table).
-- / 084	Auxiliary Steam	• Tarp the TB exterior sides and add space heaters strategically located to maintain area temperatures above freezing. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.
BAS / 101	Breathing Air	• Breathing Air is abandoned in place. There is also a self-contained apparatus fill station. Regardless, gas does not require freeze protection
CVCS / 046	Chemical & Volume Control (Boric Acid/Boron/Gas Stripper)	• Abandoned in place and all located within the AB. **FPL Recommendations:**

Acronym / #	System Name	Overall Strategy
		MC: Boric acid storage tanks have activity per the cold weather proc to use supp heat. Is this broken out in the component evaluation?
CVCS / 047	Chemical & Volume Control (Charging/Letdown/Seal Water)	• Nearly all is located within the Auxiliary Building and Containment o Aux Bldg – Utilize global strategy for protection of all systems/components in the building to maintain temperature above 39°F. 1. Existing Building Temperature maintained due to thermal mass of concrete floors & walls along with closed doors. 2. Current Cold Weather Procedure 0-ONOP-103.2 actions for HVAC operation and existing space heater deployment. 3. Implement supplemental heating (space heaters) as needed. **FPL Recommendations:** CER: Accept – no comments. Have we ever had to do this before? o Containment assumed to be acceptable with no additional heating due to reactor operation. • No protection needed for resin fill lines on the AB roof (5 for U3 and 5 for U4) • Most piping that is identified as located on the AB Roof is actually inside the VCT Bioshield enclosure and can be protected via a space heater, as needed. Exceptions: o U3 gas piping off the top of the VCT (Segments 6,7,8,9) is outside, but since gas, not susceptible to freezing. Did not see on U4, assume inside Bioshield o LT tubing comes outside grating door and will require protection (heat trace/insulate) **FPL Recommendations:** CER: Agree, HT&I. No Comments. Are we saying piping inside the Bioshield is protected by supp heating? PB&MC: Insulation or heater near transmitters. TEAM: Cover grating door and add supp heat AND verify what line we are considering is vulnerable. HT&I otherwise.
CWS / 010	Circulating Water	• Large bore CW piping is normally flowing at approximately 50°F (minimum). No additional action required as long as flow is maintained.

Acronym / #	System Name	Overall Strategy
		• Since CW demand is reduced during colder UHS periods, cycle CW pumps periodically to ensure motor lubrication. • Area including the West side of all eight (8) traveling water screen and their associated instrumentation shall be tented with supplemental heat added. **FPL Recommendations:** AK: What are we protecting? Tarping this is not practical. MC: Need to ensure that there is a commodity to protect. No water captured in basic operation. Instrumentation for DP BD: turn on screens and let them run…intermittent use could alleviate wear and tear concerns. Need to protect the circ water DP – does it drain back to canal OR we run intermittently…we don't see that there is anything else to protect. TEAM: Zachry to take another look at this. • Normally flowing CWP lube water piping will not freeze. • Area including the eight (8) CW pump lube water gage panels and their associated instrumentation shall be tented with supplemental heat added (as necessary). Note – Pump motor cooling exhaust may provide sufficient heating. **FPL Recommendations:** CER: What are we protecting? Tenting is not practical given the configuration of the plant. TEAM: Zachry to review again. • The below grade CW pump seal flow control and instrumentation in the ICW Valve Pits shall be tented with supplemental heat added. **FPL Recommendations:** CER: Confirm that this is backup?…if so, open a drain and trickle flow. What instrumentation specifically? TEAM: Yes to trickle flow. • General Comment - Cellular Poly foam insulation should be inspected and replaced (in-kind) to repair existing damage. **FPL Recommendations:**

Acronym / #	System Name	Overall Strategy
		CER: Please be sure that this is clear on the component evaluation so that the EPC knows they need to address. • Provide MOV hoods for the CW pump Motor Operated Valves. **FPL Recommendations:** CER: MOVs are not at risk in the postulated cold weather scenario. • Vacuum priming piping from the water boxes to the TB Operating Deck mounted vacuum tanks is protected by heat contained within the tented TB. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. AK: Why does this need to be protected? Always in service, always has flow. Don't think this is at risk. See General Note pertaining to vents, drains and instrumentation dead legs (end of table).
CCW / 030	Component Cooling Water	• Tarp the overhead grating and access doorways of the CCW Rooms to minimize air infiltration to grade level piping and components. Add supplemental heating to address dead legs as appropriate. Note – ICW strainers (BS-3-1400/1401, BS-4-1402/1403, 3F228A/B and 4F228A/B/C) are protected by the tenting of the CCW Rooms. **FPL Recommendations:** CER: Agree to tarp. AK: Practical to perform. Need prefab tarps and anchorage points. • As an extra precaution, start and run alternate CCW pumps periodically). • Most of the remaining system piping and components are located within the either the Auxiliary Building or Containment. No additional Winterization protection is warranted. • Supplemental Cooling System (SCS) piping, chiller skids, pumps and tanks are located on the Auxiliary Building roofs. To avoid concern with the exposed piping and components, Zachry recommends isolating the CCW system from the SCS and draining the piping and

Acronym / #	System Name	Overall Strategy
		components located on the Auxiliary Building roofs. Note – Unit 3 rooftop piping is not insulated while the Unit 4 rooftop piping is insulated. **FPL Recommendations:** MC: Isolate and open a vent. • Consistent with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," Stagnant sections of system piping should also be considered for flushing to avoid freezing, such as piping between the CCW Surge Tank and Head Tank. **FPL Recommendations:** CER: OPS – have we ever done this? Would it be better to HT&I? **FPL Recommendations:** • Insulate and heat trace the level instrument branch piping off the CCW Head Tank. **FPL Recommendations:** CER: Agree to HT&I AK: and piping to the head tank which is outside of containment See General Note pertaining to vents, drains and instrumentation dead legs (end of table).
COND / 073	Condensate	• Tarp the TB exterior sides and add space heaters strategically located to maintain area temperatures above freezing. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. • Tarp the grating on the CST missile shield enclosures and add space heaters to maintain temperatures of the Condensate lines above freezing. **FPL Recommendations:**

Acronym / #	System Name	Overall Strategy
		CER: Is this practical? HT&I would be the better option here. $$ BD: What about doing a permanent modification to create a permanent enclosure. Could be done with readily accessible materials to minimize cost. Any downside? AK: Can we tarped from the top but there is no way of getting up there. Would need a restraint system…complicated
CPDL / 077	Condensate Polishing	• Do nothing. The system has been voided and no actions to mitigate the freezing effects will be taken.
-- / 080	Condensate Recover	• Do nothing. The system is not required for power operation hence, no actions to mitigate the freezing effects will be taken.
CS / 018	Condensate Storage	• Tarp the grating on the CST missile shield enclosures and add space heaters to maintain temperatures of the associated Condensate, Condensate Transfer (Unit 4), and Feedwater lines above freezing. **FPL Recommendations:** CER: Cut and paste comments down • Heat trace and insulate CST level transmitter piping. **FPL Recommendations:** CER: Agree to HT&I Zachry please validate that aux feedwater supply is called out for HT&I
CNDSR / 014	Condenser	Do nothing. Condenser (within Turbine Building) assumed to be acceptable with no additional heating due to steam and Circulating Water system operation **FPL Recommendations:** MC: Hotwell sample lines? Have these been evaluated for freezing as they traverse to the chemistry control lab. Zachry to respond… TEAM: Engage with Tramanh Michalak

PTN Phase 1 System Walkdown Evaluation Summary

Acronym / #	System Name	Overall Strategy
-- / 056	Containment Emergency Filter	• The Emergency Containment Filter Units (3V3A, 3V3B, 3V3C, 4V3A, 4V3B, and 4V3C) are abandoned in place without the applicable demister HEPA / charcoal filters that were removed.
-- / 057	Containment Normal & Emergency Cooler	• All associated equipment is located within Containment – No Winterization precautions are required.
-- / 094	Containment Post Accident Eval	• Containment Post Accident Evaluation System is in Containment and in the Auxiliary Building. No Winterization precautions are required.
-- / 053	Containment Purge & Penetration Cooling	• Per Technical Specification Section 3.6.1.7, each containment purge supply and exhaust isolation valve shall be administratively sealed closed and deactivated or the associated penetration(s) shall be isolated by blind flange in Modes 1 through 4. This air system is not in operation at power and no Winterization precautions are required. • There are no Winterization precautions required for the air-based Penetration Cooling system.
CS / 068	Containment Spray	• One pipe runs across the AB roof and connects to Segment 7 on 5613(4)-M-3062 Sh. 1. This pipe is isolated and only used for CSP full flow recirculation test and not needed during normal power operation. No protection required; recommend draining the pipe via valve 3(4)-1351. **FPL Recommendations:** MC: We do NOT want to drain this leg. CER: Is there an alternative option for this leg? Please check against screening criteria and HT&I if necessary. TEAM: Apply asset protection screening criteria and HT&I as applicable. • Rest of system piping located in the AB, and protected via global strategy for the building itself to maintain >39°F.
-- / 025	Control Bldg. Ventilation	• Safety-Related • Control Building HVAC is cooled by split Direct Expansion (DX) air conditioning (AC) units. DX systems not subject to freezing. No winterization action required. • AC units only active on demand. • Cycle supply and return flow paths and supply fans to maintain Control Building ventilation temperature.

Acronym / #	System Name	Overall Strategy
		• Add temporary heaters as necessary to support Operator comfort.
EGD / 022	Emergency Diesel Generator & Oil	• Electric water heater and lube oil Soak Down Pump normally operating to maintain EDG temperature. • In accordance with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," "Space heater placement is intended to raise the EDG Room temperature." and "Every 4 hours, CHECK EDG Lube Oil Temperature is greater than 100°F." • Per Procedure 0-ONOP-103.2, "Obtain 15 KW space heaters from Tool Room, and install in EDG Rooms for EDGs with EDG Lube Oil temperature less than or equal to 100°F." • Per Procedure 0-ONOP-103.2, "Blow Down of Instrument and EDG Starting Air Lines to Remove any Trapped Water". **FPL Recommendations:** BD: What is the real (vendor defined) gel T of the fuel oil? Is this really a concern? Note - Diesel fuel oil gel temperature is approximately 15°F but can be as high as 20°F.
-- / 069	Equipment Area Drain System	• Retention Pit and OWS located in PTF fencing (near NW corner of PTN). No protection required since it will not have an impact on Unit operation or TS action; however, recommend immediate inspection during freezing conditions to ensure venting devices are functioning to prevent a potential safety hazard.
-- / 085	Extraction Steam	• Tarp the TB exterior sides and add space heaters strategically located to maintain area temperatures above freezing. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.
FWS / 074	Feedwater	• Tarp the TB exterior sides and add space heaters strategically located to maintain area temperatures above freezing. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.

Acronym / #	System Name	Overall Strategy
		• Tarp the grating on the CST missile shield enclosures and add space heaters to maintain temperatures of the Feedwater lines and LEFMs above freezing. **FPL Recommendations:** CER: Is this practical? HT&I would be the better option here. $$ BD: What about doing a permanent modification to create a permanent enclosure. Could be done with readily accessible materials to minimize cost. Any downside? AK: Can we tarped from the top but there is no way of getting up there. Would need a restraint system…complicated? • Tarp the grating on the Feedwater platform missile shield enclosures and add space heaters to maintain temperatures of the Feedwater lines above freezing. **FPL Recommendations:** AK: Not practical. CER: Need to assess ability to HT&I whatever requires protection • DWST and associated piping, including Standby Steam Generator Feedwater System: o DWST is located outside, no protection required for the tank itself (not susceptible to freezing over 4 days with the current temperature profile) o Pipes that can be normally kept flowing (WTP to DWST and DWST to U3/U4 Condensers don't require protection; however, piping that is not normally flowing/in standby will require protection via heat trace and/or insulation. o Skid area by DWST (Degasifier Skid, Booster Pump, Storage Tank, and Instrument Panel) can be tented and use space heater(s) (north side of DWST) **FPL Recommendations:** AK: Not practical. MC: Skid not in service only level transmitter is of concern. CER: Need plan B for anything susceptible in this area. o Tent over the Standby Steam Generator Feedwater Pumps **FPL Recommendations:**

<table>
<tr><th>Acronym / #</th><th>System Name</th><th>Overall Strategy</th></tr>
<tr><td></td><td></td><td>CER: Would use of a permanent insulated enclosure be more practical?
TEAM: Review vulnerability. Recommend HT&I

o Dead Legs (Vents, Drains, Instruments, cross-ties, etc.) options:
1. Meets Temp, Length, & Orientation criteria for not freezing, or
2. Open isolation valves for controlled trickle flow to prevent freezing as able, or
3. Heat Trace & Insulate

FPL Recommendations:

CER: HT&I per screening criteria.

• No protection for the N2 supply to the DWST and CSTs

FPL Recommendations:

AK: Tenting of the entrances of the SGFP room
CER: Please ensure that this room is evaluated somewhere.
TEAM: Zachry to email Mike Coen.

See General Note pertaining to vents, drains and instrumentation dead legs (end of table).</td></tr>
<tr><td>-- / 081</td><td>Feedwater Heater Drains & Vents</td><td>• Tarp the TB exterior sides and add space heaters strategically located to maintain area temperatures above freezing.

FPL Recommendations:

CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.</td></tr>
<tr><td>P / 016</td><td>Fire Protection</td><td>
<table>
<tr><th>System/Portion</th><th>Local Strategy</th><th>Drawing</th></tr>
<tr><td>Diesel Fire Pump</td><td>Provide building heat with portable heater.</td><td>5610-M-3016 SH3</td></tr>
<tr><td>Diesel Fire Pump Fuel Oil Tank</td><td>Add fuel stabilizer.</td><td>5610-M-3016 SH3</td></tr>
<tr><td>Diesel Fire Pump Recirc line</td><td>Insulate and heat trace outside pump house.
CER: Agree to HT&I</td><td>5610-M-3016 SH3</td></tr>
</table>
</td></tr>
</table>

Acronym / #	System Name	Overall Strategy		
		Diesel Fire Pump Large bore suction, discharge, and test line	Run pump and provide flow through all above ground piping out hydrant 10-HY-1. AK: Does pump have sufficient recirc capability	5610-M-3016 SH3
		Electric Fire Pump	Tent and provide portable heaters. CER: Would a permanent enclosure be better? Does this go back to the code violation discussed in reference to PSL?	5610-M-3016 SH3
		Electric Pump Large bore suction, discharge, and test line	Run pump and provide flow through all above ground piping out hydrant 10-HY-1. CER: Any issues with this? AK: Does pump have sufficient recirc capability? Not sure with all of the fire pumps running at one time there is sufficient RWT capability	5610-M-3016 SH3
		Jockey Fire Pumps	Dedicate one pump to provide continuous flow through test line. Run second pump continuously to maintain header pressure and provide flow to rose reel and wet system drain flow. CER: Any issues with this?	5610-M-3016 SH3
		DG, Electric, Jockey above ground vents and drains	Insulate and heat trace. CER: Agree to HT&I	5610-M-3016 SH3
		Fire Header 10" Section above ground downstream of 10-PIV-54 to 10-604. Located over U3 EDG and NE corner J-line of TB	Provide protection by tenting between TB NE corner and U3 EDG. Tenting also covers other system piping and encloses TB. CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. **AK**: Suggest opening up a fire system a SMALL amount at farthest point to maintain continuous flow	5610-M-3016 SH5
		Above ground 10" header Running East West on North end of TB. Crosstie from valve 10-610 to 10-680 and 10-604	Tent north end of TB which will enclose grated section where header is located. Tarping is intended to protect other system piping in TB also. Due to header	5610-M-3016 SH5

Acronym / #	System Name	Overall Strategy		
			loop design difficult to ensure flow through crosstie w/o closing header isolation valves. Hydraulic analysis may show adequate flow. CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. **AK: Suggest opening up a fire system a SMALL amount at farthest point to maintain continuous flow**	
		Header feed to Unit 1 & 2 from 10-PIV-3	OSY-V-10-30 over at U1 is above ground. Provide trickle drain flow from U1/2 Hose Reel "G" to protect header. The rest of U1/2 loads appear to be isolated. CER: Trickle flow acceptable? AK: good idea for all	5610-M-3016 SH4
		Header feed to Unit 1 & 2 from 10-PIV-6	For Unit 1 Deluge and Wet Systems, post fire watch and isolate feed to Unit 1 systems (except transformers). If transformer piping freezes/breaks above isolation valve, isolate portion of header at 10-PIV-8 and 10-PIV-12, as necessary. AK – need to check with Fire Protection on this.	5610-M-3016 SH4
		Header feed to Unit 1 & 2 Office from 10-PIV-7	Unit 1 and 2 Office Bldg. - Provide trickle drain flow from Hose Reel. CER: Trickle flow acceptable?	5610-M-3016 SH4
		Unit 3&4 Charging and CCW Deluge Zone 45, 47, 54, 55	Preserve header and hose reel HS-AB-04 & 05 by providing trickle flow to drain. Isolate 10-677 and 10-678. CER: Trickle flow acceptable?	5610-M-3016 SH7
		Unit 3 & 4 Aux Bldg. N-S Breezeway FZ 79A Deluge	Insulate and heat trace 4" supply from TB from J line in breezeway. CER: Agree to HT&I AK: if in Aux Bldg (enclosed) why heat trace	5610-M-3016 SH7

Acronym / #	System Name	Overall Strategy		
			Deluge valve - tent and heat. CER: Is this practical?	
		U3 EDG Deluge	Insulate and heat trace 3" supply from J-line header. Tent and heat deluge valve CER: Is this practical?	5610-M-3016 SH7
		U3 EDG Water Curtain	Protected by enclosing TB with tarps. CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.	
		U3 & 4 C-Bus Deluge	Preserve Header by providing trickle flow by opening drain valve. No PIV off header. CER: Trickle flow acceptable?	5610-M-3016 SH10, 11
		U3 & 4 Main and Aux XFMR	Protect asset by tenting and providing temporary heat. CER: More tenting….NO	5610-M-3016 SH10, 11
		Unit 3 & 4 SU XFMR	Preserve header by closing 3/4-10-1610 and providing trickle flow by opening drain valve. CER: Trickle flow acceptable?	
		U3 & 4 L/O Deluge and TB Sprinklers	Preserve header by closing PIV and draining system. CER: Is this acceptable? AK: Check with fire protection but I don't think this will be acceptable	
		U3 & 4 East Side TB Sprinklers	Preserve J-line header by enclosing with TB tarp. Note - sprinkler system is entirely within TB and protected. CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.	
		U4 EDG Deluge	Preserve Risk Significant Asset by tenting and providing temporary heat. CER: More tenting….	
		U4 EDG Wet pipe and hose reel HS-04-09	Preserve Risk Significant Asset by tenting and providing temporary heat. Also provide protection for hose reel by providing trickle flow by opening drain.	

Acronym / #	System Name	Overall Strategy		
			CER: More tenting…. CER: Trickle flow acceptable?	
		TB Operating Floor Hose Reels	Preserve capability by providing trickle flow to drain. Protect risers by enclosing TB with tarps. CER: More tenting….	
		TB ground and Mezzanine level Hose Reels	Protected by enclosing TB with tarps. CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.	
		Out Bldgs. with Exterior Risers RCA Access, EPU Warehouse, Central Storage Facility, Cafeteria, Simulator, Maintenance Facility B, Fitness Center	Preserve header by providing trickle flow within buildings by opening drain valves. CER: Trickle flow acceptable?	
		Fire Watches shall be posed as required to address the above strategies. See General Note pertaining to vents, drains and instrumentation dead legs (end of table).		
-- / 090	H_2 & CO_2 Supply	• Gases do not require freeze protection.		
IAS / 013	Instrument Air	• The desiccant dryers are capable of lowering the dewpoint of the instrument air to -40°F. • Consistent with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," (Attachment 1) "Blow Down of Instrument and EDG Starting Air Lines to Remove any Trapped Water," Blowdown designated valves and those additionally identified instrument and station air receivers and drain locations (listed in the detailed system spreadsheet and shown on the marked-up P&IDs) at least once every 24 hours. **FPL Recommendations:** CER: Accept this approach.		
ICW / 019	Intake Cooling Water	• Large bore ICW piping is normally flowing at approximately 50°F (minimum). No additional action required as long as flow is maintained. • Since one, two or three ICW pumps can be normally operating, cycle ICW pumps periodically to ensure motor lubrication and flow through the pump branch lines.		

Acronym / #	System Name	Overall Strategy
		FPL Recommendations: MC: Sounds reasonable CER: add to cold weather procedure. • ICW strainers Consistent with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," cycle POV-*-4882 and POV-*-4883 (ICW TO THE TPCW HEAT EXCHANGERS INLET ISOLATION VALVES) at least once per shift. **FPL Recommendations:** CER: Accept this approach. • Non-Safety-Related Turbine Cooling Water branch piping is located just outside the Turbine Building and assumed to be tarped or tented to conserve area heat. Supplemental heating to be included as necessary at outlying area and at tarping gaps. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. • The ICW strainers (BS-3-1400/1401 and BS-4-1402/1403) are located in the CCW Room, the overhead grating and access doorway shall be tented with supplemental head added (See CCW). **FPL Recommendations:** CER: Pull comments down. • The ICW strainers (3F228A/B and 4F228A/B/C) are also located in the CCW Room, the overhead grating and access doorway shall be tented with supplemental head added (See CCW). **FPL Recommendations:** CER: Is this tarping practical?

Acronym / #	System Name	Overall Strategy
		• ICW Supplemental Cooling is no longer installed. (Drawing 5610-M-3019 still reflects the installation of the chillers and associated piping.) See General Note pertaining to vents, drains and instrumentation dead legs (end of table).
MSS / 072	Main Steam	• Tarp the TB exterior sides and add space heaters strategically located to maintain area temperatures above freezing. CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. AK: what are we trying to protect? Most steam lines in service and all steam lines have steam traps.
-- / 065	N_2 & H_2	• Gases do not require freeze protection
PMUS / 020	Primary Water Makeup	• No protection for PWSTs required (not susceptible to freezing over 4 days with the current temperature profile). • Continuously provide water from WTP to PWSTs to protect main piping as able. Otherwise, will need to provide protection via heat trace and/or insulation to maintain ability to fill the PWSTs from the WTP. **FPL Recommendations:** CER: OPS – is this possible or do we need to HT&I? AK: Ops call but I think feasible • Continuously or periodically run Primary Water Pumps to prevent freezing of main piping. (swap pumps as needed) **FPL Recommendations:** CER: OPS – is this possible or do we need to HT&I? AK: yes run pumps • Tent over the Gas Transfer Membrane (GTM) Deaerator Skids and provide space heating. If not required for up to four days, can bypass skid. **FPL Recommendations:** CER: Is this practical? Is a permanent insulated enclosure more practical?

Acronym / #	System Name	Overall Strategy
		AK: don't think we use anymore. Ops call • Dead Legs (Vents, Drains, Instruments, cross-ties, etc.) options: 1. Meets Temp, Length, & Orientation criteria for not freezing, or 2. Open isolation valves for controlled trickle flow to prevent freezing as able, or 3. Heat Trace & Insulate **FPL Recommendations:** CER: HT&I all dead legs per the screening criteria. • Pipe Tunnel from Outside near PWSTs to CCW Pump Rooms 1. se space heater & blower with hose to heat the Tunnel. - Assume watertight seals from tunnel to pens to Aux Bldg. - Cover access openings into tunnel 2. Insulate and Heat Trace **FPL Recommendations:** CER: I think HT&I for this. We are confused what this is exactly…need more clarity. Outside building? AK: these are cover trenches, outside building and yes HTI • CCW Pump Room – Tarp the overhead grating and access doorways of the CCW Rooms to minimize air infiltration to grade level piping and components. Add supplemental heating to address dead legs as appropriate **FPL Recommendations:** CER: See comments above regarding CCW grating and doorways. • Aux Bldg – Utilize global strategy for protection of all systems/components in the building to maintain temperature above 39°F for other systems. 1. Existing Building Temperature maintained due to thermal mass of concrete floors & walls along with closed doors. 2. Current Cold Weather Procedure 0-ONOP-103.2 actions for HVAC operation and existing space heater deployment. 3. Implement supplemental heating (space heaters) as needed.

Acronym / #	System Name	Overall Strategy
		FPL Recommendations: CER: Accept – no comments. Have we ever had to do this before? Not that I am aware • Containment assumed to be acceptable with no additional heating due to reactor operation. • Fuel Handling Building (FHB) & Cask Handling Facility - Utilize global strategy for protection of all systems/components in the building to maintain temperature. SFP should be sufficient to provide heating for building without any supplemental. **FPL Recommendations:** CER: Global strategy? Agree that we don't need to act in the spent fuel building. BD: Check the primary water to spent fuel pool lines – must stay operable. • Auxiliary Building Roof – no protection required, downstream of critical system needs and will not adversely affect the system. • Radwaste Building – not critical to protect but can protect building via global strategy via space heaters. **FPL Recommendations:** CER: Accept – no comments. Have we ever had to do this before? See General Note pertaining to vents, drains and instrumentation dead legs (end of table).
-- /026	Radwaste Bldg. Ventilation/HVAC	• Non-Safety-Related • Radwaste Building HVAC is cooled by split DX air conditioning (AC) units. • AC units only active on demand. • Cycle supply and return flow paths and supply fans to maintain Radwaste Building ventilation temperature.
RCS / 041	Reactor Coolant	• Reactor Coolant System (RCS) fully installed within Containment and the Auxiliary Building: o Aux Bldg – Utilize global strategy for protection of all systems/components in the building to maintain temperature above 39°F.

Acronym / #	System Name	Overall Strategy
		▪ Existing Building Temperature maintained due to thermal mass of concrete floors & walls along with closed doors. ▪ Current Cold Weather Procedure 0-ONOP-103.2 actions for HVAC operation and existing space heater deployment. ▪ Implement supplemental heating (space heaters) as needed. **FPL Recommendations:** CER: Accept – no comments. Have we ever had to do this before? o Containment assumed to be acceptable with no additional heating due to reactor operation.
RHR / 050	Residual Heat Removal	• RHR fully installed within Containment and the Auxiliary Building: o Aux Bldg – Utilize global strategy for protection of all systems/components in the building to maintain temperature above 39°F. ▪ Existing Building Temperature maintained due to thermal mass of concrete floors & walls along with closed doors. ▪ Current Cold Weather Procedure 0-ONOP-103.2 actions for HVAC operation and existing space heater deployment. ▪ Implement supplemental heating (space heaters) as needed. **FPL Recommendations:** CER: Accept – no comments. Have we ever had to do this before? o Containment assumed to be acceptable with no additional heating due to reactor operation.
SIS / 062	Safety Injection	• RWSTs – Need to maintain temperature of >39°F of tanks 1. Zachry perform simple model to determine if any additional protection is necessary based on tank size, min starting temperature, and weather profile. 2. FPL investigate cost to insulate the tanks. If cost effective, Zachry can develop a simplistic model of tank to verify this strategy will maintain temperature without additional measures. 3. Refueling Water Purification Pump and Spent Fuel Pool piping (not a current strategy, and unclear how much heat would be added via this path).

Acronym / #	System Name	Overall Strategy
		4. Temporary skid pump/heater between pump connections (available currently on U3 with the R.O. Silica Removal Skid connections, but not on U4). 5. Add immersion heater(s) to RWSTs. • Critical Piping/Instrumentation Outside at RWST 1. Insulate and heat trace. **FPL Recommendations:** CER: Agree to HT&I 2. Additional protection for MOVs may be required (input from FPL MOV engineer(s)). **FPL Recommendations:** CER: Protection for the MOVs not necessary under postulated conditions. AK: SR MOV's – has grease been evaluated for these cold weather conditions? • Pipe Tunnels from Outside near RWSTs to CCW Pump Rooms and HHSI Pump Room 1. Use space heater & blower with hose to heat the Tunnels. - Assume watertight seals from tunnel to pens to Aux Bldg. - Cover access openings into tunnel 2. Insulate and Heat Trace **FPL Recommendations:** CER: I think HT&I for this. CER: We are confused what this is exactly…need more clarity. Outside building? AK: covered above where you ask same questions. HTI • CCW Pump Room – Tarp the overhead grating and access doorways of the CCW Rooms to minimize air infiltration to grade level piping and components. Add supplemental heating to address dead legs as appropriate **FPL Recommendations:** CER: What are we protecting? Do we fabricate a hard cover for the grating as opposed to tarps? This sounds difficult. Need a Plan B.

Acronym / #	System Name	Overall Strategy
		• HHSI Pump Room – Cover the louvered doors to minimize air infiltration to grade level piping and components. Doors go to CCW Pump Rooms, which are planned to be globally heated, so supplemental heating should not be required, but if necessary, add supplemental heating. • Aux Bldg – Utilize global strategy for protection of all systems/components in the building to maintain temperature above 39°F. 1. Existing Building Temperature maintained due to thermal mass of concrete floors & walls along with closed doors. 2. Current Cold Weather Procedure 0-ONOP-103.2 actions for HVAC operation and existing space heater deployment. 3. Implement supplemental heating (space heaters) as needed. **FPL Recommendations:** CER: Accept – no comments. Have we ever had to do this before? • Containment assumed to be acceptable with no additional heating due to reactor operation. See General Note pertaining to vents, drains and instrumentation dead legs (end of table).
SIS / 064	Safety Injection	• SI Accumulators and associated piping fully located inside of Containment and assumed to be acceptable with no additional heating due to reactor operation.
-- / 036	Sample System - NSSS	• Reactor Building - Typically, the Containment bulk ambient temperature during operation is between 50 and 120°F. No additional action required.
SSS / 032	Sample System - Secondary	• Auxiliary Building - In accordance with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," secure AB Supply and Exhaust Fans and add electric heater to maintain ambient temperature $\geq$ 72°F. No additional action required. **FPL Recommendations:** CER: Accept – no comments. Have we ever had to do this before? • Turbine Building - Tarp the exterior sides and add space heaters strategically located to maintain area temperatures above freezing. No additional action required. **FPL Recommendations:**

Acronym / #	System Name	Overall Strategy
		CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.
-- / 011	Screen Wash	• Screen Wash pumps and pump discharge piping are located within the intake canals and require no additional Winterization precautions. The above grade piping and instrumentation will be tented on the West sides of the associated traveling water screen with supplemental heat added as necessary. **FPL Recommendations:** CER: Is this practical? AK: Not practical and existing screen wash pumps are now back-up fire pumps (no action). Actual screen wash pumps are part of traveling screen assembly TEAM: Screen wash will be run intermittently. Review instrumentation for vulnerability. No protection needed for abandoned screen wash pumps.
SWLU / 082	Secondary Wet Layup	• Not required for power operation or license condition; only used during Refueling Outages.
SWS / 012	Service Water	• Provide continuous or periodic flow from the Miami Dade Water and Sewer Authority to both Raw Water Tanks (RWT) to prevent main line freezing. **FPL Recommendations:** CER: Any issues with this? Can water and sewer authority support? AK: we just overflow the tank into the canal • No protection for RWTs required. Tanks are sufficient size to prevent freezing for 4 days over the weather profile. • No protection required for the Raw Water Pumps and associated piping. • Maintain operation of at least one Service Water pump to allow for backup supply from the RWTs to the WTP. No protection required for the main piping between discharge from the RWTs, through the pumps and up to the branch connection to the WTP; however, protection for dead legs for this piping is required. Either can designate one Service Water pump and piping for protection of dead legs or protect dead legs on all four SW pump flow paths.

Acronym / #	System Name	Overall Strategy
		FPL Recommendations: CER: Preference? • Protect standby flow path from the discharge branch for the SW pumps to the WTP. This piping will not be flowing since well water is used as the primary feed to the WTP. However, Raw Water from Miami Dade (via RWTs and SW Pumps) is the backup supply. • No protection required for the piping from the SW pumps to the fire loops. This is a backup and is not utilized per the PTN FP Engineers. • No protection for the Raw Water Supply Manifold • No protection required for the SW piping supplied to the remainder of the site. This starts on 5610-M-3016 Sh. 2 at the 8" branch for Valve 10-1063 and continues on to 5610-M-3012 Sh. 1-4. The full system in NNS and doesn't serve any systems or buildings that are necessary to maintain power operation or cause a Tech Spec action. The majority of services are for building connections, systems that require manual action, and abandoned connections. Two items of note that utilize SW are: 1. Backup lube water supply to the Circulating Water System Pumps. No protection required for the backup system. 2. Supply to the Vacuum Pump Seals for the GTM Skid for PMUS. The GTM skid is not required and if it fails due to lack of SW, the GTM skid can be bypassed so the PMUS can still provide water to the site as required. • Dead Legs (Vents, Drains, Instruments, cross-ties, etc.) – between Miami Dade and RWTs and from RWTs to the WTP connection only: o Meets Temp, Length, & Orientation criteria for not freezing, or o Open isolation valves for controlled trickle flow to prevent freezing as able, or o Heat Trace & Insulate **FPL Recommendations:** CER: Agree See General Note pertaining to applicable vents, drains and instrumentation dead legs (end of table).
-- / 034	Spent Fuel Pool & New Fuel Storage Area Ventilation	• Non-Safety-Related

Acronym / #	System Name	Overall Strategy
		• Spent Fuel Pool & New Fuel Storage Area HVAC is normally not provided with supplied cooling flow. Temporary air conditioning is supplied to the Cask Handling Area during ISFSI campaigns only. • The SFP is enclosed by Fuel Handling Building. Decay heat will maintain pool above freezing.
SFPC / 033	Spent Fuel Pool Cooling	• The SFP is enclosed by Fuel Handling Building. Decay heat will maintain pool above freezing. • Protection required for the Refueling Water Purification Pump that is located outside near the RWSTs **FPL Recommendations:** CER: Recommend permanent insulated enclosure. AK: very limited space but needs to be of sufficient size for maintenance to access and replace components TEAM: Review if there exists a vulnerability. Talk to Mike Coen. • There's one section of 10" pipe from the Supplemental Spent Fuel Pool Heat Exchanger to the SFP that is outside. As long as flow is maintained through this pipe, no protection is required. If the piping is not flowing, then protection will be required (heat trace/insulation) or the piping should be drained. **FPL Recommendations:** CER: OPS – can we ensure this is always flowing? If so, does it need to be written in cold weather protection procedure? AK: Ops will need to align to back up, supplemental HX
SGWLU / 078	Steam Generator Wet Layup	• Not required for power operation or license condition. In addition, all of the piping is within the TB. **FPL Recommendations:** CER: What about asset protection? Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.
-- / 070	Turbine Building Ventilation	• Non-Safety-Related

PTN Phase 1 System Walkdown Evaluation Summary

Acronym / #	System Name	Overall Strategy
		• Turbine Building Load Centers and Switchgear Rooms are normally provided with chilled water supplied cooling flow. • AC units only active on demand. • Chiller packages are located on the Turbine Building operating deck – Drain chilled water loop in support of cold weather operations (below 32°F). **FPL Recommendations:** CER: Agree. Any issues with this?
-- / 087	Turbine Lube Oil	• Do nothing. The system is oil filled and is not subject to freezing. No additional actions to mitigate the freezing event will be taken.
-- / 076	Turbine Plant Chemical Addition	Chemicals: • Ethanolamine (ETA) freezing point 10 - 11°C (50 - 52°F) – Zachry recommends temperature-controlled storage of sufficient quantity of ETA to last the 96-hour cold weather period. **FPL Recommendations:** CER: Do we have the storage capacity? Do we need to add to the cold weather procedure? AK: emersion heater? AK: how do we want to address ETA pumps and tubing? TEAM: Pumps and tubing will be addressed by the larger review of the TB. • Hydrazine Hydrate 55% freezing point -65°C (-85°F) (No action required)
TPCW / 008	Turbine Plant Cooling Water	• Large bore TBCW piping is normally flowing at approximately 60°F (minimum). No additional action required as long as flow is maintained. • Turbine Building - Tarp the exterior sides and add space heaters strategically located to maintain area temperatures above freezing. While the major TPCW components (pumps and heat exchangers) are located outside the confines of the Turbine Building, Zachry considers it feasible to include the pumps and associated piping within the planned tarping. If this concept is not feasible, small bore vents, drains, and instrumentation dead legs shall be addressed consistent with the General Note at the end of this table. **FPL Recommendations:**

Acronym / #	System Name	Overall Strategy
		CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. AK: Ops to run two pumps • The Turbine Plant Cooling Water Heat Exchangers protrude too far from the confines of the Turbine Building to be included in the planned tarping of the Turbine Building. Therefore, small bore vents, drains, and instrumentation dead legs shall be addressed consistent with the General Note at the end of this table. **FPL Recommendations:** CER: Agree • The Turbine Plant Cooling Water Surge Tank and associated instrumentation are located in the Main Steam Platform area. This area is generally warm. Based on cooler temperature evaluation, the piping and level instruments should be heat traced and insulated. As an alternative, tarp can be placed on the inside of the missile barrier to keep cold wind off the tank and associated components. **FPL Recommendations:** CER: HT&I as opposed to tarping. • While the Turbine Lube Oil Coolers are located outside the confines of the Turbine Building (west), Zachry considers it feasible to include the heat exchangers and associated piping within the planned TB tarping. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. • The remainder of the TPCW piping and components are located within the confines of the Turbine Building and, as such, will be protected by the planned tarping and heat retention. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed.

Acronym / #	System Name	Overall Strategy
		• In accordance with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," to maintain EHC temperature - use 3/4-NOP-086 to throttle TPCW and run a second High Pressure EHC Pump as needed. **FPL Recommendations:** CER: Agree. See General Note pertaining to vents, drains and instrumentation dead legs (end of table).
-- / 089	Turbine Systems - Steam	• Tarp the TB exterior sides and add space heaters strategically located to maintain area temperatures above freezing. **FPL Recommendations:** CER: Assess for use of Heat Trace and Insulation as TB will NOT be enclosed. AK: not needed. System 89 is the turbine steam system. In operation and has steam traps.
-- / 108	U4 EDG Bldg. Vent	• Safety-Related ventilation fans (4V65A/B, 4V63A/B, and 3V65A/B) supply outside air to the Control Panel and Switchgear Rooms. Temperature Indicating Switches (TIS) control fan operation. Fans are normally OFF during cold weather operation. No action required. • Non-Safety-Related direct expansion (DX) cooling units (supply) and room fans (exhaust) are provided. • Control Panel and Switchgear Rooms ventilation is initiated by TIS. Air Handling Units (AHUs) are normally OFF during cold weather operation. No action required. • Diesel Generator Rooms are normally exhausted @ 5000 cfm. • Electric water heater and lube oil Soak Down Pump normally operating to maintain EDG temperature. • In accordance with Procedure 0-ONOP-103.2, "Cold/Hot Weather Conditions – Turkey Point Plant," "Space heater placement is intended to raise the EDG Room temperature." and "Every 4 hours, CHECK EDG Lube Oil Temperature is greater than 100°F" **FPL Recommendations:** CER: Agree

Acronym / #	System Name	Overall Strategy
		• Per Procedure 0-ONOP-103.2, "Blow Down of Instrument and EDG Starting Air Lines to Remove any Trapped Water". • **FPL Recommendations:** CER: Agree
WDS / 061	Waste Disposal	All piping and components located in the Auxiliary Building, Radwaste Building, or associated tunnel between the two. • Aux Bldg – Utilize global strategy for protection of all systems/components in the building to maintain temperature above 39°F. 1. Existing Building Temperature maintained due to thermal mass of concrete floors & walls along with closed doors. 2. Current Cold Weather Procedure 0-ONOP-103.2 actions for HVAC operation and existing space heater deployment. 3. Implement supplemental heating (space heaters) as needed. • Radwaste Building – protect building via global strategy via space heaters. **FPL Recommendations:** CER: I am fine with utilizing supp heat for the Aux and Radwaste Bldgs. Have we ever had to do this in the past? AK:we no longer use the waste disposal systems
WTP / 021	Water Treatment Plant	• Provide continuous or periodic flow from the Miami Dade Water and Sewer Authority to both Raw Water Tanks to prevent main line freezing. **FPL Recommendations:** CER: Any issues with this? Will the water authority be able to support? • Evoqua Vendor Operated WTP Skid • Maintain flow through the main system. This will prevent concerns with the main loop piping. **FPL Recommendations:** CER: Agree, is this in the current cold weather procedure or do we need to add it?Good

Acronym / #	System Name	Overall Strategy
		• Work with Evoqua to drain dead headed/legged sections of pipe as necessary to prevent freezing. **FPL Recommendations:** CER: I thought we were HT&I these portions? • Install space heaters in the SEAVANs where WTP equipment is installed as necessary if portions/trains/loops are not running. **FPL Recommendations:** CER: Agree with this approach. • Work with Evoqua personnel for mitigation of the WTP as necessary. **FPL Recommendations:** CER: What portion of the piping/components do we need to coordinate on? • Maintain flow out of the WTP. **FPL Recommendations:** CER: ? AK: I think piping to wtp is buried • Dead Legs (Vents, Drains, Instruments, cross-ties, etc.) options: o Meets Temp, Length, & Orientation criteria for not freezing, or o Open isolation valves for controlled trickle flow to prevent freezing as able, or o Heat Trace & Insulate **FPL Recommendations:** CER: Agree.

PTN Phase 1 System Walkdown Evaluation Summary

Acronym / #	System Name	Overall Strategy
		• Circulating Water Pump Lube Water Storage Tank – no protection for the tank is necessary to prevent freezing. Maintain flow as necessary to provide lube water to the CWPs to maintain operation. Protect dead legs for the piping and the tank. **FPL Recommendations:** CER: This needs to be more pointed. See General Note pertaining to vents, drains and instrumentation dead legs (end of table).

General Note - Heat trace and insulate all liquid filled vents, drains, dead legs, and instrument connections that do not meet the temperature, length, and orientation criteria to preclude freezing (0-2% freezing assumed for Safety-Related piping and roughly 25% for Non-Safety-Related piping) or are contained within some other remediation strategy.

ZACHRY

Attachment N

PTN Phase 2 TB Component Freeze Protection Evaluation

ID	Plant	Unit	PTN System	P&ID	Seg	Component/Equipment	Component	Pipe / Tube Diameter (NPS)	Length (ft)	Orientation	Already Insul	Protect	Notes	Process Temp (F)	Process Temperature Notes	Adjusted Orientation	Orientation Adjustment Notes	Dia Used	Rounded Temp (F)	Max Allowed Length (feet)	Branch Line Protected	Analysis Results	Final Protection Change	Action Required
2053	PTN	4	089	5614-M-3089, SH 2	1	Pressure Transmitter (PT) teed off of 4" pipe near HP Turb gland seal inlet. PT instrument has 1/2" tubing. PT has local/remote indication and control room alarm on low pressure.	PT-4-3417	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3708	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2055	PTN	4	089	5614-M-3089, SH 2	1	Pressure Indicator (PI) w/ 3/8" and 1/2" instrument tubing.	PI-4-1120	0.375	N/A	N/A	N/A	N/A		523		N/A		0.375	400		No	N/A		
2059	PTN	4	089	5614-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	4-90-020	2.000	N/A	N/A	N/A	N/A		523		N/A		2.000	400		No	N/A		
2059	PTN	4	089	5614-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	4-90-021	2.000	N/A	N/A	N/A	N/A		523		N/A		2.000	400		No	N/A		
2059	PTN	4	089	5614-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	4-90-022	2.000	N/A	N/A	N/A	N/A		523		N/A		2.000	400		No	N/A		
2059	PTN	4	089	5614-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	4-90-023	2.000	N/A	N/A	N/A	N/A		523		N/A		2.000	400		No	N/A		
2059	PTN	4	089	5614-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	4-90-024	1.500	N/A	N/A	N/A	N/A		523		N/A		1.500	400		No	N/A		
2059	PTN	4	089	5614-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	4-90-025	2.000	N/A	N/A	N/A	N/A		523		N/A		2.000	400		No	N/A		
2059	PTN	4	089	5614-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	4-90-084	2.000	N/A	N/A	N/A	N/A		523		N/A		2.000	400		No	N/A		
2059	PTN	4	089	5614-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x6) from Wye strainers	4-90-085	1.500	N/A	N/A	N/A	N/A		523		N/A		1.500	400		No	N/A		
2057	PTN	4	089	5614-M-3089, SH 2	1	relief valve (25 psig) and rupture disc (100 psig)	RV-4-3438	6.000	N/A	N/A	N/A	N/A		523		N/A		Not Analyzed	400		No	N/A		
2057	PTN	4	089	5614-M-3089, SH 2	1	relief valve (25 psig) and rupture disc (100 psig)	RVD-4-3439	6.000	N/A	N/A	N/A	N/A		523		N/A		Not Analyzed	400		No	N/A		
2063	PTN	4	089	5614-M-3089, SH 2	4	3" relief valve teed off the 4" main line (x2)	RV-4-417	3.000	N/A	N/A	N/A	N/A		523		N/A		3.000	400		No	N/A		
2063	PTN	4	089	5614-M-3089, SH 2	4	3" relief valve teed off the 4" main line (x2)	RV-4-418	3.000	N/A	N/A	N/A	N/A		523		N/A		3.000	400		No	N/A		
2065	PTN	4	089	5614-M-3089, SH 2	4	3/4" drains (x2) from Wye strainers	4-90-049	0.750	N/A	N/A	N/A	N/A		523		N/A		0.750	400		No	N/A		
2066	PTN	4	089	5614-M-3089, SH 2	5	Pipe size not shown. LP turbine water trough drain to "Waste Drain Near Bowser Filter"	NOT PROVIDED	NOT PROVIDED	N/A	N/A	N/A	N/A		400		N/A			400		No	N/A		
2067	PTN	4	089	5614-M-3089, SH 2	6	1" loop seal drains from LP Turbine gland seal exhaust to equipment drain.	NOT PROVIDED	1.000	N/A	N/A	N/A	N/A		400		N/A		1.000	400		No	N/A		
2069	PTN	4	089	5614-M-3089, SH 2	7	Capped pipe on 6" line	NOT PROVIDED	6.000	N/A	N/A	N/A	N/A		400		N/A		Not Analyzed	400		No	N/A		
2070	PTN	4	089	5614-M-3089, SH 2	8	Temporary Instrument port: TX	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2075	PTN	4	089	5614-M-3089, SH 2	Gland Steam Condenser	Located on top of Gland steam condenser which is located on east side of condenser protected from wind. Local heat loss from GS will prevent freezing.	PI-4-3709	Not provided	N/A	N/A	N/A	N/A		600		N/A			400		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2077	PTN	4	089	5614-M-3089, SH 2	HP Turbine	Temperature Element (TE x5), Pressure indication (PI x4), 1/2" tubing and open root valve.	PI-4-3728A	0.500	N/A	N/A	N/A	N/A		440		N/A		0.500	400		No	N/A		
2077	PTN	4	089	5614-M-3089, SH 2	HP Turbine	Temperature Element (TE x5), Pressure indication (PI x4), 1/2" tubing and open root valve.	PI-4-3728B	0.500	N/A	N/A	N/A	N/A		440		N/A		0.500	400		No	N/A		
2077	PTN	4	089	5614-M-3089, SH 2	HP Turbine	Temperature Element (TE x5), Pressure indication (PI x4), 1/2" tubing and open root valve.	PI-4-3729A	0.500	N/A	N/A	N/A	N/A		440		N/A		0.500	400		No	N/A		
2077	PTN	4	089	5614-M-3089, SH 2	HP Turbine	Temperature Element (TE x5), Pressure indication (PI x4), 1/2" tubing and open root valve.	PI-4-3729B	0.500	N/A	N/A	N/A	N/A		440		N/A		0.500	400		No	N/A		
2078	PTN	4	089	5614-M-3089, SH 2	HP Turbine	4-90-054	4-90-054	0.750	N/A	N/A	N/A	N/A		440		N/A		0.750	400		No	N/A		
2078	PTN	4	089	5614-M-3089, SH 2	HP Turbine	1/2" drains (closed) on PI insturment lines. (x4)	4-90-090	0.500	N/A	N/A	N/A	N/A		440		N/A		0.500	400		No	N/A		
2078	PTN	4	089	5614-M-3089, SH 2	HP Turbine	1/2" drains (closed) on PI insturment lines. (x4)	4-90-091	0.500	N/A	N/A	N/A	N/A		440		N/A		0.500	400		No	N/A		
2078	PTN	4	089	5614-M-3089, SH 2	HP Turbine	1/2" drains (closed) on PI insturment lines. (x4)	4-90-092	0.500	N/A	N/A	N/A	N/A		440		N/A		0.500	400		No	N/A		
2078	PTN	4	089	5614-M-3089, SH 2	HP Turbine	1/2" drains (closed) on PI insturment lines. (x4)	4-90-093	0.500	N/A	N/A	N/A	N/A		440		N/A		0.500	400		No	N/A		
2079	PTN	4	089	5614-M-3089, SH 2	LP Turbine North & South	TC (Temperature controller) one on each LP Turbine, actuates Exhaust hood sprays to regulate LP turbine exhaust temp.	TC-4-3401	0.500	N/A	N/A	N/A	N/A		366		N/A		0.500	360		No	N/A		
2079	PTN	4	089	5614-M-3089, SH 2	LP Turbine North & South	TC (Temperature controller) one on each LP Turbine, actuates Exhaust hood sprays to regulate LP turbine exhaust temp.	TC-4-3400	0.500	N/A	N/A	N/A	N/A		366		N/A		0.500	360		No	N/A		
2080	PTN	4	089	5614-M-3089, SH 2	LP Turbine North & South	Temperature Element (1 per turbine), Temperature indicator (1 per turbine),	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2081	PTN	4	089	5614-M-3089, SH 2	LP Turbine North & South	Temporary Instrument ports: PX (x4 on each turbine) with closed root valve	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2019	PTN	4	089	5614-M-3089, SH 1	1	1", 1 1/2" instrument line to Pressure Transmitter (x2) (for steam break protection and control; control of steam dump valves)	PT-4-446	0.500	22.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	Heat trace	N
2019	PTN	4	089	5614-M-3089, SH 1	1	1", 1 1/2" instrument line to Pressure Transmitter (x2) (for steam break protection and control; control of steam dump valves)	PT-4-447	0.500	22.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	Heat trace	N
2020	PTN	4	089	5614-M-3089, SH 1	1	1", 1 1/2" instrument line to Pressure Indication & Transmitter (x4) (Pressure reading controls turbine control valve position based on turb inlet pressure; control room indication of HP turbine supply pressure)	PIT-4-1604A	1.000	28.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	verify location; if in doghouse do not heat trace	Y
2020	PTN	4	089	5614-M-3089, SH 1	1	1", 1 1/2" instrument line to Pressure Indication & Transmitter (x4) (Pressure reading controls turbine control valve position based on turb inlet pressure; control room indication of HP turbine supply pressure)	PIT-4-1604B	1.000	32.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	verify location; if in doghouse do not heat trace	Y
2020	PTN	4	089	5614-M-3089, SH 1	1	1", 1 1/2" instrument line to Pressure Indication & Transmitter (x4) (Pressure reading controls turbine control valve position based on turb inlet pressure; control room indication of HP turbine supply pressure)	PIT-4-1604C	1.000	32.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	verify location; if in doghouse do not heat trace	Y
2020	PTN	4	089	5614-M-3089, SH 1	1	1", 1 1/2" instrument line to Pressure Indication & Transmitter (x4) (Pressure reading controls turbine control valve position based on turb inlet pressure; control room indication of HP turbine supply pressure)	PIT-4-1604D	1.000	30.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	verify location; if in doghouse do not heat trace	Y
2026	PTN	4	089	5614-M-3089, SH 1	2	Temporary Instrument ports: PX (x2) SN (x1) with closed root valve	PX-4-1416 4-10-154	0.500	1.0	H,D	N	HT		523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	short run; high process temp; no protection required	N
2026	PTN	4	089	5614-M-3089, SH 1	2	Temporary Instrument ports: PX (x2) SN (x1) with closed root valve	PX-4-1418 4-10-155	0.500	1.0	H,D	N	HT		523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	short run; high process temp; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2026	PTN	4	089	5614-M-3089, SH 1	2	Temporary Instrument ports: PX (x2) SN (x1) with closed root valve	SN-4-1403 4-10-116	0.500	1.0	H,D	N	HT	DIA ASSUMED BASED ON SILILAR	523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	short run; high process temp; no protection required	N
2028	PTN	4	089	5614-M-3089, SH 1	2	1/2" instrument tubing w/ closed root valve (no instrument) (x2)	4-10-146	0.500	1.0	H,D	N	HT		523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	short run; high process temp; no protection required	N
2049	PTN	4	089	5614-M-3089, SH 1	2	TE (temperature element) (x2 per MSR) MSR 3A, 3B, 3C, and 3D	N/A	N/A	N/A	N/A	N/A	N/A	All are either in thermowell or direct emersion. No process fluid is exposed. Flow will prevent freezing	523		N/A			400		No	N/A		
2025	PTN	4	089	5614-M-3089, SH 1	2	PI and PT instruments 1/2" instrument tubing	PT-4-1605	0.375	30.0	H,D	N	HT	On HP front stand, estimated length since inaccessable from below. Assumed dia based on visual. Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2050	PTN	4	089	5614-M-3089, SH 1	2	PI (pressure indicator) (x2 per MSR) 1" and 3/8" instrument tube MSR 3A, 3B, 3C, and 3D	PI-4-1410	0.375	12.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2050	PTN	4	089	5614-M-3089, SH 1	2	PI (pressure indicator) (x2 per MSR) 1" and 3/8" instrument tube MSR 3A, 3B, 3C, and 3D	PI-4-1411	0.375	12.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2050	PTN	4		5614-M-3089, SH 1	2	PI (pressure indicator) (x2 per MSR) 1" and 3/8" instrument tube MSR 3A, 3B, 3C, and 3D	PI-4-1412	0.375	12.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2050	PTN	4	089	5614-M-3089, SH 1	2	PI (pressure indicator) (x2 per MSR) 1" and 3/8" instrument tube MSR 3A, 3B, 3C, and 3D	PI-4-1413	0.375	12.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-231	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-232	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-233	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-234	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2036	PTN	4		5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-235	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-236	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-237	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-238	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-239	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2036	PTN	4	089	5614-M-3089, SH 1	3	1/2" vent (closed)(x8) (from 4 MSRs to 2 LP Turbines)	4-10-245	0.500	1.0	TV	N	HT		523		TV		0.500	400	8.5	Yes	No Protection Required		
2032	PTN	4	089	5614-M-3089, SH 1	3	PIT (x3) (pressure indicator and transmitter) (input to Turbine Control System)	PIT-4-3639A	0.500	50.0	H,D	N	HT	Transitter in Turbine skirt but tubing outside. Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	HT	N
2032	PTN	4	089	5614-M-3089, SH 1	3	PIT (x3) (pressure indicator and transmitter) (input to Turbine Control System)	PIT-4-3639B	0.500	50.0	H,D	N	HT	Transitter in Turbine skirt but tubing outside. Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	HT	N
2032	PTN	4	089	5614-M-3089, SH 1	3	PIT (x3) (pressure indicator and transmitter) (input to Turbine Control System)	PIT-4-3639C	0.500	50.0	H,D	N	HT	Transitter in Turbine skirt but tubing outside. Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	HT	N
2030	PTN	4	089	5614-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	PI-4-3405	0.750	1.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	High process temp; short run; no protection required	N
2030	PTN	4	089	5614-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	PI-4-3406	0.750	1.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	High process temp; short run; no protection required	N
2030	PTN	4	089	5614-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	PI-4-3639	0.750	1.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	High process temp; short run; no protection required	N
2030	PTN	4	089	5614-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	PT-4-1600	0.750	50.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
2030	PTN	4	089	5614-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	PT-4-1601	0.750	50.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
2033	PTN	4	089	5614-M-3089, SH 1	3	Temporary Instrument ports: TX (x4) and tubing (no root valve - thermowell?) downstream of reheat stop valves	N/A	N/A	N/A	N/A	N/A	N/A	All are either in thermowell or direct emersion. No process fluid is exposed. Flow will prevent freezing	523		N/A			400		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2030	PTN	4	089	5614-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	PI-4-1511	0.375	40.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2030	PTN	4	089	5614-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	PI-4-1513	0.375	40.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2030	PTN	4	089	5614-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)	PI-4-1514	0.375	40.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2050	PTN	4	089	5614-M-3089, SH 1	3	PI (pressure indicator) (x2 per MSR) 1" and 3/8" instrument tube MSR 3A, 3B, 3C, and 3D	PI-4-1512	0.375	40.0	H,D	N	HT	Includes all vents, drains and local indicators in line.	523		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2038	PTN	4	089	5614-M-3089, SH 1	5	PI and PT instruments and instrument tubing	PI-4-3403	0.375	3.0	H,U	N	HT	On HP front stand, estimated length since inaccessable from below. Assumed dia based on visual	523		H	Upward bend not credited for conservatism	0.375	400	4.5	Yes	No Protection Required		
2038	PTN	4	089	5614-M-3089, SH 1	5	PI and PT instruments and instrument tubing	PT-4-1603	0.375	30.0	H,U	N	HT	On HP front stand, estimated length since inaccessable from below. Assumed dia based on visual. Includes all vents, drains and local indicators in line.	523		H	Upward bend not credited for conservatism	0.375	400	4.5	No	HT	verify location; if in doghouse do not protect	Y
2039	PTN	4	089	5614-M-3089, SH 1	5	Temporary Instrument ports: PX (x3) (closed root valve)	PX-4-3400 4-90-027	0.500	1.0	H,D	N	HT		523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	short run; high process temp-no protection required	N
2039	PTN	4	089	5614-M-3089, SH 1	5	Temporary Instrument ports: PX (x3) (closed root valve)	PX-4-3401 4-90-028	0.500	1.0	H,D	N	HT		523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	short run; high process temp-no protection required	N
2039	PTN	4	089	5614-M-3089, SH 1	5	Temporary Instrument ports: PX (x3) (closed root valve)	PX-4-3402 4-90-029	0.500	1.0	H,D	N	HT		523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	short run; high process temp-no protection required	N
1975	PTN	4	084	5614-M-3084, SH 1	2	Piping [4-6"-2-C] Valves [SLWU-4-001, SLWU-4-002 (check vlv)]	Pipe between SLWU-4-002 and 4" AFW line	6.000	10.0	H-I	Y	I	Total length of line is 30ft. Assume this portion is 10ft	600		H-I		Not Analyzed	400	#N/A	No	AI		
1922	PTN	4	081	5614-M-3081, SH 7	1	1" Drains	4-30-1084	1.000	1.0	H-I	Y	HT	MSR4D	267		H-I		1.000	260	19	Yes	No Protection Required		
1922	PTN	4	081	5614-M-3081, SH 7	1	1" Drains	4-30-1085	1.000	1.0	H-I	Y	HT	MSR4D	267		H-I		1.000	260	19	Yes	No Protection Required		
1922	PTN	4	081	5614-M-3081, SH 7	1	1" Drains	4-30-1086	1.000	1.0	H-I	Y	HT	MSR4D	267		H-I		1.000	260	19	Yes	No Protection Required		
1922	PTN	4	081	5614-M-3081, SH 7	1	1" Drains	4-30-1090	1.000	1.0	H-I	Y	HT	MSR4C	267		H-I		1.000	260	19	Yes	No Protection Required		
1922	PTN	4	081	5614-M-3081, SH 7	1	1" Drains	4-30-1091	1.000	1.0	H-I	Y	HT	MSR4C	267		H-I		1.000	260	19	Yes	No Protection Required		
1922	PTN	4	081	5614-M-3081, SH 7	1	1" Drains	4-30-1092	1.000	1.0	H-I	Y	HT	MSR4C	267		H-I		1.000	260	19	Yes	No Protection Required		
1921	PTN	4	081	5614-M-3081, SH 7	1	1" Vents	4-30-1043	1.000	1.0	TV-I	Y	HT	MSR4D	310		TV-I		1.000	310	19	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1921	PTN	4	081	5614-M-3081, SH 7	1	1" Vents	4-30-1044	1.000	1.0	TV-I	Y	HT	MSR4D	310		TV-I		1.000	310	19	Yes	No Protection Required		
1921	PTN	4	081	5614-M-3081, SH 7	1	1" Vents	4-30-1046	1.000	1.0	TV-I	Y	HT	MSR4D	310		TV-I		1.000	310	19	Yes	No Protection Required		
1921	PTN	4	081	5614-M-3081, SH 7	1	1" Vents	4-30-1050	1.000	1.0	TV-I	Y	HT	MSR4C	310		TV-I		1.000	310	19	Yes	No Protection Required		
1921	PTN	4	081	5614-M-3081, SH 7	1	1" Vents	4-30-1051	1.000	1.0	TV-I	Y	HT	MSR4C	310		TV-I		1.000	310	19	Yes	No Protection Required		
1921	PTN	4	081	5614-M-3081, SH 7	1	1" Vents	4-30-1052	1.000	1.0	TV-I	Y	HT	MSR4C	310		TV-I		1.000	310	19	Yes	No Protection Required		
1920	PTN	4	081	5614-M-3081, SH 7	1	Level transmitters and associated 2" piping/valves	LIT-4-1504A	2.000	19.0	loop-I	Y	N/A	MSR4D	310		BV-I	BV conservative due to downward portion	2.000	310	15	No	N/A		
1920	PTN	4	081	5614-M-3081, SH 7	1	Level transmitters and associated 2" piping/valves	LIT-4-1504B	2.000	19.0	loop-I	Y	N/A	MSR4D	310		BV-I	BV conservative due to downward portion	2.000	310	15	No	N/A		
1920	PTN	4	081	5614-M-3081, SH 7	1	Level transmitters and associated 2" piping/valves	LIT-4-1504C	2.000	20.0	loop-I	Y	N/A	MSR4D	310		BV-I	BV conservative due to downward portion	2.000	310	15	No	N/A		
1920	PTN	4	081	5614-M-3081, SH 7	1	Level transmitters and associated 2" piping/valves	LIT-4-1525A	2.000	19.0	loop-I	Y	N/A	MSR4C	310		BV-I	BV conservative due to downward portion	2.000	310	15	No	N/A		
1920	PTN	4	081	5614-M-3081, SH 7	1	Level transmitters and associated 2" piping/valves	LIT-4-1525B	2.000	20.0	loop-I	Y	N/A	MSR4C	310		BV-I	BV conservative due to downward portion	2.000	310	15	No	N/A		
1920	PTN	4	081	5614-M-3081, SH 7	1	Level transmitters and associated 2" piping/valves	LIT-4-1525C	2.000	20.0	loop-I	Y	N/A	MSR4C	310		BV-I	BV conservative due to downward portion	2.000	310	15	No	N/A		
1965	PTN	4	081	5614-M-3081, SH 7	1	Shell Side Drain Tank	Shell Side Drain Tank	N/A	N/A	N/A	N/A	N/A		310		N/A			310		No	N/A		
1924	PTN	4	081	5614-M-3081, SH 7	2	3/4" Vent	4-30-780	0.750	0.5	H	N	HT	MSR4C	513		H		0.750	400	14	Yes	No Protection Required		
1924	PTN	4	081	5614-M-3081, SH 7	2	3/4" Vent	4-30-781	0.750	1.0	H	N	HT	MSR4D	513		H		0.750	400	14	Yes	No Protection Required		
1925	PTN	4	081	5614-M-3081, SH 7	2	1" capped pipe	4-30-706	1.000	1.0	H	N	HT	MSR4C	513		H		1.000	400	18	Yes	No Protection Required		
1925	PTN	4	081	5614-M-3081, SH 7	2	1" capped pipe	4-30-707	1.000	1.0	H	N	HT	MSR4D	513		H		1.000	400	18	Yes	No Protection Required		
1923	PTN	4	081	5614-M-3081, SH 7	2	4" Piping from MSR to RHTR Drain Tk (Vent)	4-30-706	4.000	60.0	H-I,D	Y	I		513		BV-I	BV conservative due to downward portion	4.000	400	15	No	AI		
1923	PTN	4	081	5614-M-3081, SH 7	2	4" Piping from MSR to RHTR Drain Tk (Vent)	4-30-707	4.000	50.0	H-I,D	y	I		513		BV-I	BV conservative due to downward portion	4.000	400	15	No	AI		
1927	PTN	4	081	5614-M-3081, SH 7	3	Vent	4-30-698	0.750	1.0	TV,H	N	HT	MSR4C - NO ACESS - ASSUME TYPICAL DIA	513		H		Not Analyzed	400	#N/A	No	HT	short run; high process temp; no protecton required	N
1931	PTN	4	081	5614-M-3081, SH 7	5	3/4" Vent	4-2131	0.750	1.0	TV,H	N	HT	MSR4D	441		H		0.750	400	14	Yes	No Protection Required		
1931	PTN	4	081	5614-M-3081, SH 7	5	3/4" Vent	4-2127	0.750	1.0	TV	N	HT	MSR4C	441		TV		0.750	400	19	Yes	No Protection Required		
1929	PTN	4	081	5614-M-3081, SH 7	5	PI	PI-4-6688	0.750	2.0	H,U	N	HT	MSR4D	441		H	Upward bend not credited for conservatism	0.750	400	14	Yes	No Protection Required		
1929	PTN	4	081	5614-M-3081, SH 7	5	PI	PI-4-6687	0.750	3.0	H,U	N	HT	MSR4C	441		H	Upward bend not credited for conservatism	0.750	400	14	Yes	No Protection Required		
1933	PTN	4	081	5614-M-3081, SH 7	5	3" Capped Pipe	4-2082	3.000	1.0	H	N	I		441		H		3.000	400	16	Yes	No Protection Required		
1933	PTN	4	081	5614-M-3081, SH 7	5	3" Capped Pipe	4-2086	3.000	1.0	H	N	I		441		H		3.000	400	16	Yes	No Protection Required		
1932	PTN	4	081	5614-M-3081, SH 7	5	1" Drain	4-2109	1.000	1.0	BV	N	HT	MSR4C	441		BV		1.000	400	0.5	No	HT	short run; high process temp; no protection required	N
1932	PTN	4	081	5614-M-3081, SH 7	5	1" Drain	4-2110	1.000	1.0	BV	N	HT	MSR4C	441		BV		1.000	400	0.5	No	HT	short run; high process temp; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1932	PTN	4	081	5614-M-3081, SH 7	5	1" Drain	4-2113	1.000	1.0	BV	N	HT	MSR4D	441		BV		1.000	400	0.5	No	HT	short run; high process temp; no protection required	N
1937	PTN	4	081	5614-M-3081, SH 7	7	3/4" Vent	4-2128	0.750	0.5	H	N	HT	MSR4C	441		H		0.750	400	14	Yes	No Protection Required		
1937	PTN	4	081	5614-M-3081, SH 7	7	3/4" Vent	4-2132	0.750	0.5	H	N	HT	MSR4D	441		H		0.750	400	14	Yes	No Protection Required		
1936	PTN	4	081	5614-M-3081, SH 7	7	Flanges	Downstream of 4-30-1131	3.000	0.5	H	N	I		441		H		3.000	400	16	Yes	No Protection Required		
1936	PTN	4	081	5614-M-3081, SH 7	7	Flanges	Downstream of 4-30-1132	3.000	0.5	H	N	I		441		H		3.000	400	16	Yes	No Protection Required		
1939	PTN	4	081	5614-M-3081, SH 7	7	3" Capped Pipe	Downstream of 4-30-1131	3.000	0.5	H-I	Y	I	PX ON TOP OF LINE GOING INTO TOP OF HEATER	441		H-I		3.000	400	20	Yes	No Protection Required		
1939	PTN	4	081	5614-M-3081, SH 7	7	3" Capped Pipe	Downstream of 4-30-1132	3.000	0.5	H-I	Y	I	CV-4-2212 OPEN RECORD DATA FOR 4-20-047	441		H-I		3.000	400	20	Yes	No Protection Required		
1938	PTN	4	081	5614-M-3081, SH 7	7	1" Drain	4-2111	1.000	1.0	BV,H	N	HT	MSR4C	441		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	short run; high process temp; no protection required	N
1938	PTN	4	081	5614-M-3081, SH 7	7	1" Drain	4-2114	1.000	1.0	BV,H	N	HT	MSR4D	441		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	short run; high process temp; no protection required	N
1942	PTN	4	081	5614-M-3081, SH 7	8	3/4" Vent	4-2129	0.750	1.0	TV	N	HT	MSR4C	441		TV		0.750	400	19	Yes	No Protection Required		
1941	PTN	4	081	5614-M-3081, SH 7	8	Flanges	Downstream of 4-30-1131	4.000	0.5	H-I	Y	I		441		H-I		4.000	400	15	Yes	No Protection Required		
1941	PTN	4	081	5614-M-3081, SH 7	8	Flanges	Downstream of 4-30-1132	4.000	0.5	H-I	Y	I		441		H-I		4.000	400	15	Yes	No Protection Required		
1944	PTN	4	081	5614-M-3081, SH 7	9	Flange	Downstream of 4-30-1132	8.000	0.5	H-I	Y	I		441		H-I		Not Analyzed	400	#N/A	No	AI		
1946	PTN	4	081	5614-M-3081, SH 7	11	3/4" Vent	4-2130	0.750	1.0	TV,H	N	HT	MSR4C	108		H		0.750	100	2	Yes	No Protection Required		
1946	PTN	4	081	5614-M-3081, SH 7	11	3/4" Vent	4-2133	0.750	1.0	TV,H	N	HT	MSR4D	108		H		0.750	100	2	Yes	No Protection Required		
1948	PTN	4	081	5614-M-3081, SH 7	11	3" Flanges	Downstream of 4-2084	3.000	1.0	H-I	Y	I	GUESS	108		H-I		3.000	100	20	Yes	No Protection Required		
1948	PTN	4	081	5614-M-3081, SH 7	11	3" Flanges	Downstream of 4-2088	3.000	1.0	H-I	Y	I	GUESS	108		H-I		3.000	100	20	Yes	No Protection Required		
1947	PTN	4	081	5614-M-3081, SH 7	11	1" Drain	4-2112	1.000	1.0	BV	N	HT	MSR4C	108		BV		1.000	100	0	No	HT	verify local ambient temperature is hot	Y
1947	PTN	4	081	5614-M-3081, SH 7	11	1" Drain	4-2116	1.000	1.0	BV	N	HT	MSR4D	108		BV		1.000	100	0	No	HT	verify local ambient temperature is hot	Y
1945	PTN	4	081	5614-M-3081, SH 7	11	3" Pipe	4-2085	3.000	N/A	N/A	N/A	N/A	'Any condensing steam condnsate will gravity flow to condenser and provide trickle flow to prevent freezing.	108		N/A		3.000	100		No	N/A		
1945	PTN	4	081	5614-M-3081, SH 7	11	3" Pipe	4-2089	3.000	N/A	N/A	N/A	N/A	'Any condensing steam condnsate will gravity flow to condenser and provide trickle flow to prevent freezing.	108		N/A		3.000	100		No	N/A		
1949	PTN	4	081	5614-M-3081, SH 7	12	1" Pipe	4-2095	1.000	4.0	H-I	Y	HT	MSR4C	108		H-I		1.000	100	9	Yes	No Protection Required		
1949	PTN	4	081	5614-M-3081, SH 7	12	1" Pipe	4-2097	1.000	4.0	H-I	Y	HT	MSR4D	108		H-I		1.000	100	9	Yes	No Protection Required		
1951	PTN	4	081	5614-M-3081, SH 7	13	1/2" piping	4-30-686	0.500	1.0	TV	Y	HT	MSR4C -	441		TV		0.500	400	8.5	Yes	No Protection Required		
1951	PTN	4	081	5614-M-3081, SH 7	13	1/2" piping	4-30-687	0.500	1.5	TV	Y	HT	MSR4D	441		TV		0.500	400	8.5	Yes	No Protection Required		
1950	PTN	4	081	5614-M-3081, SH 7	13	Test Connection (PX) and	PX-4-1412	Not provided	N/A	N/A	N/A	N/A	MSR4C, ISOLATED	441		N/A		Not Analyzed	400		No	N/A		
1950	PTN	4	081	5614-M-3081, SH 7	13	Test Connection (PX) and	PX-4-1413	Not provided	N/A	N/A	N/A	N/A	MSR4D, ISOLATED	441		N/A		Not Analyzed	400		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1953	PTN	4	081	5614-M-3081, SH 7	14	3/4" Connection	4-30-1119	0.750	0.5	BV	N	HT	MSR4D	387		BV		0.750	380	0.5	Yes	No Protection Required		
1953	PTN	4	081	5614-M-3081, SH 7	14	3/4" Connection	4-30-1123	0.750	0.5	BV	N	HT	MSR4C	387		BV		0.750	380	0.5	Yes	No Protection Required		
1954	PTN	4	081	5614-M-3081, SH 7	14	Flange	Upstream of 4-30-1032	8.000	1.0	H-I	Y	I		387		H-I		Not Analyzed	380	#N/A	No	AI		
1954	PTN	4	081	5614-M-3081, SH 7	14	Flange	Upstream of 4-30-1032	8.000	1.0	H-I	Y	I		387		H-I		Not Analyzed	380	#N/A	No	AI		
1955	PTN	4	081	5614-M-3081, SH 7	15	Pressure Test Connection	PX-4-1451	0.375	3.0	H,U	N	HT	MSR4C	387		H	Upward bend not credited for conservatism	0.375	380	4.3	Yes	No Protection Required		
1955	PTN	4	081	5614-M-3081, SH 7	15	Pressure Test Connection	PX-4-1452	0.375	3.0	H,U	N	HT	MSR4D	387		H	Upward bend not credited for conservatism	0.375	380	4.3	Yes	No Protection Required		
1958	PTN	4	081	5614-M-3081, SH 7	16	3/4" Connection	4-30-1127	0.750	1.0	BV	N	HT	MSR4C	387		BV		0.750	380	0.5	No	HT	check ambient temp; if hot do not protect	Y
1958	PTN	4	081	5614-M-3081, SH 7	16	3/4" Connection	4-30-757	0.750	1.0	BV	N	HT	MSR4D	387		BV		0.750	380	0.5	No	HT	check ambient temp; if hot do not protect	Y
1961	PTN	4	081	5614-M-3081, SH 7	18	Flange	ownstream of CV-4-1504	10.000	1.0	H-I	Y	I		387		H-I		Not Analyzed	380	#N/A	No	AI		
1961	PTN	4	081	5614-M-3081, SH 7	18	Flange	ownstream of CV-4-1525	10.000	1.0	H-I	Y	I		387		H-I		Not Analyzed	380	#N/A	No	AI		
1963	PTN	4	081	5614-M-3081, SH 7	19	3/4" Connection	4-30-1128	0.750	10.0	H-I,D	Y	HT	MSR4C - 10 FEET TO SECOND VALVE	387		BV-I	BV conservative due to downward portion	0.750	380	2.5	No	HT	check ambient temp; if hot do not protect	Y
1963	PTN	4	081	5614-M-3081, SH 7	19	3/4" Connection	4-30-759	0.750	10.0	H-I,D	Y	HT	MSR4D - 10 FEET TO SECOND VALVE	387		BV-I	BV conservative due to downward portion	0.750	380	2.5	No	HT	check ambient temp; if hot do not protect	Y
1962	PTN	4	081	5614-M-3081, SH 7	19	8" Pipe	4-30-1021 4-30-1023	8.000	16.0	H-I,D	Y	I	MSR4C - 16 FEET TO CLOSED VALVE	387		BV-I	BV conservative due to downward portion	Not Analyzed	380	#N/A	No	AI		
1962	PTN	4	081	5614-M-3081, SH 7	19	8" Pipe	4-30-758 4-30-760	8.000	16.0	H-I,D	Y	I	MSR4D - 16 FEET TO CLOSED VALVE	387		BV-I	BV conservative due to downward portion	Not Analyzed	380	#N/A	No	AI		
1867	PTN	4	081	5614-M-3081, SH 6	3	3" Pipe	FWHR-4-001	3.000	3.0	H-I	Y	I	DISCHARGE	205		H-I		3.000	200	20	Yes	No Protection Required		
1867	PTN	4	081	5614-M-3081, SH 6	3	3" Pipe	FWHR-4-011	3.000	3.0	H-I	y	I	DISCHARGE	205		H-I		3.000	200	20	Yes	No Protection Required		
1869	PTN	4	081	5614-M-3081, SH 6	5	1" Pipe	FWHR-4-010	1.000	3.0	H-I	Y	HT	(BY-PASS) (P&ID zone B-3)	205		H-I		1.000	200	19	Yes	No Protection Required		
1869	PTN	4	081	5614-M-3081, SH 6	5	1" Pipe	FWHR-4-062	1.000	3.0	H-I	Y	HT	(BY-PASS) (P&ID zone E-3)	205		H-I		1.000	200	19	Yes	No Protection Required		
1870	PTN	4	081	5614-M-3081, SH 6	6	10" Pipe	FWH2A	10.000	N/A	N/A	N/A	N/A	Close to condenser will prevent freezing	175		BV-I	BV conservative due to downward portion	Not Analyzed	170		No	N/A		
1870	PTN	4	081	5614-M-3081, SH 6	6	10" Pipe	FWH2B	10.000	N/A	N/A	N/A	N/A	Close to condenser will prevent freezing	175		BV-I	BV conservative due to downward portion	Not Analyzed	170		No	N/A		
1871	PTN	4	081	5614-M-3081, SH 6	7	2" Pipe	FWH2A	2.000	N/A	N/A	N/A	N/A	piping close to condenser and Isolation valves in east condenser pit which will prevent freezing	175		BV-I	BV conservative due to downward portion	2.000	170		No	N/A		
1871	PTN	4	081	5614-M-3081, SH 6	7	2" Pipe	FWH2B	2.000	N/A	N/A	N/A	N/A	piping close to condenser and Isolation valves in east condenser pit which will prevent freezing	175		BV-I	BV conservative due to downward portion	2.000	170		No	N/A		
1874	PTN	4	081	5614-M-3081, SH 6	8	1" Connection	4-30-225	1.000	1.0	H	N	HT	NO ACCESS - COPIED FROM TYPICAL DATA	175		H		1.000	170	8.2	Yes	No Protection Required		
1874	PTN	4	081	5614-M-3081, SH 6	8	1" Connection	4-30-226	1.000	1.0	H	N	HT	NO ACCESS - COPIED FROM TYPICAL DATA	175		H		1.000	170	8.2	Yes	No Protection Required		
1872	PTN	4	081	5614-M-3081, SH 6	8	PX	PX-4-1453	0.500	1.0	TV	N	HT		175		TV		0.500	170	#N/A	No	HT	hot line; short run; no heat trace required	N
1872	PTN	4	081	5614-M-3081, SH 6	8	PX	PX-4-1459	0.500	1.0	TV	N	HT		175		TV		0.500	170	#N/A	No	HT	hot line; short run; no heat trace required	N
1876	PTN	4	081	5614-M-3081, SH 6	9	3/4" Connection	4-30-253	0.750	1.0	BV	N	HT		175		BV		0.750	170	0.4	No	HT	hot line; short run; no heat trace required	N
1876	PTN	4	081	5614-M-3081, SH 6	9	3/4" Connection	4-30-254	0.750	1.0	BV,H	N	HT		175		BV	BV conservative due to downward portion	0.750	170	0.4	No	HT	hot line; short run; no heat trace required	N
1878	PTN	4	081	5614-M-3081, SH 6	10	14" Flange	Upstream of 4-30-261	14.000	1.0	N/A	Y	N/A	MOST OF THESE ARE A 1' ALREADY INSULATED	175		N/A		Not Analyzed	170		No	N/A		
1878	PTN	4	081	5614-M-3081, SH 6	10	14" Flange	Upstream of 4-30-262	14.000	1.0	N/A	Y	N/A	MOST OF THESE ARE A 1' ALREADY INSULATED	175		N/A		Not Analyzed	170		No	N/A		
1879	PTN	4	081	5614-M-3081, SH 6	11	8" Pipe	4-30-258	8.000	5.0	H-I	Y	I	BY-PASS	175		H-I		Not Analyzed	170	#N/A	No	AI		
1879	PTN	4	081	5614-M-3081, SH 6	11	8" Pipe	4-30-259	8.000	5.0	H-I	Y	I	BY-PASS	175		H-I		Not Analyzed	170	#N/A	No	AI		
1881	PTN	4	081	5614-M-3081, SH 6	12	3/4" Connection	4-30-265	0.750	1.0	BV,H	N	HT		119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	close proximity to condensor; ambient temp high; no heat trace required.	N
1881	PTN	4	081	5614-M-3081, SH 6	12	3/4" Connection	4-30-266	0.750	1.0	BV,H	N	HT		119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	close proximity to condensor; ambient temp high; no heat trace required.	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1880	PTN	4	081	5614-M-3081, SH 6	12	10" Pipe	CV-4-1526	10.000	5.0	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1880	PTN	4	081	5614-M-3081, SH 6	12	10" Pipe	CV-4-1543	10.000	5.0	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1882	PTN	4	081	5614-M-3081, SH 6	13	12" Pipe	4-30-273	12.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	119		N/A		Not Analyzed	110		No	N/A		
1882	PTN	4	081	5614-M-3081, SH 6	13	12" Pipe	4-30-274	12.000	N/A	N/A	N/A	N/A	Condensation will drain to condenser producing trickle flow tpo prevent freezing. Located on east side of condenser	119		N/A		Not Analyzed	110		No	N/A		
1883	PTN	4	081	5614-M-3081, SH 6	13	12" Flange	Upstream of 4-30-273	12.000	1.0	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1883	PTN	4	081	5614-M-3081, SH 6	13	12" Flange	Upstream of 4-30-274	12.000	1.0	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1885	PTN	4	081	5614-M-3081, SH 6	14	3/4" Connection	4-30-269	0.750	1.0	BV	N	HT	NO ACCESS, IN CONDENSER PIT. Right under pipe right beside rail, behind kickplate - WARM AREA	119		BV		0.750	110	0	No	HT	close proximity to condensor; ambient temp high; no heat trace required.	N
1884	PTN	4	081	5614-M-3081, SH 6	14	8" Pipe	4-30-271 4-30-267	8.000	5.0	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1884	PTN	4	081	5614-M-3081, SH 6	14	8" Pipe	4-30-272 4-30-268	8.000	5.0	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1887	PTN	4	081	5614-M-3081, SH 6	16	1.5" Pipe	FWHR-4-008	1.500	3.0	H-I	Y	I	4 EAST CONNECTIONS IN PIT - HOT. 4 WEST CONNECTIONS COULD NOT FIND. IF SLOPED TO CONDENSER , CONDENSATE WILL DRAIN TO CONDENSER AND NOT FREEZE.	205		H-I		1.500	200	20	Yes	No Protection Required		
1887	PTN	4	081	5614-M-3081, SH 6	16	1.5" Pipe	FWHR-4-016	1.500	3.0	H-I	Y	I	4 EAST CONNECTIONS IN PIT - HOT. 4 WEST CONNECTIONS COULD NOT FIND. IF SLOPED TO CONDENSER , CONDENSATE WILL DRAIN TO CONDENSER AND NOT FREEZE.	205		H-I		1.500	200	20	Yes	No Protection Required		
1889	PTN	4	081	5614-M-3081, SH 6	18	4" Pipe	FWHR-4-009	4.000	3.0	H-I	Y	I		205		H-I		4.000	200	15	Yes	No Protection Required		
1889	PTN	4	081	5614-M-3081, SH 6	18	4" Pipe	FWHR-4-018	4.000	3.0	H-I	Y	I		205		H-I		4.000	200	15	Yes	No Protection Required		
1890	PTN	4	081	5614-M-3081, SH 6	19	PX	PX-4-1454	0.500	1.0	H,U	N	HT		119		H	Upward bend not credited for conservatism	0.500	110	1.2	Yes	No Protection Required		
1890	PTN	4	081	5614-M-3081, SH 6	19	PX	PX-4-1460	0.500	1.0	H,U	N	HT		119		H	Upward bend not credited for conservatism	0.500	110	1.2	Yes	No Protection Required		
1892	PTN	4	081	5614-M-3081, SH 6	19	3/4" & 1" Drains	4-30-153	0.750	0.5	BV	N	HT		119		BV		0.750	110	0	No	HT	high temp; short run; no heat trace required	N
1892	PTN	4	081	5614-M-3081, SH 6	19	3/4" & 1" Drains	4-30-291	0.750	0.5	BV	N	HT		119		BV		0.750	110	0	No	HT	high temp; short run; no heat trace required	N
1892	PTN	4	081	5614-M-3081, SH 6	19	3/4" & 1" Drains	4-30-125	1.000	1.0	BV	N	HT		119		BV		1.000	110	0	No	HT	high temp; short run; no heat trace required	N
1892	PTN	4	081	5614-M-3081, SH 6	19	3/4" & 1" Drains	4-30-126	1.000	1.0	BV	N	HT		119		BV		1.000	110	0	No	HT	high temp; short run; no heat trace required	N
1892	PTN	4	081	5614-M-3081, SH 6	19	3/4" & 1" Drains	4-30-275	1.000	1.0	BV,H	N	HT		119		BV	BV conservative due to downward portion	1.000	110	0	No	HT	high temp; short run; no heat trace required	N
1893	PTN	4	081	5614-M-3081, SH 6	19	12" Flange	Upstream of 4-30-162	12.000	1.0	H-I	Y	I	DEAD LEG + FLANGE (MOST OF THESE ARE INSULATED, 1')	119		H-I		Not Analyzed	110	#N/A	No	AI		
1894	PTN	4	081	5614-M-3081, SH 6	20	10" Pipe	4-30-159 4-30-157	10.000	5.0	H-I	Y	I	BY-PASS - 20' FROM CONDENSER SHELL	119		H-I		Not Analyzed	110	#N/A	No	AI		
1894	PTN	4	081	5614-M-3081, SH 6	20	10" Pipe	4-30-160 4-30-158	10.000	5.0	H-I	Y	I	BY-PASS - 20' FROM CONDENSER SHELL	119		H-I		Not Analyzed	110	#N/A	No	AI		
1895	PTN	4	081	5614-M-3081, SH 6	21	12" Pipe	4-30-163 4-30-173	12.000	10.0	H-I	Y	I	20' FROM CONDENSER SHELL	119		H-I		Not Analyzed	110	#N/A	No	AI		
1895	PTN	4	081	5614-M-3081, SH 6	21	12" Pipe	4-30-164 4-30-174	12.000	8.0	H-I	y	I	20' FROM CONDENSER SHELL	119		H-I		Not Analyzed	110	#N/A	No	AI		
1897	PTN	4	081	5614-M-3081, SH 6	22	3/4" Connection	4-30-165	0.750	0.5	H	N	HT	JUST OUTSIDE GUARDRAIL	119		H		0.750	110	2.4	Yes	No Protection Required		
1897	PTN	4	081	5614-M-3081, SH 6	22	3/4" Connection	4-30-166	0.750	0.5	H	N	HT	NO ACCESS - COPIED FROM B	119		H		0.750	110	2.4	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1896	PTN	4	081	5614-M-3081, SH 6	22	8" Pipe	CV-4-1544	8.000	3.0	H-I	y	I	20' FROM CONDENSER SHELL	119		H-I		Not Analyzed	110	#N/A	No	AI		
1896	PTN	4	081	5614-M-3081, SH 6	22	8" Pipe	CV-4-1545	8.000	3.0	H-I	y	I	20' FROM CONDENSER SHELL	119		H-I		Not Analyzed	110	#N/A	No	AI		
1899	PTN	4	081	5614-M-3081, SH 6	23	3/4" Connection	4-30-169	0.750	0.5	H	N	HT		119		H		0.750	110	2.4	Yes	No Protection Required		
1899	PTN	4	081	5614-M-3081, SH 6	23	3/4" Connection	4-30-170	0.750	0.5	H	N	HT		119		H		0.750	110	2.4	Yes	No Protection Required		
1898	PTN	4	081	5614-M-3081, SH 6	23	10" Pipe	4-30-171 4-30-167	10.000	10.0	H-I	y	I	BY-PASS - 20' FROM CONDENSER SHELL	119		H-I		Not Analyzed	110	#N/A	No	AI		
1898	PTN	4	081	5614-M-3081, SH 6	23	10" Pipe	4-30-172 4-30-168	10.000	10.0	H-I	y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1900	PTN	4	081	5614-M-3081, SH 6	24	12" Pipe	FWH1A	12.000	N/A	N/A	N/A	N/A	Located close to Condenser in East condenser pit which will prevent freezing	120		BV-I	BV conservative due to downward portion	Not Analyzed	120		No	N/A		
1900	PTN	4	081	5614-M-3081, SH 6	24	12" Pipe	FWH1B	12.000	N/A	N/A	N/A	N/A	Located close to Condenser in East condenser pit which will prevent freezing	120		BV-I	BV conservative due to downward portion	Not Analyzed	120		No	N/A		
1901	PTN	4	081	5614-M-3081, SH 6	25	2" Pipe	FWH1A	2.000	N/A	N/A	N/A	N/A	piping close to condenser and Isolation valves in east condenser pit which will prevent freezing	120		BV-I	BV conservative due to downward portion	2.000	120		No	N/A		
1901	PTN	4	081	5614-M-3081, SH 6	25	2" Pipe	FWH1B	2.000	N/A	N/A	N/A	N/A	piping close to condenser and Isolation valves in east condenser pit which will prevent freezing	120		BV-I	BV conservative due to downward portion	2.000	120		No	N/A		
1904	PTN	4	081	5614-M-3081, SH 6	26	LI, LGs	LG-4-3413	0.750	3.5	TV	n	HT	FWH2B - hot area	211		TV		0.750	210	7.6	Yes	No Protection Required		
1904	PTN	4	081	5614-M-3081, SH 6	26	LI, LGs	LG-4-3423	0.750	3.5	TV	n	HT	FWH2A - hot area	211		TV		0.750	210	7.6	Yes	No Protection Required		
1906	PTN	4	081	5614-M-3081, SH 6	26	Vents	4-30-276	1.000	1.0	H-I	Y	HT	FWH2B - HOT AREA	211		H-I		1.000	210	19	Yes	No Protection Required		
1906	PTN	4	081	5614-M-3081, SH 6	26	Vents	4-30-277	1.000	1.0	H-I	Y	HT	FWH2A - HOT AREA	211		H-I		1.000	210	19	Yes	No Protection Required		
1906	PTN	4	081	5614-M-3081, SH 6	26	Vents	4-30-280	1.000	1.0	H-I	Y	HT	FWH2B - HOT AREA	211		H-I		1.000	210	19	Yes	No Protection Required		
1906	PTN	4	081	5614-M-3081, SH 6	26	Vents	4-30-281	1.000	1.0	H-I	Y	HT	FWH2A - HOT AREA	211		H-I		1.000	210	19	Yes	No Protection Required		
1907	PTN	4	081	5614-M-3081, SH 6	26	Drains	4-30-278	1.000	1.0	H-I	Y	HT	FWH2B - hot area	211		H-I		1.000	210	19	Yes	No Protection Required		
1907	PTN	4	081	5614-M-3081, SH 6	26	Drains	4-30-279	1.000	1.0	H-I	Y	HT	FWH2A - HOT AREA	211		H-I		1.000	210	19	Yes	No Protection Required		
1907	PTN	4	081	5614-M-3081, SH 6	26	Drains	4-30-282	1.000	1.0	H-I	Y	HT	FWH2B - HOT AREA	211		H-I		1.000	210	19	Yes	No Protection Required		
1907	PTN	4	081	5614-M-3081, SH 6	26	Drains	4-30-283	1.000	1.0	H-I	Y	HT	FWH2A - HOT AREA	211		H-I		1.000	210	19	Yes	No Protection Required		
1902	PTN	4	081	5614-M-3081, SH 6	26	LS	LS-4-1504	1.000	4.0	TV	n	HT	FWH2A - partly insulated - hot area	211		TV		1.000	210	20	Yes	No Protection Required		
1902	PTN	4	081	5614-M-3081, SH 6	26	LS	LS-4-1526	1.000	4.0	TV	N	HT	FWH2B -partly insulated - hot area	211		TV		1.000	210	20	Yes	No Protection Required		
1902	PTN	4	081	5614-M-3081, SH 6	26	LS	LS-4-1516	1.000	4.5	TV	N	HT	FWH2A (40% insulated)	211		TV		1.000	210	20	Yes	No Protection Required		
1902	PTN	4	081	5614-M-3081, SH 6	26	LS	LS-4-1543	1.000	4.5	TV	n	HT	FWH2B - partly insulated - hot area	211		TV		1.000	210	20	Yes	No Protection Required		
1904	PTN	4	081	5614-M-3081, SH 6	26	LI, LGs	LI-4-1546B	1.000	11.0	TV-I	Y	HT	FWH2B - HOT AREA	211		TV-I		1.000	210	19	Yes	No Protection Required		
1904	PTN	4	081	5614-M-3081, SH 6	26	LI, LGs	LI-4-1546A	1.000	12.0	TV-I	Y	HT	FWH2A - HOT AREA	211		TV-I		1.000	210	19	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1905	PTN	4	081	5614-M-3081, SH 6	26	1.5" Pipe	FWH2A	1.500	10.0	H-I	Y	I	GAS SERVICE VERTICAL PIPE	175		H-I		1.500	170	20	Yes	No Protection Required		
1908	PTN	4	081	5614-M-3081, SH 6	26	3/4" Connections	LG-4-1433	0.750	N/A	N/A	N/A	N/A	Condensing steam will cause trickle flow within glass and prevent freezing	211		N/A		0.750	210		No	N/A		
1908	PTN	4	081	5614-M-3081, SH 6	26	3/4" Connections	LG-4-1435	0.750	N/A	N/A	N/A	N/A	Condensing steam will cause trickle flow within glass and prevent freezing	211		N/A		0.750	210		No	N/A		
1908	PTN	4	081	5614-M-3081, SH 6	26	3/4" Connections	LG-4-3413	0.750	N/A	N/A	N/A	N/A	Condensing steam will cause trickle flow within glass and prevent freezing	211		N/A		0.750	210		No	N/A		
1908	PTN	4	081	5614-M-3081, SH 6	26	3/4" Connections	LG-4-3423	0.750	N/A	N/A	N/A	N/A	Condensing steam will cause trickle flow within glass and prevent freezing	211		N/A		0.750	210		No	N/A		
1905	PTN	4	081	5614-M-3081, SH 6	26	1.5" Pipe	FWH2B	1.500	10.0	H-I	Y	I		175		H-I		1.500	170	20	Yes	No Protection Required		
1903	PTN	4	081	5614-M-3081, SH 6	26	LC, LS	LC-4-1501	1.500	1.5	h	n	I		211		h		1.500	210	18	Yes	No Protection Required		
1904	PTN	4	081	5614-M-3081, SH 6	26	LI, LGs	LG-4-1433	0.750	3.0	H,D	N	HT	FWH2B - HOT AREA	211		BV	BV conservative due to downward portion	0.750	210	0.5	No	HT	close to condenser; hot ambient temp; constant tricke flow	N
1904	PTN	4	081	5614-M-3081, SH 6	26	LI, LGs	LG-4-1435	0.750	3.0	H,D	n	HT	FWH2A - hot area - partly insulated	211		BV	BV conservative due to downward portion	0.750	210	0.5	No	HT	close to condenser; hot ambient temp; constant tricke flow	N
1903	PTN	4	081	5614-M-3081, SH 6	26	LC, LS	LC-4-1513	1.500	8.0	TV	n	I	.5 SLOPED TO VERTICAL MAIN PIPE	211		TV		1.500	210	18	Yes	No Protection Required		
1911	PTN	4	081	5614-M-3081, SH 6	27	LI, LGs	LG-4-3412	0.750	3.0	TV	N	HT	FWH1B	172		TV		0.750	170	5.2	Yes	No Protection Required		
1911	PTN	4	081	5614-M-3081, SH 6	27	LI, LGs	LG-4-1432	0.750	3.5	TV	N	HT	FWH1B	172		TV		0.750	170	5.2	Yes	No Protection Required		
1911	PTN	4	081	5614-M-3081, SH 6	27	LI, LGs	LG-4-1434	0.750	4.0	TV	N	HT	FWH1A	172		TV		0.750	170	5.2	Yes	No Protection Required		
1915	PTN	4	081	5614-M-3081, SH 6	27	3/4" Connections	LG-4-1434	0.750	4.0	TV	N	HT	FWH1A	172		TV		0.750	170	5.2	Yes	No Protection Required		
1913	PTN	4	081	5614-M-3081, SH 6	27	Vents	4-30-180	1.000	1.0	H-I	Y	HT	FWH1B	172		H-I		1.000	170	19	Yes	No Protection Required		
1913	PTN	4	081	5614-M-3081, SH 6	27	Vents	4-30-181	1.000	1.0	H-I	Y	HT	FWH1A	172		H-I		1.000	170	19	Yes	No Protection Required		
1913	PTN	4	081	5614-M-3081, SH 6	27	Vents	4-30-192	1.000	1.0	H-I	Y	HT	FWH1B	172		H-I		1.000	170	19	Yes	No Protection Required		
1913	PTN	4	081	5614-M-3081, SH 6	27	Vents	4-30-193	1.000	1.0	H-I	Y	HT	FWH1A	172		H-I		1.000	170	19	Yes	No Protection Required		
1914	PTN	4	081	5614-M-3081, SH 6	27	Drains	4-30-182	1.000	1.0	H-I	Y	HT	FWH1B	172		H-I		1.000	170	19	Yes	No Protection Required		
1914	PTN	4	081	5614-M-3081, SH 6	27	Drains	4-30-183	1.000	1.0	H-I	Y	HT	FWH1A	172		H-I		1.000	170	19	Yes	No Protection Required		
1914	PTN	4	081	5614-M-3081, SH 6	27	Drains	4-30-194	1.000	1.0	H-I	Y	HT	FWH1B	172		H-I		1.000	170	19	Yes	No Protection Required		
1914	PTN	4	081	5614-M-3081, SH 6	27	Drains	4-30-195	1.000	1.0	H-I	Y	HT	FWH1A	172		H-I		1.000	170	19	Yes	No Protection Required		
1909	PTN	4	081	5614-M-3081, SH 6	27	LS	LS-4-1545	1.000	4.0	TV	N	HT	FWH1A - HOT AREA - PARTLY INSULATED	172		TV		1.000	170	14	Yes	No Protection Required		
1909	PTN	4	081	5614-M-3081, SH 6	27	LS	LS-4-1505	1.000	5.0	TV	N	HT	FWH1B	172		TV		1.000	170	14	Yes	No Protection Required		
1909	PTN	4	081	5614-M-3081, SH 6	27	LS	LS-4-1544	1.000	5.0	TV	N	HT	FWH1B - HOT AREA - PARTLY INSULATED	172		TV		1.000	170	14	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1912	PTN	4	081	5614-M-3081, SH 6	27	1.5" Pipe	FWH1A	1.500	10.0	H-I	Y	I	58 Discharge 2A	120		H-I		1.500	120	20	Yes	No Protection Required		
1912	PTN	4	081	5614-M-3081, SH 6	27	1.5" Pipe	FWH1B	1.500	10.0	H-I	Y	I	61 2B	120		H-I		1.500	120	20	Yes	No Protection Required		
1910	PTN	4	081	5614-M-3081, SH 6	27	LC, LS	LC-4-1502	1.500	0.5	H,D	N	I		172		BV	BV conservative due to downward portion	1.500	170	0.7	Yes	No Protection Required		
1910	PTN	4	081	5614-M-3081, SH 6	27	LC, LS	LC-4-1514	1.500	2.0	TV	N	I		172		TV		1.500	170	18	Yes	No Protection Required		
1911	PTN	4	081	5614-M-3081, SH 6	27	LI, LGs	LG-4-3422	0.750	3.0	H,D	N	HT	FWH1A	172		BV	BV conservative due to downward portion	0.750	170	0.4	No	HT	close to condenser; hot ambient temp; constant tricke flow	N
1915	PTN	4	081	5614-M-3081, SH 6	27	3/4" Connections	LG-4-1432	0.750	3.5	TV	N	HT	FWH1B	172		TV		0.750	170	5.2	No	HT	close to condenser; hot ambient temp; constant tricke flow	N
1915	PTN	4	081	5614-M-3081, SH 6	27	3/4" Connections	LG-4-3412	0.750	3.0	H,D	N	HT	FWH1B	172		BV	BV conservative due to downward portion	0.750	170	0.4	No	HT	close to condenser; hot ambient temp; constant tricke flow	N
1915	PTN	4	081	5614-M-3081, SH 6	27	3/4" Connections	LG-4-3422	0.750	3.0	H-I,D	Y	HT	FWH1A	172		BV-I	BV conservative due to downward portion	0.750	170	1.95	No	HT	close to condenser; hot ambient temp; constant tricke flow	N
1909	PTN	4	081	5614-M-3081, SH 6	27	LS	LS-4-1517	1.000	4.5	TV	N	HT	FWH1A - HOT AREA - PARTLY INSULATED	172		TV		1.000	170	14	No	HT	close to condensor; hot ambient temp; constant tricke flow	N
1911	PTN	4	081	5614-M-3081, SH 6	27	LI, LGs	LI-4-1545A	1.000	11.0	H-I,D	Y	HT	FWH1A	172		BV-I	BV conservative due to downward portion	1.000	170	2.2	No	HT	close to condensor; hot ambient temp; constant tricke flow	N
1911	PTN	4	081	5614-M-3081, SH 6	27	LI, LGs	LI-4-1545B	1.000	9.0	H-I,D	Y	HT	FWH1B - MOSTLY INSULATED - HOT AREA	172		BV-I	BV conservative due to downward portion	1.000	170	2.2	No	HT	close to condensor; hot ambient temp; constant tricke flow	N
1918	PTN	4	081	5614-M-3081, SH 6	-	1.5" Drains	4-30-227	1.500	1.5	BV,H	N	I	Basement. Condensate Sump Area. Always Warm	172		BV	BV conservative due to downward portion	1.500	170	0.7	No	I		
1918	PTN	4	081	5614-M-3081, SH 6	-	1.5" Drains	4-30-228	1.500	1.5	BV,H	N	I		172		BV	BV conservative due to downward portion	1.500	170	0.7	No	I		
1918	PTN	4	081	5614-M-3081, SH 6	-	1.5" Drains	4-30-237	1.500	1.5	BV,H	N	I		172		BV	BV conservative due to downward portion	1.500	170	0.7	No	I		
1918	PTN	4	081	5614-M-3081, SH 6	-	1.5" Drains	4-30-238	1.500	1.5	BV,H	N	I	Line length estimated	172		BV	BV conservative due to downward portion	1.500	170	0.7	No	I		
1919	PTN	4	081	5614-M-3081, SH 6	-	1.5" Drain	4-30-127	1.500	1.5	BV,H	N	I		172		BV	BV conservative due to downward portion	1.500	170	0.7	No	I		
1919	PTN	4	081	5614-M-3081, SH 6	-	1.5" Drain	4-30-128	1.500	1.5	BV,H	N	I		172		BV	BV conservative due to downward portion	1.500	170	0.7	No	I		
1919	PTN	4	081	5614-M-3081, SH 6	-	1.5" Drain	4-30-137	1.500	1.5	BV,H	N	I		172		BV	BV conservative due to downward portion	1.500	170	0.7	No	I		
1919	PTN	4	081	5614-M-3081, SH 6	-	1.5" Drain	4-30-138	1.500	1.5	BV,H	N	I		172		BV	BV conservative due to downward portion	1.500	170	0.7	No	I		
1862	PTN	4	081	5614-M-3081, SH 5	1	RV (4" Inlet, 6" Outlet per NAMS)	RV-4-3420	4.000	1.0	TV	N	I	FWH3B	310		TV		4.000	310	#N/A	No	I		
1862	PTN	4	081	5614-M-3081, SH 5	1	RV (4" Inlet, 6" Outlet per NAMS)	RV-4-3421	4.000	1.0	TV	N	I	FWH3A	310		TV		4.000	310	#N/A	No	I		
1813	PTN	4	081	5614-M-3081, SH 5	3	PX & FX	PX-4-1458	0.750	1.0	H	N	HT	FWH4B - mezz next to heater - hot area, ASSUME 3/4" DIA	267		H		0.750	260	8.4	Yes	No Protection Required		
1863	PTN	4	081	5614-M-3081, SH 5	3	1.5" Drains	FWHR-4-034	0.500	2.0	BV-I,H	Y	HT	FWH4B	267		BV-I	BV conservative due to downward portion	0.500	260	1.75	No	HT	short run; high process temp; no protection required	N
1813	PTN	4	081	5614-M-3081, SH 5	3	PX & FX	PX-4-1457	0.375	1.0	H	N	HT	Dia assumed based on similar. FWH4A	267	Pipe class is E, but D was chosen from spec.	H		Not Analyzed	260	#N/A	No	HT	short run; high process temp; no protection required	N
1813	PTN	4	081	5614-M-3081, SH 5	3	PX & FX	FX-4-1407	N/A	N/A	N/A	N/A	N/A	FWH4B - nothing sticks out of insulation - - mezz next to heater - hot area	267		N/A			260		No	N/A		
1815	PTN	4	081	5614-M-3081, SH 5	3	1" Connection	4-30-425	1.000	1.0	BV	N	HT	FWH4A	267		BV		1.000	260	0.5	No	HT	short run; high process temp; no protection required	N
1815	PTN	4	081	5614-M-3081, SH 5	3	1" Connection	4-30-426	1.000	1.0	BV	N	HT	FWH4B	267		BV		1.000	260	0.5	No	HT	short run; high process temp; no protection required	N
1816	PTN	4	081	5614-M-3081, SH 5	3	6" Connection	Upstream of 4-30-461	6.000	1.0	H-I	y	I	FWH4A	267		H-I		Not Analyzed	260	#N/A	No	AI		
1816	PTN	4	081	5614-M-3081, SH 5	3	6" Connection	Upstream of 4-30-462	6.000	1.0	H-I	Y	I	FWH4B	267		H-I		Not Analyzed	260	#N/A	No	AI		
1813	PTN	4	081	5614-M-3081, SH 5	3	PX & FX	FX-4-1406	Not provided	N/A	N/A	N/A	N/A	No exterior lines, FX within pipe, FWH4A - nothing sticks out of insulation - mezz next to heater - hot area	267		N/A		Not Analyzed	260		No	N/A		
1863	PTN	4	081	5614-M-3081, SH 5	3	1.5" Drains	4-30-427	1.500	2.0	BV-I,H	Y	I	MSR4D	267		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		
1863	PTN	4	081	5614-M-3081, SH 5	3	1.5" Drains	4-30-428	1.500	2.0	BV-I,H	Y	I	MSR4D Likely no heat trace required.	267		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1819	PTN	4	081	5614-M-3081, SH 5	5	3/4" Connection	4-30-090	0.750	1.0	H,D	N	HT	FWH4A (CAN'T LOCATE) TAKEN FROM TYP	267		BV	BV conservative due to downward portion	0.750	260	0.5	No	HT	verify temp at indication and ambient; if hot do not heat trace	Y
1819	PTN	4	081	5614-M-3081, SH 5	5	3/4" Connection	4-30-091	0.750	1.0	H,D	N	HT	FWH4B CAN'T LOCATE TAKEN FROM TYP	267		BV	BV conservative due to downward portion	0.750	260	0.5	No	HT	verify temp at indication and ambient; if hot do not heat trace	Y
1818	PTN	4	081	5614-M-3081, SH 5	5	4" Pipe	4-30-457 4-30-459	4.000	10.0	H-I	Y	I		267		H-I		4.000	260	15	Yes	No Protection Required		
1818	PTN	4	081	5614-M-3081, SH 5	5	4" Pipe	4-30-458 4-30-460	4.000	10.0	H-I	Y	I		267		H-I		4.000	260	15	Yes	No Protection Required		
1820	PTN	4	081	5614-M-3081, SH 5	6	6" Pipe	4-30-474	6.000	40.0	H-I,D	Y	I	FWH4B - ESTIMATE / CAN'T FOLLOW - HOT AREA	119		BV-I	BV conservative due to downward portion	Not Analyzed	110	#N/A	No	AI		
1820	PTN	4	081	5614-M-3081, SH 5	6	6" Pipe	4-30-473	6.000	35.0	H-I,D	Y	I	FWH4A - CAN'T FOLLOW - HOT AREA - 35' ESTIMATE	119		BV-I	BV conservative due to downward portion	Not Analyzed	110	#N/A	No	AI		
1821	PTN	4	081	5614-M-3081, SH 5	6	6" Connection	Upstream of 4-30-473	6.000	1.0	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1821	PTN	4	081	5614-M-3081, SH 5	6	6" Connection	Upstream of 4-30-474	6.000	1.0	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1823	PTN	4	081	5614-M-3081, SH 5	7	3/4" Connection	4-30-465	0.750	1.0	TV	N	HT	FWH4A	119		TV		0.750	110	2.6	Yes	No Protection Required		
1823	PTN	4	081	5614-M-3081, SH 5	7	3/4" Connection	4-30-466	0.750	1.0	TV	N	HT	FWH4B	119		TV		0.750	110	2.6	Yes	No Protection Required		
1822	PTN	4	081	5614-M-3081, SH 5	7	3" Pipe	CV-4-1511B	3.000	10.0	H-I	Y	I	DISCHARGE	119		H-I		3.000	110	20	Yes	No Protection Required		
1822	PTN	4	081	5614-M-3081, SH 5	7	3" Pipe	CV-4-1512B	3.000	10.0	H-I	Y	I	DISCHARGE	119		H-I		3.000	110	20	Yes	No Protection Required		
1825	PTN	4	081	5614-M-3081, SH 5	8	3/4" Connection	4-30-469	0.750	1.0	H,D	N	HT	FWH4A	119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	both ends open to process temp; short run; no heat trace required	N
1825	PTN	4	081	5614-M-3081, SH 5	8	3/4" Connection	4-30-470	0.750	1.0	H,D	N	HT	FWH4B	119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	both ends open to process temp; short run; no heat trace required	N
1824	PTN	4	081	5614-M-3081, SH 5	8	4" Pipe	4-30-471 4-30-467	4.000	10.0	H-I,D	Y	I		119		BV-I	BV conservative due to downward portion	4.000	110	15	Yes	No Protection Required		
1824	PTN	4	081	5614-M-3081, SH 5	8	4" Pipe	4-30-472 4-30-468	4.000	10.0	H-I,D	Y	I		119		BV-I	BV conservative due to downward portion	4.000	110	15	Yes	No Protection Required		
1826	PTN	4	081	5614-M-3081, SH 5	9	PX & FX	PX-4-1455	0.500	1.0	H-I,U	y	HT	FWH3A	267		H-I	Upward bend not credited for conservatism	0.500	260	13.8	Yes	No Protection Required		
1826	PTN	4	081	5614-M-3081, SH 5	9	PX & FX	PX-4-1456	0.500	1.0	H-I,U	Y	HT	FWH3B	267		H-I	Upward bend not credited for conservatism	0.500	260	13.8	Yes	No Protection Required		
1829	PTN	4	081	5614-M-3081, SH 5	9	3/4" Connection	4-30-353	0.750	1.0	BV	N	HT	FWH3A	267		BV		0.750	260	0.5	No	HT	short run; high process temp; no protection required	N
1829	PTN	4	081	5614-M-3081, SH 5	9	3/4" Connection	4-30-354	0.750	1.0	BV	N	HT	FWH3B	267		BV		0.750	260	0.5	No	HT	short run; high process temp; no protection required	N
1828	PTN	4	081	5614-M-3081, SH 5	9	1" Connection	4-30-325	1.000	1.0	BV	N	HT	FWH3A (IN PIT)	267		BV		1.000	260	0.5	No	HT	short run; high process temp; no protection required	N
1830	PTN	4	081	5614-M-3081, SH 5	9	8" Flange	Downstream of CV-1507A	8.000	1.0	H-I	Y	I	FWH3A	267		H-I		Not Analyzed	260	#N/A	No	AI		
1830	PTN	4	081	5614-M-3081, SH 5	9	8" Flange	Downstream of CV-1508A	8.000	1.0	H-I	Y	I	FWH3B	267		H-I		Not Analyzed	260	#N/A	No	AI		
1826	PTN	4	081	5614-M-3081, SH 5	9	PX & FX	FX-4-1408	Not provided	N/A	N/A	N/A	N/A	FWH4B - nothing sticks out of insulation - - mezz next to heater - hot area	267		N/A		Not Analyzed	260		No	N/A		
1826	PTN	4	081	5614-M-3081, SH 5	9	PX & FX	FX-4-1409	Not provided	N/A	N/A	N/A	N/A	FWH4B - nothing sticks out of insulation - - mezz next to heater - hot area	267		N/A		Not Analyzed	260		No	N/A		
1864	PTN	4	081	5614-M-3081, SH 5	9	1.5" Drains	4-30-327	1.500	2.0	BV-I,H	Y	I	MSR4C Likely no heat trace required.	267		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		
1864	PTN	4	081	5614-M-3081, SH 5	9	1.5" Drains	4-30-328	1.500	2.0	BV-I,H	Y	I	MSR4D Likely no heat trace required.	267		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		
1864	PTN	4	081	5614-M-3081, SH 5	9	1.5" Drains	FWHR-4-030	1.500	2.0	BV-I,H	Y	I	MSR4C Likely no heat trace required.	267		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		
1831	PTN	4	081	5614-M-3081, SH 5	10	6" Pipe	4-30-357 4-30-359	6.000	10.0	TV-I	Y	I	FWH3A (BY-PASS) - WITHIN 10' OF CONDENSER - WARM AREA	211		TV-I		Not Analyzed	210	#N/A	No	AI		
1831	PTN	4	081	5614-M-3081, SH 5	10	6" Pipe	4-30-358 4-30-360	6.000	10.0	TV-I	Y	I	FWH3B (BY-PASS) - CLOSE TO CONDENSER - WARM AREA	211		TV-I		Not Analyzed	210	#N/A	No	AI		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1832	PTN	4	081	5614-M-3081, SH 5	11	1.5" Pipe	Pipe	1.500	N/A	N/A	N/A	N/A	Due to location adjacent to # 3 HX and condenser, local temperature will prevent freezing	211		N/A		1.500	210		No	N/A		
1832	PTN	4	081	5614-M-3081, SH 5	11	1.5" Pipe	Pipe	1.500	N/A	N/A	N/A	N/A	Due to location adjacent to # 3 HX and condenser, local temperature will prevent freezing	211		N/A		1.500	210		No	N/A		
1834	PTN	4	081	5614-M-3081, SH 5	12	8" Connection	4-30-373	8.000	1.0	H-I	Y	I	FWH3A - WARM AREA	119		H-I		Not Analyzed	110	#N/A	No	AI		
1834	PTN	4	081	5614-M-3081, SH 5	12	8" Connection	4-30-374	8.000	1.0	H-I	Y	I	FWH3B - WARM AREA	119		H-I		Not Analyzed	110	#N/A	No	AI		
1833	PTN	4	081	5614-M-3081, SH 5	12	8" Pipe	4-30-373	8.000	N/A	N/A	N/A	N/A	'Any condensing steam will drain to condenser and produce needed trickle flow to prevent freezing.. FWH3A - WARM AREA - NO CLOSED VALVES	119		BV-I	BV conservative due to downward portion	Not Analyzed	110		No	N/A		
1833	PTN	4	081	5614-M-3081, SH 5	12	8" Pipe	4-30-374	8.000	N/A	N/A	N/A	N/A	'Any condensing steam will drain to condenser and produce needed trickle flow to prevent freezing.. FWH3A - WARM AREA - NO CLOSED VALVES	119		BV-I	BV conservative due to downward portion	Not Analyzed	110		No	N/A		
1836	PTN	4	081	5614-M-3081, SH 5	13	3/4" Connection	4-30-365	0.750	1.0	bv,h	n	HT	FWH3A	119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	verify temp at gage; ambient temp; if hot do not heat trace	Y
1836	PTN	4	081	5614-M-3081, SH 5	13	3/4" Connection	4-30-366	0.750	1.0	BV,H	N	HT	FWH3B	119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	verify temp at gage; ambient temp; if hot do not heat trace	Y
1835	PTN	4	081	5614-M-3081, SH 5	13	6" Pipe	CV-4-1507B	6.000	3.0	H-I	Y	I	FWH3A	119		H-I		Not Analyzed	110	#N/A	No	AI		
1835	PTN	4	081	5614-M-3081, SH 5	13	6" Pipe	CV-4-1508B	6.000	3.0	H-I	Y	I	FWH3B	119		H-I		Not Analyzed	110	#N/A	No	AI		
1838	PTN	4	081	5614-M-3081, SH 5	14	3/4" Connection	4-30-370	0.750	0.5	H	N	HT	FWH3B (Behind pump room)	119		H		0.750	110	2.4	Yes	No Protection Required		
1838	PTN	4	081	5614-M-3081, SH 5	14	3/4" Connection	4-30-369	0.750	1.0	H	N	HT	FWH3A	119		H		0.750	110	2.4	Yes	No Protection Required		
1837	PTN	4	081	5614-M-3081, SH 5	14	6" Pipe	4-30-371 4-30-367	6.000	10.0	H-I	Y	I	FWH3A - WITHIN 10 FEET OF CONDENSER - WARM AREA	119		H-I		Not Analyzed	110	#N/A	No	AI		
1837	PTN	4	081	5614-M-3081, SH 5	14	6" Pipe	4-30-372 4-30-368	6.000	10.0	H-I	Y	I	FWH3B - WITHIN 10 FEET OF CONDENSER - WARM AREA	119		H-I		Not Analyzed	110	#N/A	No	AI		
1840	PTN	4	081	5614-M-3081, SH 5	16	1.5" Pipe	FWHR-4-019	1.500	3.0	H-I,D	Y	I	(BY-PASS) (P&ID zone A-3)	260		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		
1840	PTN	4	081	5614-M-3081, SH 5	16	1.5" Pipe	FWHR-4-021	1.500	3.0	H-I,D	Y	I	NO CLOSED VALVE - HOT AREA - OK AS IS	260		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		
1840	PTN	4	081	5614-M-3081, SH 5	16	1.5" Pipe	FWHR-4-027	1.500	3.0	H-I,D	Y	I	NO CLOSED VALVE - HOT AREA - OK AS IS	260		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		
1840	PTN	4	081	5614-M-3081, SH 5	16	1.5" Pipe	FWHR-4-028	1.500	3.0	H-I,D	Y	I	by-pass loop - WITHIN 6 FEET OF CONDENSER WILL NOT FREEZE	260		BV-I	BV conservative due to downward portion	1.500	260	8.7	Yes	No Protection Required		
1861	PTN	4	081	5614-M-3081, SH 5	18	RV (4" Inlet, 6" Outlet per NAMS)	RV-4-6301A	4.000	1.0	TV	N	I	FWH3B	309		TV		4.000	300	#N/A	No	I		
1861	PTN	4	081	5614-M-3081, SH 5	18	RV (4" Inlet, 6" Outlet per NAMS)	RV-4-6301B	4.000	1.0	TV	N	I	FWH3A	309		TV		4.000	300	#N/A	No	I		
1843	PTN	4	081	5614-M-3081, SH 5	19	1" Pipe	FWHR-4-022	1.000	3.0	H-I,D	Y	HT	FWH3A (BY-PASS)	260		BV-I	BV conservative due to downward portion	1.000	260	2.55	No	HT	open to process to temp; saturated steam; no protection required	N
1843	PTN	4	081	5614-M-3081, SH 5	19	1" Pipe	FWHR-4-029	1.000	3.0	H-I,D	Y	HT	FWH3B	260		BV-I	BV conservative due to downward portion	1.000	260	2.55	No	HT	open to process to temp; saturated steam; no protection required	N
1845	PTN	4	081	5614-M-3081, SH 5	21	LS	LS-4-1512	1.000	5.0	loop-I	y	HT	FWH4A	279		BV-I	BV conservative due to downward portion	1.000	270	2.6	No	HT	constant trickly flow; no protection required	N
1845	PTN	4	081	5614-M-3081, SH 5	21	LS	LS-4-1514	1.000	6.0	loop-I	Y	HT	FWH4B	279		BV-I	BV conservative due to downward portion	1.000	270	2.6	No	HT	constant trickly flow; no protection required	N
1846	PTN	4	081	5614-M-3081, SH 5	21	LS & LC	LS-4-1513	1.000	5.0	loop-I	Y	HT	FWH4A	279		BV-I	BV conservative due to downward portion	1.000	270	2.6	No	HT	constant trickly flow; no protection required	N
1846	PTN	4	081	5614-M-3081, SH 5	21	LS & LC	LS-4-1515	1.000	6.0	loop-I	Y	HT	FWH4B	279		BV-I	BV conservative due to downward portion	1.000	270	2.6	No	HT	constant trickly flow; no protection required	N
1847	PTN	4	081	5614-M-3081, SH 5	21	LG	LG-4-3416	1.500	2.0	loop	N	I	by-pass loop - WITHIN 6 FEET OF CONDENSER WILL NOT FREEZE	279		BV	BV conservative due to downward portion	1.500	270	0.75	No	I		
1847	PTN	4	081	5614-M-3081, SH 5	21	LG	LG-4-3417	1.500	3.0	loop	N	I	hot area - no closed valve	279		BV	BV conservative due to downward portion	1.500	270	0.75	No	I		
1851	PTN	4	081	5614-M-3081, SH 5	21	Connections	LG-4-3416	1.500	3.0	loop	N	I	FWH2A	279		BV	BV conservative due to downward portion	1.500	270	0.75	No	I		
1851	PTN	4	081	5614-M-3081, SH 5	21	1.5" Instrument Piping	LG-4-3417	1.500	70.0	H-I,D	Y	I	FWH2B	279		BV-I	BV conservative due to downward portion	1.500	270	8.9	No	AI		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1848	PTN	4	081	5614-M-3081, SH 5	21	1.5" Instrument Piping	FWH4A	1.500	30.0	loop-I	y	I	hot area - no closed valve	325		BV-I	BV conservative due to downward portion	1.500	320	9	No	AI		
1848	PTN	4	081	5614-M-3081, SH 5	21	1.5" Instrument Piping	FWH4B	1.500	30.0	loop-I	Y	I	FWH2B - hot area	325		BV-I	BV conservative due to downward portion	1.500	320	9	No	AI		
1851	PTN	4	081	5614-M-3081, SH 5	21	Connections	LG-4-3417	1.500	3.0	TV	N	I	FWH1A	279		TV		1.500	270	18	Yes	No Protection Required		
1846	PTN	4	081	5614-M-3081, SH 5	21	LS & LC	LC-4-1511	1.500	8.0	loop-I	Y	I	by-pass loop - WITHIN 6 FEET OF CONDENSER WILL NOT FREEZE	279		BV-I	BV conservative due to downward portion	1.500	270	8.9	Yes	No Protection Required		
1846	PTN	4	081	5614-M-3081, SH 5	21	LS & LC	LC-4-1512	1.500	8.0	loop-I	Y	I	by-pass loop - WITHIN 6 FEET OF CONDENSER WILL NOT FREEZE	279		BV-I	BV conservative due to downward portion	1.500	270	8.9	Yes	No Protection Required		
1849	PTN	4	081	5614-M-3081, SH 5	21	Vents	4-30-480	1.500	0.5	TV-I	Y	I	FWH2A	325		TV-I		1.500	320	20	Yes	No Protection Required		
1849	PTN	4	081	5614-M-3081, SH 5	21	Vents	4-30-481	1.500	0.5	TV-I	Y	I	FWH2A	325		TV-I		1.500	320	20	Yes	No Protection Required		
1849	PTN	4	081	5614-M-3081, SH 5	21	Vents	4-30-488	1.500	0.5	H-I	Y	I	FWH2B	325		H-I		1.500	320	20	Yes	No Protection Required		
1849	PTN	4	081	5614-M-3081, SH 5	21	Vents	4-30-489	1.500	0.5	H-I	Y	I	FWH1B	325		H-I		1.500	320	20	Yes	No Protection Required		
1850	PTN	4	081	5614-M-3081, SH 5	21	Drains	4-30-482	1.500	0.5	H-I	Y	I	FWH1A	325		H-I		1.500	320	20	Yes	No Protection Required		
1850	PTN	4	081	5614-M-3081, SH 5	21	Drains	4-30-483	1.500	0.5	H-I	Y	I	FWH1B	325		H-I		1.500	320	20	Yes	No Protection Required		
1850	PTN	4	081	5614-M-3081, SH 5	21	Drains	4-30-149	1.500	1.0	BV-I	Y	I	FWH1A	325		BV-I		1.500	320	9	Yes	No Protection Required		
1850	PTN	4	081	5614-M-3081, SH 5	21	Drains	4-30-490	1.500	1.0	H-I	Y	I	FWH2A	325		H-I		1.500	320	20	Yes	No Protection Required		
1850	PTN	4	081	5614-M-3081, SH 5	21	Drains	4-30-491	1.500	1.0	H-I	Y	I	FWH2B	325		H-I		1.500	320	20	Yes	No Protection Required		
1852	PTN	4	081	5614-M-3081, SH 5	22	LS	LS-4-1508	1.000	5.0	TV-I	Y	HT	FWH3A	225		TV-I		1.000	220	19	Yes	No Protection Required		
1852	PTN	4	081	5614-M-3081, SH 5	22	LS	LS-4-1510	1.000	5.0	TV-I	Y	HT	FWH3B	225		TV-I		1.000	220	19	Yes	No Protection Required		
1853	PTN	4	081	5614-M-3081, SH 5	22	LS & LC	LS-4-1509	1.000	5.0	TV-I	Y	HT	FWH3A	225		TV-I		1.000	220	19	Yes	No Protection Required		
1853	PTN	4	081	5614-M-3081, SH 5	22	LS & LC	LS-4-1511	1.000	5.0	TV-I	Y	HT	FWH3B	225		TV-I		1.000	220	19	Yes	No Protection Required		
1853	PTN	4	081	5614-M-3081, SH 5	22	LS & LC	LC-4-1507	1.500	10.0	loop-I	Y	I	FWH1B	225		BV-I	BV conservative due to downward portion	1.500	220	6.4	No	AI		
1853	PTN	4	081	5614-M-3081, SH 5	22	LS & LC	LC-4-1508	1.500	10.0	loop-I	Y	I	FWH1A	225		BV-I	BV conservative due to downward portion	1.500	220	6.4	No	AI		
1858	PTN	4	081	5614-M-3081, SH 5	22	1.5" Instrument Piping	LG-4-3416	1.500	70.0	H-I,D	Y	I	MSR4C	279		BV-I	BV conservative due to downward portion	1.500	270	8.9	No	AI		
1854	PTN	4	081	5614-M-3081, SH 5	22	LG	LG-4-3414	1.500	3.0	TV	N	I	FWH1B	225		TV		1.500	220	#N/A	No	I		
1855	PTN	4	081	5614-M-3081, SH 5	22	1.5" Instrument Piping	LG-4-3414	1.500	70.0	H-I,D	Y	I	MSR4D can't follow - guess 50	225		BV-I	BV conservative due to downward portion	1.500	220	6.4	No	AI		
1855	PTN	4	081	5614-M-3081, SH 5	22	1.5" Instrument Piping	LG-4-3415	1.500	30.0	H-I,D	Y	I	MSR4C	225		BV-I	BV conservative due to downward portion	1.500	220	6.4	No	AI		
1854	PTN	4	081	5614-M-3081, SH 5	22	LG	LG-4-3415	1.500	3.0	TV-I	Y	I	MSR4C - CAN'T FOLLOW - GUESS 60	225		TV-I		1.500	220	20	Yes	No Protection Required		
1858	PTN	4	081	5614-M-3081, SH 5	22	Connections	LG-4-3414	1.500	3.0	TV	N	I	MSR4C	225		TV		1.500	220	18	Yes	No Protection Required		
1858	PTN	4	081	5614-M-3081, SH 5	22	Connections	LG-4-3415	1.500	3.0	TV-I	Y	I	MSR4D (NOT REQUIRED)	225		TV-I		1.500	220	20	Yes	No Protection Required		
1857	PTN	4	081	5614-M-3081, SH 5	22	Drains	4-30-383	1.500	0.5	H	N	I	MSR4C	265		H		1.500	260	18	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1856	PTN	4	081	5614-M-3081, SH 5	22	Vents	4-30-380	1.500	1.0	TV-I,H	Y	I	MSR4D	265		H-I		1.500	260	20	Yes	No Protection Required		
1856	PTN	4	081	5614-M-3081, SH 5	22	Vents	4-30-381	1.500	1.0	TV-I,H	Y	I	MSR4C	265		H-I		1.500	260	20	Yes	No Protection Required		
1856	PTN	4	081	5614-M-3081, SH 5	22	Vents	4-30-388	1.500	1.0	H-I	Y	I	MSR4D	265		H-I		1.500	260	20	Yes	No Protection Required		
1856	PTN	4	081	5614-M-3081, SH 5	22	Vents	4-30-389	1.500	1.0	H-I	Y	I	MSR4C	265		H-I		1.500	260	20	Yes	No Protection Required		
1857	PTN	4	081	5614-M-3081, SH 5	22	Drains	4-30-219	1.500	1.0	H	N	I	MSR4D	265		H		1.500	260	18	Yes	No Protection Required		
1857	PTN	4	081	5614-M-3081, SH 5	22	Drains	4-30-390	1.500	1.0	H-I	Y	I	MSR4D	265		H-I		1.500	260	20	Yes	No Protection Required		
1857	PTN	4	081	5614-M-3081, SH 5	22	Drains	4-30-391	1.500	1.0	H-I	Y	I	Likely no heat trace required.	265		H-I		1.500	260	20	Yes	No Protection Required		
1864	PTN	4	081	5614-M-3081, SH 5	-	1.5" Drains	FWHE-4-024	1.500	2.0	BV-I,H	Y	I		211		BV-I	BV conservative due to downward portion	1.500	210	5.7	Yes	No Protection Required		
1756	PTN	4	081	5614-M-3081, SH 4	5	Cap & 3/4" Drain	4-30-525	0.750	2.0	BV,H	N	HT		267		BV	BV conservative due to downward portion	0.750	260	0.5	No	HT	short run; high process temp; no protection required	N
1757	PTN	4	081	5614-M-3081, SH 4	5	Welded pipe cap	Upstream of 4-30-553	6.000	1.0	H	N	I	CAN'T LOCATE - TYP, assumed same as pipe	267		H		Not Analyzed	260	#N/A	No	I		
1759	PTN	4	081	5614-M-3081, SH 4	6	Connection (size not marked)	4-30-593	0.750	1.0	H	N	HT	(PID zone A-2), assumed dia similar to others	387		H		Not Analyzed	380	#N/A	No	HT	short run; high process temp; no protection required	N
1761	PTN	4	081	5614-M-3081, SH 4	7	Connection (size not marked)	4-30-591	0.750	1.0	H	N	HT	(PID zone A-6)	387		H		Not Analyzed	380	#N/A	No	HT	short run; high process temp; no protection required	N
1764	PTN	4	081	5614-M-3081, SH 4	9	1" and 1/2" Vents and drains	4-30-449	0.500	1.0	TV-I	Y	HT		267		TV-I		0.500	260	12.2	Yes	No Protection Required		
1764	PTN	4	081	5614-M-3081, SH 4	9	1" and 1/2" Vents and drains	4-30-579	1.000	0.5	BV,H	N	HT		267		BV	BV conservative due to downward portion	1.000	260	0.5	Yes	No Protection Required		
1764	PTN	4	081	5614-M-3081, SH 4	9	1" and 1/2" Vents and drains	4-30-588	1.000	0.5	BV-I	Y	HT		267		BV-I		1.000	260	2.55	Yes	No Protection Required		
1764	PTN	4	081	5614-M-3081, SH 4	9	1" and 1/2" Vents and drains	4-30-590	1.000	1.0	H-I	Y	HT		267		H-I		1.000	260	19	Yes	No Protection Required		
1763	PTN	4	081	5614-M-3081, SH 4	9	4A HDT Level transmitters and associated piping/valves	LIT-4-1510A	0.750	25.0	loop-I	y	N/A	MEZZ LEVEL - SW corner	267		BV-I	BV conservative due to downward portion	0.750	260	2.25	No	N/A		
1763	PTN	4	081	5614-M-3081, SH 4	9	4A HDT Level transmitters and associated piping/valves	LG-4-1510A	0.750	25.0	loop-I	y	HT	MEZZ LEVEL - SW corner	267		BV-I	BV conservative due to downward portion	0.750	260	2.25	No	HT	steam condenses-constant trickle flow; no protection required	N
1765	PTN	4	081	5614-M-3081, SH 4	10	4B HDT Level transmitters and associated piping/valves	LIT-4-1510B	2.000	51.0	loop-I	Y	N/A	SMALL TANK NORTH WEST FOR THE FW PUMP ROOM ON GROUND LEVEL	267		BV-I	BV conservative due to downward portion	2.000	260	15	No	N/A		
1765	PTN	4	081	5614-M-3081, SH 4	10	4B HDT Level transmitters and associated piping/valves	LIT-4-1510C	2.000	51.0	loop-I	Y	N/A	SMALL TANK NORTH WEST FOR THE FW PUMP ROOM ON GROUND LEVEL	267		BV-I	BV conservative due to downward portion	2.000	260	15	No	N/A		
1765	PTN	4	081	5614-M-3081, SH 4	10	4B HDT Level transmitters and associated piping/valves	LG-4-1510B	0.750	26.0	loop-I	Y	HT	SMALL TANK NORTH WEST FOR THE FW PUMP ROOM ON GROUND LEVEL	267		BV-I	BV conservative due to downward portion	0.750	260	2.25	No	HT	steam condenses-constant trickle flow; no protection required	N
1766	PTN	4	081	5614-M-3081, SH 4	10	1" and 1/2" Vents and drains, capped pipe section	4-30-395	1.500	1.0	BV,H	N	I	FWH3B	267		BV	BV conservative due to downward portion	1.500	260	0.75	No	I		
1766	PTN	4	081	5614-M-3081, SH 4	10	1" and 1/2" Vents and drains, capped pipe section	LG-4-1510B	1.500	26.0	loop-I	Y	I	FWH3B	267		BV-I	BV conservative due to downward portion	1.500	260	8.7	No	AI		
1766	PTN	4	081	5614-M-3081, SH 4	10	1" and 1/2" Vents and drains, capped pipe section	4-30-393	1.500	1.5	H	N	I	FWH3A	267		H		1.500	260	18	Yes	No Protection Required		
1767	PTN	4	081	5614-M-3081, SH 4	11	4B HDT capped connections	HDT 4B	1.500	1.0	N/A	N/A	N/A	CAPPED CONNECTIONS ON TANK - HOT AREA UNDER STEEL - GORUND FLOOR, assumed dia, tank heat will prevent freezing	267		N/A		Not Analyzed	260		No	N/A		
1773	PTN	4	081	5614-M-3081, SH 4	16	Cap & 3/4" Drain	4-30-526	0.750	2.0	BV,H	N	HT		267		BV	BV conservative due to downward portion	0.750	260	0.5	No	HT	short run; high process temp; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1774	PTN	4	081	5614-M-3081, SH 4	16	Welded pipe cap	4-30-554	6.000	1.0	h	n	I	assumed based on pipe.dia (P&ID zone A-6) - taken from typ	267		h		Not Analyzed	260	#N/A	No	I		
1775	PTN	4	081	5614-M-3081, SH 4	17	Local Pressure Indicator PI-4-6695	PI-4-6695	0.500	1.5	H	N	HT		267		H		0.500	260	5.2	Yes	No Protection Required		
1778	PTN	4	081	5614-M-3081, SH 4	17	1" drains	4-30-595	1.000	N/A	N/A	N/A	N/A	'Due to local walls, pipe and pump heat loss, local temperatures will remain above freezing	267		N/A		1.000	260		No	N/A		
1778	PTN	4	081	5614-M-3081, SH 4	17	1" drains	4-30-596	1.000	N/A	N/A	N/A	N/A	'Due to local walls, pipe and pump heat loss, local temperatures will remain above freezing	267		N/A		1.000	260		No	N/A		
1777	PTN	4	081	5614-M-3081, SH 4	17	Various test connections	PX-4-3422	1.000	16.0	H,D	N	HT		267		BV	BV conservative due to downward portion	1.000	260	0.5	No	HT	verify 4-30-597 is close to main run	Y
1777	PTN	4	081	5614-M-3081, SH 4	17	Various test connections	PX-4-3423	1.000	9.0	H,D	N	HT		267		BV	BV conservative due to downward portion	1.000	260	0.5	No	HT	verify 4-30-598 is close to main run	Y
1782	PTN	4	081	5614-M-3081, SH 4	18	1" Drain	4-30-566 4-30-492	1.000	1.5	H,D	N	HT	GUESS - CAN'T LOCATE	119		BV	BV conservative due to downward portion	1.000	110	0	No	HT	warm ambient no protection required	N
1780	PTN	4	081	5614-M-3081, SH 4	18	12" piping from HDT 4A/4B to 4B condenser [4-12"-5-D, 4-12"-5-CM]	CV-4-1510B	10.000	40.0	H-I,D	y	I	GUESS - 40'	119		BV-I	BV conservative due to downward portion	Not Analyzed	110	#N/A	No	AI		
1784	PTN	4	081	5614-M-3081, SH 4	19	Connection (size not marked)	4-30-570	0.750	1.5	H,D	N	HT	Length and Dia assumed based on similar	119		BV	BV conservative due to downward portion	Not Analyzed	110	#N/A	No	HT	warm ambient no protection required; usually isolated	N
1783	PTN	4	081	5614-M-3081, SH 4	19	10" piping from HDT 4A/4B to 4B condenser/ bypass control valve CN-4-1510B [4-10"-5-D]	4-30-568 4-30-572	10.000	5.0	H	N	I		119		H		Not Analyzed	110	#N/A	No	I		
1788	PTN	4	081	5614-M-3081, SH 4	20	3/4" drain/connection	4-30-565	0.750	1.5	BV,H	N	HT	SEE PHOTO	373		BV	BV conservative due to downward portion	0.750	370	0.5	No	HT	short run; high process temp; no protection required	N
1786	PTN	4	81	5614-M-3081, SH 4	20	4" piping from Main Condensate Header to HD Pump suction header [4-4"-3-D]	CV-4-1900	4.000	17.0	H	N	I		373		H		4.000	370	15	No	I		
1786	PTN	4	081	5614-M-3081, SH 4	20	4" piping from Main Condensate Header to HD Pump suction header [4-4"-3-D]	CV-4-1900	2.000	3.0	H	N	I		373		H		2.000	370	18	Yes	No Protection Required		
1790	PTN	4	081	5614-M-3081, SH 4	21	3/4" drain	4-30-569	0.750	1.0	BV	N	HT		119		BV		0.750	110	0	No	HT	short run; high process temp; no protection required	N
1789	PTN	4	081	5614-M-3081, SH 4	21	3" piping from Condensate Header to HD pump suction header - Bypass control valve CV-4-1900 [4-3"-3-D]	4-30-567 4-30-571	3.000	5.0	H	N	I	DISCHARGE	119		H		3.000	110	16	Yes	No Protection Required		
1791	PTN	4	081	5614-M-3081, SH 4	22	3" piping to SWLU connection valve SWLU-4-053	Pipe	3.000	N/A	N/A	N/A	N/A	'Due to local walls, pipe and pump heat loss, local temperatures will remain above freezing	109		N/A		3.000	100		No	N/A		
1792	PTN	4	081	5614-M-3081, SH 4	23	1" piping; HD Pump vent to 4A HDT [4-1"-5-D]	4-30-821 4-30-822	1.000	25.0	H-I,D	Y	HT	NO CLOSED VALVE - NOT NEEDED	267		BV-I	BV conservative due to downward portion	1.000	260	2.55	No	HT	constant trickle flow-no protection needed	N
1795	PTN	4	081	5614-M-3081, SH 4	24	Test connection [PX]	PX-4-3424	0.375	1.0	H	N	HT		267		H		0.375	260	3.1	Yes	No Protection Required		
1793	PTN	4	081	5614-M-3081, SH 4	24	Local Pressure Indicator PI-4-1437	PI-4-1437	0.375	1.5	TV	N	HT	PI ON SAMPLE LINE	267		TV		0.375	260	3.1	Yes	No Protection Required	short run; high process temp; no protecton required	N
1794	PTN	4	081	5614-M-3081, SH 4	24	1/2" to 1/4" SS tubing from A HD Pump discharge to sample system	PX-4-3424	0.375	4.0	H	N	HT		267		H		0.375	260	3.1	No	HT	verify with chemistry continous flow	Y
1796	PTN	4	081	5614-M-3081, SH 4	25	Local Pressure Indicator PI-4-1438	PI-4-1438	0.375	3.0	H,U	N	HT		267		H	Upward bend not credited for conservatism	0.375	260	3.1	Yes	No Protection Required		
1798	PTN	4	081	5614-M-3081, SH 4	25	Test connection [PX]	PX-4-3425	0.375	1.5	H,D	N	HT		267		BV	BV conservative due to downward portion	0.375	260	Not Analyzed	No	HT	confrim with chemisty continuous flow; if so no heat trace required	Y
1797	PTN	4	081	5614-M-3081, SH 4	25	1/2" to 1/4" SS tubing from B HD Pump discharge to sample system	PX-4-3425	0.375	5.0	H	N	HT		267		H		0.375	260	3.1	No	HT	verify with chemistry continous flow	Y
1803	PTN	4	081	5614-M-3081, SH 4	27	Test connection [PX]	PX-4-1471	0.375	1.5	H	N	HT		267		H		Not Analyzed	260	#N/A	No	HT	short run; high process temp; no protecton required	N
1804	PTN	4	081	5614-M-3081, SH 4	27	Vents and drains (2 of each)	4-30-863	0.750	1.5	BV,H	N	HT	IN FW PUMP ROOM	267		BV	BV conservative due to downward portion	Not Analyzed	260	#N/A	No	HT	short run; high process temp; no protecton required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1804	PTN	4	081	5614-M-3081, SH 4	27	Vents and drains (2 of each)	4-30-841	0.750	1.0	H	N	HT	IN FW PUMP ROOM	267		H		Not Analyzed	260	#N/A	No	HT	short run; high process temp; no protecton required	N
1804	PTN	4	081	5614-M-3081, SH 4	27	Vents and drains (2 of each)	4-30-843	0.750	1.0	H	N	HT	IN FW PUMP ROOM	267		H		Not Analyzed	260	#N/A	No	HT	short run; high process temp; no protecton required	N
1804	PTN	4	081	5614-M-3081, SH 4	27	Vents and drains (2 of each)	4-30-865	0.750	1.0	BV,H	N	HT	IN FW PUMP ROOM	267		BV	BV conservative due to downward portion	Not Analyzed	260	#N/A	No	HT	short run; high process temp; no protecton required	N
1805	PTN	4	081	5614-M-3081, SH 4	28	3/4" piping - bypass HD pump A/B discharge check valves	4-30-845 4-30-847	0.750	5.0	H	N	HT	BY-PASS FOR CV	267		H		0.750	260	8.4	Yes	No Protection Required		
1805	PTN	4	081	5614-M-3081, SH 4	28	3/4" piping - bypass HD pump A/B discharge check valves	4-30-846 4-30-848	0.750	5.0	H	N	HT	BY-PASS FOR CV - SEE PHOTO	267		H		0.750	260	8.4	Yes	No Protection Required		
1806	PTN	4	081	5614-M-3081, SH 4	29	Piping/ Tubing/ valves associated with FIT-3-1404	FIT-4-1404	0.375	30.0	loop	n	HT	Dia assumed based on simlilar	267		BV	BV conservative due to downward portion	Not Analyzed	260	#N/A	No	HT	verify line temp-if not high enough heat trace	Y
1809	PTN	4	081	5614-M-3081, SH 4	30	Connection (size not marked)	4-30-870	0.750	1.0	BV	N	HT	Dia assumed based on simlilar	267		BV		Not Analyzed	260	#N/A	No	HT	short run; high process temp; no protecton required	N
1808	PTN	4	081	5614-M-3081, SH 4	30	12" piping from A/B HD Pumps to FW PP suction/ bypass control valve CN-4-1510A [4-12"-3-D]	4-30-869 4-30-871	12.000	10.0	H	N	I	IN FW PUMP ROOM - HOT AREA	267		H		Not Analyzed	260	#N/A	No	I		
1810	PTN	4	081	5614-M-3081, SH 4	31	Flex tubing installed to either side of CV-4-1510A; HD pump interlock	DPS-4-1401	0.375	4.0	loop	n	HT	Dia assumed based on simlilar	267		BV	BV conservative due to downward portion	Not Analyzed	260	#N/A	No	HT	short run; high process line; no protection required	N
1810	PTN	4	081	5614-M-3081, SH 4	31	Flex tubing installed to either side of CV-4-1510A; HD pump interlock	DPS-4-1402	0.375	4.0	loop	N	HT	Dia assumed based on simlilar	267		BV	BV conservative due to downward portion	Not Analyzed	260	#N/A	No	HT	short run; high process line; no protection required	N
1686	PTN	4	081	5614-M-3081, SH 3	1	6A FW HTR Level transmitters and associated piping/valves	LIT-4-1517A	2.000	23.0	loop-I	y	N/A	JUST SOUTH OF FEEDWATER HEATER ON GROUND LEVEL	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1686	PTN	4	081	5614-M-3081, SH 3	1	6A FW HTR Level transmitters and associated piping/valves	LIT-4-1517B	2.000	22.0	loop-I	y	N/A	JUST SOUTH OF FEEDWATER HEATER ON GROUND LEVEL	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1686	PTN	4	081	5614-M-3081, SH 3	1	6A FW HTR Level transmitters and associated piping/valves	LIT-4-1517C	2.000	21.0	loop-I	y	N/A	JUST SOUTH OF FEEDWATER HEATER ON GROUND LEVEL	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1687	PTN	4	081	5614-M-3081, SH 3	1	1" Drain	4-30-607	1.000	1.0	H-I	Y	HT		380		H-I		1.000	380	19	Yes	No Protection Required		
1687	PTN	4	081	5614-M-3081, SH 3	1	1" Drain	4-30-615	1.000	1.0	H-I	Y	HT		380		H-I		1.000	380	19	Yes	No Protection Required		
1687	PTN	4	081	5614-M-3081, SH 3	1	1" Drain	4-30-721	1.000	1.0	H-I	Y	HT		380		H-I		1.000	380	19	Yes	No Protection Required		
1687	PTN	4	081	5614-M-3081, SH 3	1	1" Vent	4-30-605	1.000	1.0	TV-I	Y	HT		441		TV-I		1.000	400	19	Yes	No Protection Required		
1687	PTN	4	081	5614-M-3081, SH 3	1	1" Vent	4-30-613	1.000	1.0	TV-I	Y	HT		441		TV-I		1.000	400	19	Yes	No Protection Required		
1687	PTN	4	081	5614-M-3081, SH 3	1	1" Vent	4-30-720	1.000	1.0	TV-I	Y	HT		441		TV-I		1.000	400	19	Yes	No Protection Required		
1690	PTN	4	081	5614-M-3081, SH 3	3	1" piping - bypass Orifice	FWHR-4-080	1.000	5.0	H-I	y	HT		441		H-I		1.000	400	19	Yes	No Protection Required		
1696	PTN	4	081	5614-M-3081, SH 3	5	Flange connection/ drains [4-1/2"-5-D]	4-30-014	0.500	0.5	BV	N	HT		380		BV		0.500	380	0.5	Yes	No Protection Required		
1696	PTN	4	081	5614-M-3081, SH 3	5	Flange connection/ drains [4-1/2"-5-D]	4-30-498A	0.500	0.5	H-I	Y	HT		380		H-I		0.500	380	20	Yes	No Protection Required		
1696	PTN	4	081	5614-M-3081, SH 3	5	Flange connection/ drains [4-1/2"-5-D]	4-30-651	0.500	0.5	H	N	HT		380		H		0.500	380	7.9	Yes	No Protection Required		
1695	PTN	4	081	5614-M-3081, SH 3	5	1/2" and 3/4" connections; Various test connections [PX, TX, FX]	PX-4-1463	0.750	0.5	TV	N	HT		380		TV		0.750	380	17.8	Yes	No Protection Required		
1696	PTN	4	081	5614-M-3081, SH 3	5	Flange connection/ drains [4-1/2"-5-D]	4-30-499A	0.750	0.5	TV	N	HT	Location on P&ID is B-6)	380		TV		0.750	380	17.8	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1695	PTN	4	081	5614-M-3081, SH 3	5	1/2" and 3/4" connections; Various test connections [PX, TX, FX]	FX-4-1404	10.000	N/A	N/A	N/A	N/A	within pipe	380		N/A		Not Analyzed	380		No	N/A		
1697	PTN	4	081	5614-M-3081, SH 3	6	8" piping/ bypass CV-4-1517A [4-8"-5-D]	4-30-657 4-30-659	8.000	3.0	H-I	Y	I	BY-PASS - (Location on P&ID is B-5) - 3' TO CLOSED VALVE, 10' MORE BACK TO HEADER	380		H-I		Not Analyzed	380	#N/A	No	AI		
1701	PTN	4	081	5614-M-3081, SH 3	7	3/4" drains	4-30-699	0.750	1.0	H	N	HT	(Location on P&ID is C-4) - TAKEN FROM TYP	119		H		0.750	110	2.4	Yes	No Protection Required		
1702	PTN	4	081	5614-M-3081, SH 3	7	Blind Flange/ connection	Upstream of 4-30-673	10.000	0.5	H-I	Y	I	NOT ACCESSSIBLE - WARNING TAPE	119		H-I		Not Analyzed	110	#N/A	No	AI		
1704	PTN	4	081	5614-M-3081, SH 3	8	3/4" Drain/connection	4-30-669	0.750	1.5	BV,H	N	HT		119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	verify ambient temperature; if hot do not heat trace	Y
1703	PTN	4	081	5614-M-3081, SH 3	8	8" piping/ bypass CV-4-1517B [4-8"-5-D, 4-8"-5-E]	4-30-667 4-30-671	8.000	12.0	H-I	Y	I	BY-PASS - (Location on P&ID is D-3) - ASSUMED BASED ON OTHERS	119		H-I		Not Analyzed	110	#N/A	No	AI		
1705	PTN	4	081	5614-M-3081, SH 3	9	5A FW HTR Level transmitters and associated piping/valves	LIT-4-1520A	2.000	25.0	loop-I	y	N/A		375		BV-I	BV conservative due to downward portion	2.000	370	15	No	N/A		
1705	PTN	4	081	5614-M-3081, SH 3	9	5A FW HTR Level transmitters and associated piping/valves	LIT-4-1520B	2.000	25.0	loop-I	y	N/A		375		BV-I	BV conservative due to downward portion	2.000	370	15	No	N/A		
1705	PTN	4	081	5614-M-3081, SH 3	9	5A FW HTR Level transmitters and associated piping/valves	LIT-4-1520C	2.000	25.0	loop-I	y	N/A		375		BV-I	BV conservative due to downward portion	2.000	370	15	No	N/A		
1706	PTN	4	081	5614-M-3081, SH 3	9	1" Vent	4-30-509	1.000	1.0	TV-I	Y	HT		387		TV-I		1.000	380	19	Yes	No Protection Required		
1706	PTN	4	081	5614-M-3081, SH 3	9	1" Vent	4-30-513	1.000	1.0	TV-I	Y	HT		387		TV-I		1.000	380	19	Yes	No Protection Required		
1706	PTN	4	081	5614-M-3081, SH 3	9	1" Vent	4-30-531	1.000	1.0	TV-I	Y	HT		387		TV-I		1.000	380	19	Yes	No Protection Required		
1706	PTN	4	081	5614-M-3081, SH 3	9	1" Drain	4-30-511	1.000	1.0	H-I	Y	HT		387		H-I		1.000	380	19	Yes	No Protection Required		
1706	PTN	4	081	5614-M-3081, SH 3	9	1" Drain	4-30-515	1.000	1.0	H-I	Y	HT		387		H-I		1.000	380	19	Yes	No Protection Required		
1706	PTN	4	081	5614-M-3081, SH 3	9	1" Drain	4-30-533	1.000	1.0	H-I	Y	HT		387		H-I		1.000	380	19	Yes	No Protection Required		
1708	PTN	4	081	5614-M-3081, SH 3	11	1" pipe - Bypass flow orifice	FWHR-4-035	1.000	4.0	H-I	Y	HT	BY-PASS (P&ID ZONE A-6)	119		H-I		1.000	110	11	Yes	No Protection Required		
1711	PTN	4	081	5614-M-3081, SH 3	13	Test connections [TX, PX]	PX-4-1461	0.500	1.0	H	N	HT		387		H		0.500	380	7.9	Yes	No Protection Required		
1712	PTN	4	081	5614-M-3081, SH 3	13	1" cap/drain	4-30-119	1.000	1.0	BV	N	HT		387		BV		1.000	380	0.5	No	HT	short run; high process temp; no protection required	N
1713	PTN	4	081	5614-M-3081, SH 3	14	3" piping for SWLU connection to 5A FW HTR drain line 4-3"-5-D	None	3.000	35.0	H-I,D	Y	I	DISCHARGE	387		BV-I	BV conservative due to downward portion	3.000	380	15	No	AI		
1714	PTN	4	081	5614-M-3081, SH 3	15	6B FW HTR Level transmitters and associated piping/valves	LIT-4-1518A	2.000	25.0	loop-I	Y	N/A	TD - along east path	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1714	PTN	4	081	5614-M-3081, SH 3	15	6B FW HTR Level transmitters and associated piping/valves	LIT-4-1518B	2.000	25.0	loop-I	Y	N/A	TD - along east path	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1714	PTN	4	081	5614-M-3081, SH 3	15	6B FW HTR Level transmitters and associated piping/valves	LIT-4-1518C	2.000	25.0	loop-I	Y	N/A	TD - along east path	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1715	PTN	4	081	5614-M-3081, SH 3	15	1" Drain	4-30-606	1.000	1.0	H-I	Y	HT		380		H-I		1.000	380	19	Yes	No Protection Required		
1715	PTN	4	081	5614-M-3081, SH 3	15	1" Drain	4-30-614	1.000	1.0	H-I	Y	HT		380		H-I		1.000	380	19	Yes	No Protection Required		
1715	PTN	4	081	5614-M-3081, SH 3	15	1" Drain	4-30-725	1.000	1.0	H-I	Y	HT		380		H-I		1.000	380	19	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1715	PTN	4	081	5614-M-3081, SH 3	15	1" Vent	4-30-604	1.000	1.0	TV-I	Y	HT		441		TV-I		1.000	400	19	Yes	No Protection Required		
1715	PTN	4	081	5614-M-3081, SH 3	15	1" Vent	4-30-612	1.000	1.0	TV-I	Y	HT		441		TV-I		1.000	400	19	Yes	No Protection Required		
1715	PTN	4	081	5614-M-3081, SH 3	15	1" Vent	4-30-724	1.000	1.0	TV-I	Y	HT		441		TV-I		1.000	400	19	Yes	No Protection Required		
1718	PTN	4	081	5614-M-3081, SH 3	17	1" piping - bypass Orifice	FWHR-4-082	1.000	4.0	H-I	Y	HT	BY-PASS	441		H-I		1.000	400	19	Yes	No Protection Required		
1723	PTN	4	081	5614-M-3081, SH 3	18	Flange connection/ drain [4-1/2"-5-D]	4-30-647	0.500	0.5	TV	N	HT	CAN'T LOCATE- TAKEN FROM TRAIN A	380		TV		0.500	380	7.9	Yes	No Protection Required		
1722	PTN	4	081	5614-M-3081, SH 3	18	1/2" and 3/4" connections; Various test connections [PX, TX, FX]	PX-4-1464	0.750	0.5	TV	N	HT	CAN'T LOCATE- TAKEN FROM TRAIN A	380		TV		0.750	380	17.8	Yes	No Protection Required		
1723	PTN	4	081	5614-M-3081, SH 3	18	Flange connection/ drain [4-1/2"-5-D]	4-30-499B	0.750	0.5	tv	N	HT	CAN'T LOCATE- TAKEN FROM TRAIN A	380		tv		0.750	380	17.8	Yes	No Protection Required		
1723	PTN	4	081	5614-M-3081, SH 3	18	Flange connection/ drain [4-1/2"-5-D]	4-30-626	1.000	1.0	BV	N	HT	CAN'T LOCATE- TAKEN FROM TRAIN A	380		BV		1.000	380	0.5	No	HT	verify length of line; if short line (less than 2') do not heat trace	Y
1722	PTN	4	081	5614-M-3081, SH 3	18	1/2" and 3/4" connections; Various test connections [PX, TX, FX]	FX-4-1405	10.000	N/A	N/A	N/A	N/A	within pipe	380		N/A		Not Analyzed	380		No	N/A		
1724	PTN	4	081	5614-M-3081, SH 3	19	8" piping/ bypass CV-4-1518A [4-8"-5-D]	4-30-658 4-30-660	8.000	3.0	H-I	Y	I	BY-PASS - 3' TO CLOSED VALVE, 10 MORE FEET TO HEADER	380		H-I		Not Analyzed	380	#N/A	No	AI		
1728	PTN	4	081	5614-M-3081, SH 3	20	3/4" drains	4-30-666	0.750	1.5	BV,H	N	HT	LOCATION n. OF fw PUMP ROOM GROUND FLOOR (HOT AREA)	119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	verify ambient temperature; if hot do not heat trace	Y
1729	PTN	4	081	5614-M-3081, SH 3	20	Blind Flange	Upstream of 4-30-674	10.000	0.5	H-I	Y	I		119		H-I		Not Analyzed	110	#N/A	No	AI		
1731	PTN	4	081	5614-M-3081, SH 3	21	3/4" Drain/connections	4-30-670	0.750	1.0	H,D	N	HT	DRAIN - JUST NORTH OF FW PUMP ROOM	119		BV	BV conservative due to downward portion	0.750	110	0	No	HT	verify ambient temperature; if hot do not heat trace	Y
1730	PTN	4	081	5614-M-3081, SH 3	21	8" piping/ bypass CV-4-1518B [4-8"-5-D, 4-8"-5-E]]	4-30-668 4-30-672	8.000	12.0	H-I,D	Y	I	BY-PASS	119		BV-I	BV conservative due to downward portion	Not Analyzed	110	#N/A	No	AI		
1732	PTN	4	081	5614-M-3081, SH 3	22	5B FW HTR Level transmitters and associated piping/valves	LIT-4-1521A	2.000	20.0	loop-I	Y	N/A	LOCATED TD SE SIDE RIGHT AT THE TOP OF STAIRS	375		BV-I	BV conservative due to downward portion	2.000	370	15	No	N/A		
1732	PTN	4	081	5614-M-3081, SH 3	22	5B FW HTR Level transmitters and associated piping/valves	LIT-4-1521B	2.000	20.0	loop-I	Y	N/A	LOCATED TD SE SIDE NEXT TO STAIRS	375		BV-I	BV conservative due to downward portion	2.000	370	15	No	N/A		
1732	PTN	4	081	5614-M-3081, SH 3	22	5B FW HTR Level transmitters and associated piping/valves	LIT-4-1521C	2.000	20.0	loop-I	Y	N/A	LOCATED TD SE SIDE NEXT TO STAIRS	375		BV-I	BV conservative due to downward portion	2.000	370	15	No	N/A		
1733	PTN	4	081	5614-M-3081, SH 3	22	1" Vent	4-30-508	1.000	1.0	TV-I	Y	HT	LOCATED TD SE SIDE NEXT TO STAIRS	309		TV-I		1.000	300	19	Yes	No Protection Required		
1733	PTN	4	081	5614-M-3081, SH 3	22	1" Vent	4-30-512	1.000	1.0	TV-I	Y	HT	LOCATED TD SE SIDE NEXT TO STAIRS	309		TV-I		1.000	300	19	Yes	No Protection Required		
1733	PTN	4	081	5614-M-3081, SH 3	22	1" Vent	4-30-535	1.000	1.0	TV-I	Y	HT	LOCATED TD SE SIDE NEXT TO STAIRS	309		TV-I		1.000	300	19	Yes	No Protection Required		
1733	PTN	4	081	5614-M-3081, SH 3	22	1" Drain	4-30-510	1.000	1.0	H-I	Y	HT	LOCATED TD SE SIDE NEXT TO STAIRS	387		H-I		1.000	380	19	Yes	No Protection Required		
1733	PTN	4	081	5614-M-3081, SH 3	22	1" Drain	4-30-514	1.000	1.0	H-I	Y	HT	LOCATED TD SE SIDE NEXT TO STAIRS	387		H-I		1.000	380	19	Yes	No Protection Required		
1733	PTN	4	081	5614-M-3081, SH 3	22	1" Drain	4-30-537	1.000	1.0	H-I	Y	HT	LOCATED TD SE SIDE NEXT TO STAIRS	387		H-I		1.000	380	19	Yes	No Protection Required		
1735	PTN	4	081	5614-M-3081, SH 3	24	1" pipe - Bypass flow orifice	FWHR-4-042	1.000	4.0	H-I	Y	HT	(P&ID D-6) (BY-PASS)	387		H-I		1.000	380	19	Yes	No Protection Required		
1738	PTN	4	081	5614-M-3081, SH 3	26	Test connections [TX, PX]	PX-4-1462	0.500	1.0	TV	N	HT		387		TV		0.500	380	7.9	Yes	No Protection Required		
1739	PTN	4	081	5614-M-3081, SH 3	26	Cap/ 1" drain	4-30-120	1.000	1.0	BV	N	HT		387		BV		1.000	380	0.5	No	HT	short run; high process temp; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1740	PTN	4	081	5614-M-3081, SH 3	27	3" piping for SWLU connection to 5B FW HTR drain line [4-3"-5-D]	None	3.000	35.0	BV-I	Y	I	DISCHARGE	387		BV-I		3.000	380	15	No	AI		
1742	PTN	4	081	5614-M-3081, SH 3	5A FW HTR	5A FWHTR Tank Relief Valve RV-4-3422	RV-4-3422	4.000	1.0	TV	N	I		387		TV		4.000	380	20	Yes	No Protection Required		
1744	PTN	4	081	5614-M-3081, SH 3	5B FW HTR	5B FWHTR Tank Relief Valve RV-4-3423	RV-4-3423	4.000	1.0	TV	N	I		387		TV		4.000	380	20	Yes	No Protection Required		
1747	PTN	4	081	5614-M-3081, SH 3	6A FW HTR	6A FWHTR 1 1/2" drains	FWHR-4-038	1.500	2.0	BV-I,H	Y	I	FWH4A (INSULATION MAY CAUSE ACTUATOR ON RV TO NOT FUNCTION PROPERLY, MAY HINDER OPENING OR CAUSE TO BE STUCK OPEN. SEE RV PHOTOS)	380		BV-I	BV conservative due to downward portion	1.500	380	9	Yes	No Protection Required		
1747	PTN	4	081	5614-M-3081, SH 3	6A FW HTR	6A FWHTR 1 1/2" drains	FWHR-4-627	1.500	2.0	BV-I,H	Y	I	FWH4B (INSULATION MAY CAUSE ACTUATOR ON RV TO NOT FUNCTION PROPERLY, MAY HINDER OPENING OR CAUSE TO BE STUCK OPEN. SEE RV PHOTOS)	380		BV-I	BV conservative due to downward portion	1.500	380	9	Yes	No Protection Required		
1746	PTN	4	081	5614-M-3081, SH 3	6A FW HTR	6A FWHTR Tank Relief Valve RV-4-3424	RV-4-3424	4.000	1.0	TV	N	I	INLINE	380		TV		4.000	380	20	Yes	No Protection Required		
1750	PTN	4	081	5614-M-3081, SH 3	6B FW HTR	6B FWHTR 1 1/2" tank drains	FWHR-4-039	1.500	2.0	BV-I,H	Y	I	FWH4A	380		BV-I	BV conservative due to downward portion	1.500	380	9	Yes	No Protection Required		
1750	PTN	4	081	5614-M-3081, SH 3	6B FW HTR	6B FWHTR 1 1/2" tank drains	FWHR-4-628	1.500	2.0	BV-I,H	Y	I	FWH4B	380		BV-I	BV conservative due to downward portion	1.500	380	9	Yes	No Protection Required		
1749	PTN	4	081	5614-M-3081, SH 3	6B FW HTR	6B FWHTR Tank Relief Valve RV-4-3425	RV-4-3425	4.000	1.0	TV	N	I		380		TV		4.000	380	20	Yes	No Protection Required		
1643	PTN	4	081	5614-M-3081, SH 2	1	2" vent RHTR Drain Tank 4A to ES system/ FW HTR 6A [4-2"-2-C]	PIPE	2.000	150.0	H-I	Y	I	can't follow through mezz - estimate pipe length of 150 ft	513		H-I		2.000	400	20	No	AI		
1644	PTN	4	081	5614-M-3081, SH 2	2	8" & 4" Drains/Vents from MSRs A/B to RHTR Drain Tank 4A [4-8"-2-C, 4-4"-2-C]	Vent Line	4.000	75.0	BV-I	Y	I	can't follow through mezz - estimate pipe length of 75 ft	513		BV-I		4.000	400	15	No	AI		
1644	PTN	4	081	5614-M-3081, SH 2	2	8" & 4" Drains/Vents from MSRs A/B to RHTR Drain Tank 4A [4-8"-2-C, 4-4"-2-C]	Vent Line	4.000	75.0	BV-I	Y	I	can't follow through mezz - estimate pipe length of 75 ft	513		BV-I		4.000	400	15	No	AI		
1644	PTN	4	081	5614-M-3081, SH 2	2	8" & 4" Drains/Vents from MSRs A/B to RHTR Drain Tank 4A [4-8"-2-C, 4-4"-2-C]	Drain Line	8.000	75.0	BV-I	Y	I	can't follow through mezz - estimate pipe length of 75 ft	513		BV-I		Not Analyzed	400	#N/A	No	AI		
1644	PTN	4	081	5614-M-3081, SH 2	2	8" & 4" Drains/Vents from MSRs A/B to RHTR Drain Tank 4A [4-8"-2-C, 4-4"-2-C]	Drain Line	8.000	75.0	BV-I	Y	I	can't follow through mezz - estimate pipe length of 75 ft	513		BV-I		Not Analyzed	400	#N/A	No	AI		
1645	PTN	4	081	5614-M-3081, SH 2	3	RHTR Drain Tank 4A Level transmitters and associated piping/valves	LIT-4-1505A	1.500	20.0	BV-I	Y	N/A	INSTRUMENTATION LOOP - TANK WEST OF fw PUMP ROOM, NORTH OF Heater pumps - near column B35	513		BV-I		1.500	400	9	No	N/A		
1645	PTN	4	081	5614-M-3081, SH 2	3	RHTR Drain Tank 4A Level transmitters and associated piping/valves	LIT-4-1505B	1.500	22.0	BV-I	Y	N/A	INSTRUMENTATION LOOP - TANK WEST OF fw PUMP ROOM, NORTH OF Heater pumps - near column B35	513		BV-I		1.500	400	9	No	N/A		
1645	PTN	4	081	5614-M-3081, SH 2	3	RHTR Drain Tank 4A Level transmitters and associated piping/valves	LIT-4-1505C	1.500	20.0	BV-I	Y	N/A	INSTRUMENTATION LOOP - TANK WEST OF fw PUMP ROOM, NORTH OF Heater pumps - near column B35	513		BV-I		1.500	400	9	No	N/A		
1646	PTN	4	081	5614-M-3081, SH 2	3	1" Vents and drains	Drain & Valve 4-30-765	1.000	0.5	BV-I	Y	HT		513		BV-I		1.000	400	3	Yes	No Protection Required		
1646	PTN	4	081	5614-M-3081, SH 2	3	1" Vents and drains	Drain & Valve 4-30-778	1.000	0.5	BV-I	Y	HT		513		BV-I		1.000	400	3	Yes	No Protection Required		
1646	PTN	4	081	5614-M-3081, SH 2	3	1" Vents and drains	Drain & Valve 4-30-828	1.000	0.5	BV-I	Y	HT		513		BV-I		1.000	400	3	Yes	No Protection Required		
1646	PTN	4	081	5614-M-3081, SH 2	3	1" Vents and drains	Vent - Valve 4-30-764	1.000	1.0	TV	N	HT	CONGESTED AREA ABOUT 9' ABOVE THE GROUND, WILL NEED SCAFFOLDING OR LADDER	513		TV		1.000	400	20	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1646	PTN	4	081	5614-M-3081, SH 2	3	1" Vents and drains	Vent - Valve 4-30-779	1.000	1.0	TV	N	HT	CONGESTED AREA ABOUT 9' ABOVE THE GROUND, WILL NEED SCAFFOLDING OR LADDER	513		TV		1.000	400	20	Yes	No Protection Required		
1646	PTN	4	081	5614-M-3081, SH 2	3	1" Vents and drains	Vent - Valve 4-30-826	1.000	1.0	TV	N	HT	CONGESTED AREA ABOUT 9' ABOVE THE GROUND, WILL NEED SCAFFOLDING OR LADDER	513		TV		1.000	400	20	Yes	No Protection Required		
1651	PTN	4	081	5614-M-3081, SH 2	4	3/4" Drain/connection	Drain 4-30-809	0.750	0.5	BV	N	HT	VALVE HAS DRIP LEAK	513		BV		0.750	400	0.5	Yes	No Protection Required		
1652	PTN	4	081	5614-M-3081, SH 2	4	3/4" vent	Vent 4-30-143	0.750	1.5	TV	N	HT		513		TV		0.750	400	19	Yes	No Protection Required		
1647	PTN	4	081	5614-M-3081, SH 2	4	Flow indication and associated valves, 1/2" tubing. [FE/FI 4-5120] [4-1/2"-2-C]	FE/ FI-4-5120 & loop	0.500	12.0	BV,H,U	N	HT	P&ID is not acurate. The loop has a tubing bypass for the FI with a valve	513		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	verify ambient temp; if hot no protection required	Y
1651	PTN	4	081	5614-M-3081, SH 2	4	3/4" Drain/connection	Drain 4-30-792	0.750	1.0	BV	N	HT		513		BV		0.750	400	0.5	No	HT	short line high process temp; no protection required	N
1653	PTN	4	081	5614-M-3081, SH 2	4	Blind Flange	dead leg w/ blind	10.000	1.0	H-I	Y	I	FWH3A	513		H-I		Not Analyzed	400	#N/A	No	AI		
1655	PTN	4	081	5614-M-3081, SH 2	5	3/4" Drain/connection	drain 4-30-790	0.750	0.5	BV	N	HT		513		BV		0.750	400	0.5	Yes	No Protection Required		
1654	PTN	4	081	5614-M-3081, SH 2	5	10" piping/ bypass FE-4-5120 [4-10"-2-C]	by-pass loop 2 valves	10.000	20.0	BV-I,H,U	Y	I		513		BV-I	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	AI		
1657	PTN	4	081	5614-M-3081, SH 2	6	3/4"drain/connection	drain 4-30-811	0.750	1.0	H	N	HT		513		H		0.750	400	14	Yes	No Protection Required		
1656	PTN	4	081	5614-M-3081, SH 2	6	8" piping/ bypass CV-4-1505 [4-8"-2-C, 4-8"-5-D]	by-pass	8.000	15.0	BV-I	Y	I		513		BV-I		Not Analyzed	400	#N/A	No	AI		
1661	PTN	4	081	5614-M-3081, SH 2	7	3/4"drain/connection	drain 4-30-815	0.750	1.0	BV,H	N	HT		513		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	check ambient temp; if hot no protection required	N
1662	PTN	4	081	5614-M-3081, SH 2	7	Blind Flange/ connection	Dead-leg & Blind	10.000	1.0	H-I	Y	I	FWH3A	513		H-I		Not Analyzed	400	#N/A	No	AI		
1664	PTN	4	081	5614-M-3081, SH 2	8	3/4" Drain/connection	drain 4-30-817	0.750	1.0	BV	N	HT		513		BV		0.750	400	0.5	No	HT	check ambient temp; if hot no protection required	N
1663	PTN	4	081	5614-M-3081, SH 2	8	8" piping/ bypass CV-4-1515 [4-8"-2-C, 4-8"-5-E]	by-pass	8.000	10.0	H-I,D	Y	I		513		BV-I	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	AI		
1665	PTN	4	081	5614-M-3081, SH 2	9	2" vent RHTR Drain Tank 4B to ES system/ FW HTR 6B [4-2"-2-C]	steam pipe	2.000	70.0	H-I	Y	I	MAY NOT BE POSSIBLE TO INSULATE AND ALOW THE ACTUATOR TO OPERATE PROPERLY	513		H-I		2.000	400	20	No	AI		
1667	PTN	4	081	5614-M-3081, SH 2	11	RHTR Drain Tank 4B Level transmitters and associated piping/valves	LIT-4-1506A & LOOP	0.500	20.0	H-I,D	Y	N/A	DRAIN TANK RIGHT BEHIND (NORTH) OF fw PUMP ROOM ON GROUND LEVEL	513		BV-I	BV conservative due to downward portion	0.500	400	2	No	N/A		
1667	PTN	4	081	5614-M-3081, SH 2	11	RHTR Drain Tank 4B Level transmitters and associated piping/valves	LIT-4-1506B & LOOP	0.500	22.0	H-I,D	Y	N/A	DRAIN TANK RIGHT BEHIND (NORTH) OF fw PUMP ROOM ON GROUND LEVEL	513		BV-I	BV conservative due to downward portion	0.500	400	2	No	N/A		
1667	PTN	4	081	5614-M-3081, SH 2	11	RHTR Drain Tank 4B Level transmitters and associated piping/valves	LIT-4-1506C & LOOP	0.500	20.0	H-I,D	Y	N/A	DRAIN TANK RIGHT BEHIND (NORTH) OF fw PUMP ROOM ON GROUND LEVEL	513		BV-I	BV conservative due to downward portion	0.500	400	2	No	N/A		
1668	PTN	4	081	5614-M-3081, SH 2	11	1" Vents and drains	drain 4-30-768	1.000	0.5	BV	N	HT		513		BV		1.000	400	0.5	Yes	No Protection Required		
1668	PTN	4	081	5614-M-3081, SH 2	11	1" Vents and drains	drain 4-30-834	1.000	0.5	BV	N	HT		513		BV		1.000	400	0.5	Yes	No Protection Required		
1668	PTN	4	081	5614-M-3081, SH 2	11	1" Vents and drains	drain 4-30835	1.000	0.5	BV	N	HT		513		BV		1.000	400	0.5	Yes	No Protection Required		
1668	PTN	4	081	5614-M-3081, SH 2	11	1" Vents and drains	vent 4-30-769	1.000	1.0	TV	N	HT	CONGESTED AREA ABOUT 9' ABOVE THE GROUND, WILL NEED SCAFFOLDING OR LADDER	513		TV		1.000	400	20	Yes	No Protection Required		
1668	PTN	4	081	5614-M-3081, SH 2	11	1" Vents and drains	vent 4-30-832	1.000	1.0	TV	N	HT	CONGESTED AREA ABOUT 9' ABOVE THE GROUND, WILL NEED SCAFFOLDING OR LADDER	513		TV		1.000	400	20	Yes	No Protection Required		
1668	PTN	4	081	5614-M-3081, SH 2	11	1" Vents and drains	vent 4-30-833	1.000	1.0	TV	N	HT	CONGESTED AREA ABOUT 9' ABOVE THE GROUND, WILL NEED SCAFFOLDING OR LADDER	513		TV		1.000	400	20	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1674	PTN	4	081	5614-M-3081, SH 2	12	3/4" vent	vent 4-30-477	0.750	1.5	TV	N	HT		513		TV		0.750	400	19	Yes	No Protection Required		
1669	PTN	4	081	5614-M-3081, SH 2	12	Flow indication and associated valves, 1/2" tubing. [FE/FI 4-5121] [4-1/2"-2-C]	FE / FI - tubing loop	0.500	18.0	H,D	N	HT		513		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	verify ambient temp; if hot no protection required	Y
1673	PTN	4	081	5614-M-3081, SH 2	12	3/4" Drain/connection	drain 4-30-796	0.750	1.0	BV,H	N	HT		513		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	short run; hot process temp; no protection required	N
1675	PTN	4	081	5614-M-3081, SH 2	12	Blind Flange/ connection	dead leg w/ blind	10.000	1.0	H-I	Y	I	FWH3B	513		H-I		Not Analyzed	400	#N/A	No	AI		
1677	PTN	4	081	5614-M-3081, SH 2	13	3/4" Drain/connection	drain 4-30-784	0.750	1.0	BV	N	HT		513		BV		0.750	400	0.5	No	HT	verify ambient temp; if hot no protection required	Y
1676	PTN	4	081	5614-M-3081, SH 2	13	10" piping/ bypass FE-4-5121 [4-10"-2-C]	by-pass loop	10.000	25.0	H-I,D	Y	I		513		BV-I	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	AI		
1679	PTN	4	081	5614-M-3081, SH 2	14	3/4"drain/connection	drain 4-30-798	0.750	1.0	BV	N	HT		513		BV		0.750	400	0.5	No	HT	verify ambient temp; if hot no protection required	Y
1678	PTN	4	081	5614-M-3081, SH 2	14	8" piping/ bypass CV-4-1505 [4-8"-2-C, 4-8"-5-D]	by-pass	8.000	15.0	H-I	Y	I		513		H-I		Not Analyzed	400	#N/A	No	AI		
1683	PTN	4	081	5614-M-3081, SH 2	15	3/4"drain/connection	drain 4-30-802	0.750	1.0	BV	N	HT		513		BV		0.750	400	0.5	No	HT	verify ambient temp; if hot no protection required	Y
1684	PTN	4	081	5614-M-3081, SH 2	15	Blind Flange	dead leg w/ blind	10.000	1.0	H-I	Y	I	FWH4A, Length based on 3A	513		H-I		Not Analyzed	400	#N/A	No	AI		
1685	PTN	4	081	5614-M-3081, SH 2	16	8" piping/ bypass CV-4-1516 [4-8"-2-C, 4-8"-5-E]	by-pass	8.000	10.0	H-I,D	Y	I		513		BV-I	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	AI		
1581	PTN	4	081	5614-M-3081, SH 1	1	1/2" Vent; capped pipe	4-30-771	0.750	0.5	H	N	HT		513		H		0.750	400	14	Yes	No Protection Required		
1583	PTN	4	081	5614-M-3081, SH 1	2	Test Connection (PX) and 1/2 piping	1/2 IN PIPING	0.500	0.5	H	N	HT	SIZE NOT GIVEN ON P&ID, ASSUMED	513		H		0.500	400	8.5	Yes	No Protection Required		
1583	PTN	4	081	5614-M-3081, SH 1	2	Test Connection (PX) and 1/2 piping	TEST CONNECTION B(PX)	0.500	0.5	H	N	HT		513		H		0.500	400	8.5	Yes	No Protection Required		
1587	PTN	4	081	5614-M-3081, SH 1	3	3/4" Vents	VENT (4-2124)	0.750	0.5	TV,H	N	HT		441		H		0.750	400	14	Yes	No Protection Required		
1587	PTN	4	081	5614-M-3081, SH 1	3	3/4" Vents	VENT (4-2125)	0.750	0.5	H	N	HT		441		H		0.750	400	14	Yes	No Protection Required		
1584	PTN	4	081	5614-M-3081, SH 1	3	PI & associated 3/4" pipe & Valve	PI-4-6686	0.750	3.0	H,U	N	HT		441		H	Upward bend not credited for conservatism	0.750	400	14	Yes	No Protection Required		
1586	PTN	4	081	5614-M-3081, SH 1	3	1" Drains	DRAIN (4-2106)	1.000	1.0	BV	N	HT		441		BV		1.000	400	0.5	No	HT	short line high process temp; no protection required	N
1586	PTN	4	081	5614-M-3081, SH 1	3	1" Drains	DRAIN (4-2107)	1.000	1.0	BV	N	HT		441		BV		1.000	400	0.5	No	HT	short line high process temp; no protection required	N
1588	PTN	4	081	5614-M-3081, SH 1	3	(5) Blind flanged or capped sections	1ST BLIND	3.000	0.5	H-I	Y	I	BLIND LOOKS TO BE SAME SIZE AS THE HEADER, assumed	441		H-I		Not Analyzed	400	#N/A	No	AI		
1588	PTN	4	081	5614-M-3081, SH 1	3	(5) Blind flanged or capped sections	2ND BLIND	3.000	0.5	H-I	Y	I	BLIND LOOKS TO BE SAME SIZE AS THE HEADER, assumed	441		H-I		Not Analyzed	400	#N/A	No	AI		
1588	PTN	4	081	5614-M-3081, SH 1	3	(5) Blind flanged or capped sections	3RD BLIND	3.000	0.5	H-I	Y	I	BLIND LOOKS TO BE SAME SIZE AS THE HEADER, assumed	441		H-I		Not Analyzed	400	#N/A	No	AI		
1588	PTN	4	081	5614-M-3081, SH 1	3	(5) Blind flanged or capped sections	1ST CAPPED 3"	3.000	0.5	H-I	Y	I	FWH4A	441		H-I		3.000	400	20	Yes	No Protection Required		
1588	PTN	4	081	5614-M-3081, SH 1	3	(5) Blind flanged or capped sections	2ND CAPED 3"	3.000	0.5	H-I	Y	I	FWH4B	441		H-I		3.000	400	20	Yes	No Protection Required		
1590	PTN	4	081	5614-M-3081, SH 1	5	3/4" Vent	V (4-2126)	0.750	1.0	TV,H	N	HT		108		H		0.750	100	2	Yes	No Protection Required		
1589	PTN	4	081	5614-M-3081, SH 1	5	3" piping to 4B Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	VALVE (4-2093) & AND E	1.000	3.0	H	N	HT	based on typ	108		H		1.000	100	3.5	Yes	No Protection Required		
1591	PTN	4	081	5614-M-3081, SH 1	5	1" Drain	Valve (4-2108)	1.000	1.0	BV,H	N	HT	TAKEN FROM TYP	108		BV	BV conservative due to downward portion	1.000	100	0	No	HT	short line high process temp; no protection required	N
1593	PTN	4	081	5614-M-3081, SH 1	6	Blind flange/ connection	blind	8.000	0.5	H-I	Y	I	BLIND LOOKS TO BE SAME SIZE AS THE HEADER, assumed	441		H-I		Not Analyzed	400	#N/A	No	AI		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1597	PTN	4	081	5614-M-3081, SH 1	7	3/4" Drain/connection, Blind Flanged pipe section	.75 Drain (4-30-1093)	0.750	0.5	BV	N	HT		441		BV		0.750	400	0.5	Yes	No Protection Required		
1597	PTN	4	081	5614-M-3081, SH 1	7	3/4" Drain/connection, Blind Flanged pipe section	dead leg w/ blind	8.000	1.0	H-I	Y	I	FWH3A	441		H-I		Not Analyzed	400	#N/A	No	AI		
1597	PTN	4	081	5614-M-3081, SH 1	7	3/4" Drain/connection, Blind Flanged pipe section	TX-4-1463	Not provided	N/A	N/A	N/A	N/A	Within pipe, NO TAG, JUST A CONNECTION STICKING OUT OF THE PIPE EVEN WITH THE INSULATION JACKET	441		N/A		Not Analyzed	400		No	N/A		
1599	PTN	4	081	5614-M-3081, SH 1	8	Test Connection (PX) and associated piping (3/8")	valve 4-30-937	0.375	1.0	H	N	HT	NEXT TO THE WEST CATWALK ON THE MEZZ LEVEL. RIGHT BELOW THE TURBIND DECK EAST OF THE CATWALK	441		H		0.375	400	4.5	Yes	No Protection Required		
1598	PTN	4	081	5614-M-3081, SH 1	8	1/2" pipe - 1/4 SS Tubing to Sample System	.25 SS tubing to panel	0.250	110.0	N/A	N/A	N/A	ABOUT 50' OF TUBING IS ALONG THE CATWALK (OVERHEAD ON WEST SIDE) IS SHARED WITH UNIT B. ABOUT 20' WILL REQUIRE SCAFFOLDING.	441		BV	BV conservative due to downward portion	Not Analyzed	400		No	N/A		
1603	PTN	4	081	5614-M-3081, SH 1	9	3/4" Drain/connection	valve 4-30-751	0.750	1.0	BV	N	HT	PARTLY INSULATED	119		BV		0.750	110	0	No	HT	short line high process temp; no protection required	N
1605	PTN	4	081	5614-M-3081, SH 1	10	3/4" Drain/connection	valve 4-30-753	0.750	1.0	BV-I,H,D	y	HT	Insulation broken around support - photo taken	119		BV-I	BV conservative due to downward portion	0.750	110	1.6	Yes	No Protection Required		
1604	PTN	4	081	5614-M-3081, SH 1	10	8" Pipe to 4B Condenser [4-8"-5-D] [Bypass CV-4-1503B]	8" pipe by-pass	8.000	38.0	H-I	Y	I	MEASURED FROM HEADER TO CLOSED VALVE	119		H-I		Not Analyzed	110	#N/A	No	AI		
1607	PTN	4	081	5614-M-3081, SH 1	12	Level transmitters and associated piping/valves	LIT-4-1503A & LOOP	2.000	18.0	H-I,D	Y	N/A	Location on TD	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1607	PTN	4	081	5614-M-3081, SH 1	12	Level transmitters and associated piping/valves	LIT-4-1503B & LOOP	2.000	18.0	H-I,D	Y	N/A	Location on TD	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1607	PTN	4	081	5614-M-3081, SH 1	12	Level transmitters and associated piping/valves	LIT-4-1503C & LOOP	2.000	18.0	H-I,D	Y	N/A	Location on TD	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1608	PTN	4	081	5614-M-3081, SH 1	12	MSR 4B - 1" Vents	Vent & Valve 4-30-1040	1.000	1.0	TV-I	Y	HT	Location on TD	309		TV-I		1.000	300	19	Yes	No Protection Required		
1608	PTN	4	081	5614-M-3081, SH 1	12	MSR 4B - 1" Vents	Vent & Valve 4-30-1041	1.000	1.0	TV-I	Y	HT	Location on TD	309		TV-I		1.000	300	19	Yes	No Protection Required		
1608	PTN	4	081	5614-M-3081, SH 1	12	MSR 4B - 1" Vents	Vent & Valve 4-30-1042	1.000	1.0	TV-I	Y	HT	Location on TD	309		TV-I		1.000	300	19	Yes	No Protection Required		
1609	PTN	4	081	5614-M-3081, SH 1	12	MSR 4B - 1" Drains	valve 4-30-1081	1.000	1.0	H-I	Y	HT	Location on WEST SIDE OF TD - INST DRAIN	387		H-I		1.000	380	19	Yes	No Protection Required		
1609	PTN	4	081	5614-M-3081, SH 1	12	MSR 4B - 1" Drains	valve 4-30-1082	1.000	1.0	H-I	Y	HT	Location on WEST SIDE OF TD - INST DRAIN	387		H-I		1.000	380	19	Yes	No Protection Required		
1609	PTN	4	081	5614-M-3081, SH 1	12	MSR 4B - 1" Drains	valve 4-30-1083	1.000	1.0	H-I	Y	HT	Location on WEST SIDE OF TD - INST DRAIN	387		H-I		1.000	380	19	Yes	No Protection Required		
1611	PTN	4	081	5614-M-3081, SH 1	13	3/4" Vent; capped pipe	& valve 4-30-770 (not cap	0.750	0.5	H	N	HT	TD	513		H		0.750	400	14	Yes	No Protection Required		
1613	PTN	4	081	5614-M-3081, SH 1	14	Test Connection (PX) and 1/2 piping	4-30-684	0.500	1.0	H	N	HT	TD	513		H		0.500	400	8.5	Yes	No Protection Required		
1616	PTN	4	081	5614-M-3081, SH 1	15	1" Drains	1st Drain 4-2102	0.750	1.0	TV	N	HT		441		TV		0.750	400	19	Yes	No Protection Required		
1617	PTN	4	081	5614-M-3081, SH 1	15	3/4" Vents	3rd Vent 4-2122	0.750	1.0	TV	N	HT	PARTIALY INSULATED -	441		TV		0.750	400	19	Yes	No Protection Required		
1614	PTN	4	081	5614-M-3081, SH 1	15	PI & associated 3/4" pipe & Valve	PI-4-6685	0.750	3.0	H,U	N	HT	TD	441		H	Upward bend not credited for conservatism	0.750	400	14	Yes	No Protection Required		
1618	PTN	4	081	5614-M-3081, SH 1	15	(4) Blind flanged sections and (2) welded caps	1st Blind	3.000	1.0	H-I	Y	I	BLIND LOOKS TO BE SAME SIZE AS THE HEADER, assumed	441		H-I		Not Analyzed	400	#N/A	No	AI		
1616	PTN	4	081	5614-M-3081, SH 1	15	1" Drains	2nd Drain 4-2104	1.000	1.0	BV,H	N	HT		441		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	short line high process temp; no protection required	N
1616	PTN	4	081	5614-M-3081, SH 1	15	1" Drains	3rd drain 4-2103	1.000	1.0	BV,H	N	HT		441		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	short line high process temp; no protection required	N
1617	PTN	4	081	5614-M-3081, SH 1	15	3/4" Vents	Drain 4-2120	1.000	1.0	BV	N	HT	ON 18' EL FLOOR ON GRATING BUT BEHIND GAURDRAIL - 6" BROKEN AFTER TURN UP ON WWESST SIDE	441		BV		1.000	400	0.5	No	HT	short line high process temp; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1618	PTN	4	081	5614-M-3081, SH 1	15	(4) Blind flanged sections and (2) welded caps	2nd Blind	3.000	1.0	H-I	Y	I	BLIND LOOKS TO BE SAME SIZE AS THE HEADER, assumed	441		H-I		Not Analyzed	400	#N/A	No	AI		
1618	PTN	4	081	5614-M-3081, SH 1	15	(4) Blind flanged sections and (2) welded caps	3rd Blind	3.000	1.0	H-I	Y	I	BLIND LOOKS TO BE SAME SIZE AS THE HEADER, assumed	441		H-I		Not Analyzed	400	#N/A	No	AI		
1618	PTN	4	081	5614-M-3081, SH 1	15	(4) Blind flanged sections and (2) welded caps	4th Blind	3.000	1.0	H-I	Y	I	BLIND LOOKS TO BE SAME SIZE AS THE HEADER, assumed	441		H-I		Not Analyzed	400	#N/A	No	AI		
1617	PTN	4	081	5614-M-3081, SH 1	15	3/4" Vents	1ST VENT 4-2119	1.000	1.0	TV	N	HT	Turbine Deck - TD	441		TV		1.000	400	20	Yes	No Protection Required		
1618	PTN	4	081	5614-M-3081, SH 1	15	(4) Blind flanged sections and (2) welded caps	1ST CAPED 3"	3.000	1.0	H-I	Y	I	FWH4A	441		H-I		3.000	400	20	Yes	No Protection Required		
1618	PTN	4	081	5614-M-3081, SH 1	15	(4) Blind flanged sections and (2) welded caps	2ND CAPED 3"	3.000	1.0	H-I	Y	I	FWH4B	441		H-I		3.000	400	20	Yes	No Protection Required		
1620	PTN	4	081	5614-M-3081, SH 1	17	3/4" Vent	Valve 4-2121 VENT	0.750	1.0	TV	N	HT	MEZZ LEVEL WEST SIDE (IN STEPDOWN OFF CATWALK)	108		TV		0.750	100	1	Yes	No Protection Required		
1619	PTN	4	081	5614-M-3081, SH 1	17	3" piping to 4A Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	Valve 4-2091 & loop	1.000	6.0	TV-I,H	Y	HT	VALVE TAG BROKEN - INSULATED	108		H-I		1.000	100	9	Yes	No Protection Required		
1621	PTN	4	081	5614-M-3081, SH 1	17	1" Drain	Valve 4-2105	1.000	0.5	BV	N	HT	PARTLY INSULATED WITH BLIND TEE	108		BV		1.000	100	0	No	HT	short line high process temp; no protection required	N
1626	PTN	4	081	5614-M-3081, SH 1	18	3/4" Drain/connection	Valve 4-30-1121	0.750	0.5	BV	N	HT		441		BV		0.750	400	0.5	Yes	No Protection Required		
1627	PTN	4	081	5614-M-3081, SH 1	18	Blind flange/ connection	dead leg w/ blind	8.000	1.0	H-I	Y	I	FWH3B	441		H-I		Not Analyzed	400	#N/A	No	AI		
1628	PTN	4	081	5614-M-3081, SH 1	19	1/2" pipe - 1/4 SS Tubing to Sample System	375 pipe & valve 4-30-93(	0.375	0.5	H	N	HT		441		H		0.375	400	4.5	Yes	No Protection Required		
1628	PTN	4	081	5614-M-3081, SH 1	19	1/2" pipe - 1/4 SS Tubing to Sample System	.5 - .375. pipe &SS tubing	0.375	150.0	H	N	HT	ALONG WEST CATWALK IN MEZZ LEVEL - START IS RIGHT BELOW td EAST OF CATWALK 20' SCAFOLDING REQUIRED - 50' HAS SHARED SUPPORTS WITH B UNIT	441		H		0.375	400	4.5	No	HT	verify with chemistry if in service; can isolate if need be	Y
1633	PTN	4	081	5614-M-3081, SH 1	20	3/4" Drain/connection	valve 4-30-1125 (DRAIN)	0.750	0.5	BV	N	HT	HANDLE REMOVED	119		BV		0.750	110	0	No	HT	short line high process temp; no protection required	N
1634	PTN	4	081	5614-M-3081, SH 1	20	Blind flange/ connection	dead-leg & blind flange	10.000	1.0	H-I	Y	I	FWH3B	119		H-I		Not Analyzed	110	#N/A	No	AI		
1636	PTN	4	081	5614-M-3081, SH 1	21	3/4" Drain/connection	valve 4-30-1126	0.750	1.0	BV	N	HT		119		BV		0.750	110	0	No	HT	short line high process temp; no protection required	N
1635	PTN	4	081	5614-M-3081, SH 1	21	8" Pipe to 4B Condenser [4-8"-5-D] [Bypass CV-4-1523B]	pipe bypass	8.000	38.0	H-I	Y	I	30' FROM HEADER TO FIRST CLOSED VALVE 8' TO SECOND CLOSED VALVE	119		H-I		Not Analyzed	110	#N/A	No	AI		
1637	PTN	4	081	5614-M-3081, SH 1	22	10" Piping from Drain Tks outlet control valve [CV-4-1523B) to 4B Condenser	Pipe & valve 4-30-1017	10.000	60.0	BV-I	Y	I	NOT REQUIRED - COULD NOT FOLLOW TROUGH THE MEZZ LEVEL, 60' GUESS	119		BV-I		Not Analyzed	110	#N/A	No	AI		
1638	PTN	4	081	5614-M-3081, SH 1	23	Level transmitters and associated piping/valves	LIT-4-1523A & loop	2.000	18.0	H-I,D	Y	N/A	ALREADY INSULATED - TURBINE DECK (TD) - WEST OF TURBINE	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1638	PTN	4	081	5614-M-3081, SH 1	23	Level transmitters and associated piping/valves	LIT-4-1523B & loop	2.000	18.0	H-I,D	Y	N/A	ALREADY INSULATED - TURBINE DECK (TD) - WEST OF TURBINE	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1638	PTN	4	081	5614-M-3081, SH 1	23	Level transmitters and associated piping/valves	LIT-4-1523C & loop	2.000	18.0	H-I,D	Y	N/A	ALREADY INSULATED - TURBINE DECK (TD) - WEST OF TURBINE	441		BV-I	BV conservative due to downward portion	2.000	400	15	No	N/A		
1639	PTN	4	081	5614-M-3081, SH 1	23	MSR 4A - 1" Vents	4-30-1039	1.000	1.0	TV-I	Y	HT	ALREADY INSULATED - TURBINE DECK (TD) - WEST (INSTRUMENT VENT)	309		TV-I		1.000	300	19	Yes	No Protection Required		
1639	PTN	4	081	5614-M-3081, SH 1	23	MSR 4A - 1" Vents	4-30-1048	1.000	1.0	TV-I	Y	HT	ALREADY INSULATED - TURBINE DECK (TD) - WEST (INSTRUMENT VENT)	309		TV-I		1.000	300	19	Yes	No Protection Required		
1639	PTN	4	081	5614-M-3081, SH 1	23	MSR 4A - 1" Vents	4-30-1049	1.000	1.0	TV-I	Y	HT	ALREADY INSULATED - TURBINE DECK (TD) - WEST (INSTRUMENT VENT)	309		TV-I		1.000	300	19	Yes	No Protection Required		
1640	PTN	4	081	5614-M-3081, SH 1	23	MSR 4A - 1" Drains	4-30-1087	1.000	1.0	H-I	Y	HT	ALREADY INSULATED - TURBINE DECK (TD) - WEST (INSTRUMENT DRAIN)	387		H-I		1.000	380	19	Yes	No Protection Required		
1640	PTN	4	081	5614-M-3081, SH 1	23	MSR 4A - 1" Drains	4-30-1088	1.000	1.0	H-I	Y	HT	ALREADY INSULATED - TURBINE DECK (TD) - WEST (INSTRUMENT DRAIN)	387		H-I		1.000	380	19	Yes	No Protection Required		
1640	PTN	4	081	5614-M-3081, SH 1	23	MSR 4A - 1" Drains	4-30-1089	1.000	1.0	H-I	Y	HT	ALREADY INSULATED - TURBINE DECK (TD) - WEST (INSTRUMENT DRAIN)	387		H-I		1.000	380	19	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1571	PTN	4	080	5614-M-3080, SH 1	2	Level switches for Gland Steam Condenser Drain Pump Start/stop control of pump and control room annunciation (high level).	LS-4-1530	4.000	0.5	N/A	N	N/A	Fluid portion of Switch (float) is contained in Gland Steam Condenser Receiver tank and heated by tank fluid	350		N/A		4.000	350		No	N/A		
1571	PTN	4	080	5614-M-3080, SH 1	2	Level switches for Gland Steam Condenser Drain Pump Start/stop control of pump and control room annunciation (high level).	LS-4-1568	N/A	N/A	N/A	N/A	N/A	Fluid portion of Switch (float) is contained in Gland Steam Condenser Receiver tank and heated by tank fluid	350		N/A			350		No	N/A		
1574	PTN	4	080	5614-M-3080, SH 1	4	Level switch for condenser pit sump pump with control room annunciation and alarm (high)	LC-4-3512	N/A	N/A	N/A	N/A	N/A	EAST SIDE OF CONDENSOR IN PIT. CONFINED SPACE, EXTREMELY HOT, WILL NOT FREEZE.	90		N/A			90		No	N/A		
1576	PTN	4	080	5614-M-3080, SH 1	4	1" vent	Vent 4-50-032	1.000	N/A	N/A	N/A	N/A	EAST SIDE OF CONDENSOR IN PIT. CONFINED SPACE, EXTREMELY HOT, WILL NOT FREEZE.	90		N/A		1.000	90		No	N/A		
1576	PTN	4	080	5614-M-3080, SH 1	4	1" vent	Vent 4-70-069	1.000	N/A	N/A	N/A	N/A	EAST SIDE OF CONDENSOR IN PIT. CONFINED SPACE, EXTREMELY HOT, WILL NOT FREEZE.	90		N/A		1.000	90		No	N/A		
1574	PTN	4	080	5614-M-3080, SH 1	4	Level switch for condenser pit sump pump with control room annunciation and alarm (high)	LT-4-3512	6.000	N/A	N/A	N/A	N/A	EAST SIDE OF CONDENSOR IN PIT. CONFINED SPACE, EXTREMELY HOT, WILL NOT FREEZE.	90		N/A		Not Analyzed	90		No	N/A		
1575	PTN	4	080	5614-M-3080, SH 1	4	4", 6" piping Condenser Pit Sump	4" Pipe	4.000	N/A	N/A	N/A	N/A	EAST SIDE OF CONDENSOR IN PIT. CONFINED SPACE, EXTREMELY HOT, WILL NOT FREEZE.	90		N/A		4.000	90		No	N/A		
1575	PTN	4	080	5614-M-3080, SH 1	4	4", 6" piping Condenser Pit Sump	6" pipe	6.000	N/A	N/A	N/A	N/A	EAST SIDE OF CONDENSOR IN PIT. CONFINED SPACE, EXTREMELY HOT, WILL NOT FREEZE.	90		N/A		Not Analyzed	90		No	N/A		
2608	PTN	4	SGWLU / 078	5614-M-3078, SH 1	2	2" Pipe up to locked closed valves during normal operation SGWL-4-011, -031, -049	SGWL-4-002	**1.000**	N/A	N/A	N/A	N/A	This line is isolated by closed valves from CST	518		N/A		1.000	400		No	N/A		
2608	PTN	4	SGWLU / 078	5614-M-3078, SH 1	2	2" Pipe up to locked closed valves during normal operation SGWL-4-011, -031, -049	SGWL-4-011	**2.000**	40.0	H-I	Y	I	FWH4A	518		H-I		2.000	400	20	No	AI		
2608	PTN	4	SGWLU / 078	5614-M-3078, SH 1	2	2" Pipe up to locked closed valves during normal operation SGWL-4-011, -031, -049	SGWL-4-031	**2.000**	40.0	H-I	Y	I	FWH4B	518		H-I		2.000	400	20	No	AI		
2608	PTN	4	SGWLU / 078	5614-M-3078, SH 1	2	2" Pipe up to locked closed valves during normal operation SGWL-4-011, -031, -049	SGWL-4-049	**2.000**	40.0	H-I	Y	I	FWH4A - hot area	518		H-I		2.000	400	20	No	AI		
2610	PTN	4	SGWLU / 078	5614-M-3078, SH 1	4	2" Pipe up to locked closed valves during normal operation SGWL-4-007, -025, -042	SGWL-4-007	**2.000**	1.0	H-I	Y	I	FWH4B - hot area	518		H-I		2.000	400	20	Yes	AI		
2610	PTN	4	SGWLU / 078	5614-M-3078, SH 1	4	2" Pipe up to locked closed valves during normal operation SGWL-4-007, -025, -042	SGWL-4-025	**2.000**	1.0	H-I	Y	I	FWH4A - HOT area	518		H-I		2.000	400	20	Yes	AI		
2610	PTN	4	SGWLU / 078	5614-M-3078, SH 1	4	2" Pipe up to locked closed valves during normal operation SGWL-4-007, -025, -042	SGWL-4-042	**2.000**	1.0	H-I	Y	I	FWH4B - HOT AREA	518		H-I		2.000	400	20	Yes	AI		
2611	PTN	4	SGWLU / 078	5614-M-3078, SH 1	5	3/4" Pipe to SGWL-4-022, -028, -046	SGWL-4-028	**0.750**	N/A	N/A	N/A	N/A	vent valve is maintained open betweem]n two closed valves for expansion of ice	150		N/A		0.750	150		No	N/A		
2611	PTN	4	SGWLU / 078	5614-M-3078, SH 1	5	3/4" Pipe to SGWL-4-022, -028, -046	SGWL-4-046	**0.750**	N/A	N/A	N/A	N/A	vent valve is maintained open betweem]n two closed valves for expansion of ice	150		N/A		0.750	150		No	N/A		
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-190	0.750	1.0	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.750	40	0	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-191	0.750	1.5	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.750	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-192	0.750	1.0	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.750	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-281	0.750	1.0	TV	N	HT	Could not locate. Assumed length based on others in system	40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-276	0.750	1.0	TV	N	HT	Could not locate. Assumed length based on others in system	40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-275	0.750	1.0	TV	N	HT	Could not locate. Assumed length based on others in system	40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-362	0.750	1.0	TV	N	HT	Could not locate. Assumed length based on others in system	40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-282	0.750	1.0	TV	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-282A	0.750	1.0	TV	N	HT	Could not locate. Assumed length based on others in system	40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	HT	N
2101	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	4" and 6" AFW piping, up to control valve	Pipe up to CV-4-2816	4.000	20.0	H	N	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		4.000	40	0	No	M		
2101	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	4" and 6" AFW piping, up to control valve	Pipe up to CV-4-2817	4.000	32.0	H	N	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		4.000	40	0	No	M		
2101	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	4" and 6" AFW piping, up to control valve	Pipe up to CV-4-2818	4.000	38.0	H	N	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		4.000	40	0	No	M		
2101	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	4" and 6" AFW piping, up to control valve	Pipe up to CV-4-2831	4.000	18.0	H	N	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		4.000	40	0	No	M		
2101	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	4" and 6" AFW piping, up to control valve	Pipe up to CV-4-2832	4.000	14.0	H	N	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		4.000	40	0	No	M		
2101	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	4" and 6" AFW piping, up to control valve	Pipe up to CV-4-2833	4.000	14.0	H	N	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		4.000	40	0	No	M		
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-399	1.000	1.0	BV	N	HT	Could not locate. Assumed length based on others in system	40	SBFW pumps are in standby, therefore, temperature reflects ambient	BV		1.000	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-198	1.000	1.0	BV	N	HT	Could not locate. Assumed length based on others in system	40	SBFW pumps are in standby, therefore, temperature reflects ambient	BV		1.000	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-398	1.000	1.0	BV	N	HT	Could not locate. Assumed length based on others in system	40	SBFW pumps are in standby, therefore, temperature reflects ambient	BV		1.000	40	0	No	HT	HT	N
2102	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	3/4" Vent & 1" Connection	4-20-363	1.000	1.5	BV	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	BV		1.000	40	0	No	HT	HT	N
2101	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	4" and 6" AFW piping, up to control valve	4-6"-1-A	6.000	383.0	H,U	N	M	Train 2 From AFPD-001,2,3 to AFPD-4-9,11,13	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	M		
2101	PTN	4	AFWS / 075	5614-M-3075 Sh 2	1	4" and 6" AFW piping, up to control valve	4-6"-1-A	6.000	350.0	H,U	N	M	Train 1 From 4-20-142, 242,342, to 4-20-141,241,341	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	M		
2103	PTN	4	AFWS / 075	5614-M-3075 Sh 2	2	4" AFW piping, downstream control valve	4-20-139	4.000	28.0	H-I	Y	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H-I		4.000	40	Not Analyzed	No	M	system flow will provide protection; no heat trace required	N
2103	PTN	4	AFWS / 075	5614-M-3075 Sh 2	2	4" AFW piping, downstream control valve	4-20-239	4.000	38.0	H-I	Y	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H-I		4.000	40	Not Analyzed	No	M	system flow will provide protection; no heat trace required	N
2103	PTN	4	AFWS / 075	5614-M-3075 Sh 2	2	4" AFW piping, downstream control valve	4-20-339	4.000	45.0	H-I	Y	M		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H-I		4.000	40	Not Analyzed	No	M	system flow will provide protection; no heat trace required	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FT-4-1458A	0.500	9.8	H	N	HT	length is per side	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FE-4-1458A	0.500	9.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FT-4-1458B	0.500	15.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FE-4-1458B	0.500	15.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FT-4-1457A	0.500	9.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FE-4-1457A	0.500	9.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FT-4-1457B	0.500	9.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FE-4-1457B	0.500	9.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FT-4-1401A	0.500	13.3	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FE-4-1401A	0.500	13.3	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FT-4-1401B	0.500	15.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2104	PTN	4	AFWS / 075	5614-M-3075 Sh 2	4	1/2" tubing for AFW flow element / transmitter	FE-4-1401B	0.500	15.8	H	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.500	40	0	No	HT	HT	N
2380	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Flow transmitters	FE-4-6227A	0.750	44.0	H	N	HT		450		H		0.750	400	14	No	HT	HT	N
2380	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Flow transmitters	FE-4-6227B	0.750	40.0	H	N	HT		450		H		0.750	400	14	No	HT	HT	N
2380	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Flow transmitters	FE-4-6227C	0.750	30.0	H	N	HT		450		H		0.750	400	14	No	HT	HT	N
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-044	0.750	0.5	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-045	0.750	0.5	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-046	0.750	0.5	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-047	0.750	0.5	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2381	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	Temperature indication	TI-4-6562A,B,C	N/A	N/A	N/A	N/A	N/A	Temperaure elements are either in thermal well or direct emerssion. Process fluid is not exposed and therefore no protection required	450		N/A			400		No	N/A		
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-048	0.750	0.5	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-049	0.750	0.5	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2385	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" manual vents	SGB-4-052	0.750	0.5	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2385	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" manual vents	SGB-4-050	0.750	0.8	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2385	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" manual vents	SGB-4-051	0.750	1.0	TV	N	HT	ASSUMED LENGTH	450		TV		0.750	400	19	Yes	No Protection Required		
2383	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" & 2" CV bypass line	SV-4-6275A-1 SGB-4-082A	0.750	12.0	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2383	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" & 2" CV bypass line	SV-4-6275B-1 SGB-4-082B	0.750	12.0	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		
2383	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" & 2" CV bypass line	SV-4-6275C-1 SGB-4-082C	0.750	12.0	VA	Y	HT		450		TV-I		0.750	400	20	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-041	1.000	1.0	BV-I	Y	HT		450		BV-I		1.000	400	3	Yes	No Protection Required		
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-042	1.000	1.0	BV-I	Y	HT		450		BV-I		1.000	400	3	Yes	No Protection Required		
2384	PTN	4	FWS / 074	5614-M-3074, Sh. 4	1	3/4" test connections	SGB-4-043	1.000	1.0	BV-I	Y	HT		450		BV-I		1.000	400	3	Yes	No Protection Required		
2386	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Blowdown Tank level instrumentation lines	HPS-4-6323	0.750	5.0	TV-I	Y	HT		366		TV-I		0.750	360	20	Yes	No Protection Required		
2386	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Blowdown Tank level instrumentation lines	PIC-4-6269	0.750	5.0	TV	N	HT		366		TV		0.750	360	16.6	Yes	No Protection Required		
2386	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Blowdown Tank level instrumentation lines	PS-4-6267	0.750	5.0	TV	N	HT		366		TV		0.750	360	16.6	Yes	No Protection Required		
2386	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Blowdown Tank level instrumentation lines	PS-4-6267A	0.750	5.0	TV	N	HT		366		TV		0.750	360	16.6	Yes	No Protection Required		
2386	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Blowdown Tank level instrumentation lines	PI-4-6268	0.750	11.0	VA	Y	HT		366		TV-I		0.750	360	20	Yes	No Protection Required		
2386	PTN	4	FWS / 074	5614-M-3074, Sh. 4	2	Blowdown Tank level instrumentation lines	PT-4-6268A	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	366		BV		0.750	360	0.5	No	HT	verify length if less than 2' do not HT	Y
2401	PTN	4	FWS / 074	5614-M-3074, Sh. 4	3	Manual drains	SGB-4-112	0.500	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	100		BV		0.500	100	0	No	HT	verify length; if short run no heat trace b/c high process temp	Y
2401	PTN	4	FWS / 074	5614-M-3074, Sh. 4	3	Manual drains	SGB-4-066	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	100		BV		0.750	100	0	No	HT	verify length; if short run no heat trace b/c high process temp	Y
2396	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	3/4" strainer bypass	SGB-4-079	0.750	5.0	H-I	Y	HT		140		H-I		0.750	140	9.8	Yes	No Protection Required		
2396	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	3/4" strainer bypass	SGB-4-078	0.750	7.0	H-I	Y	HT		140		H-I		0.750	140	9.8	Yes	No Protection Required		
2397	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	Manual drains	SGB-4-085	0.500	5.0	BV-I	Y	HT		140		BV-I		0.500	140	1.4	No	HT	constant trickly flow; no protection required	N
2396	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	3/4" strainer bypass	SGB-4-084	2.000	7.0	H-I	Y	I	BY-PASS - SEE PHOTO OF CV-4-1900	140		H-I		2.000	140	20	Yes	AI		
2395	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	Traps ST-4-57 ST-4-58	Traps ST-4-57 ST-4-58	N/A	N/A	N/A	N/A	N/A		140		N/A			140		No	N/A		
2397	PTN	4	FWS / 074	5614-M-3074, Sh. 4	4	Manual drains	SGB-4-116	1.000	0.5	TV-I	Y	HT		140		TV-I		1.000	140	14	Yes	No Protection Required		
2399	PTN	4	FWS / 074	5614-M-3074, Sh. 4	5	Manual vents	SGB-4-060	0.750	0.5	TV-I	Y	HT		316		TV-I		0.750	310	20	Yes	No Protection Required		
2399	PTN	4	FWS / 074	5614-M-3074, Sh. 4	5	Manual vents	SGB-4-061	0.750	0.5	TV-I	Y	HT		316		TV-I		0.750	310	20	Yes	No Protection Required		
2399	PTN	4	FWS / 074	5614-M-3074, Sh. 4	5	Manual vents	SGB-4-062	0.750	0.5	TV-I	Y	HT		316		TV-I		0.750	310	20	Yes	No Protection Required		
2399	PTN	4	FWS / 074	5614-M-3074, Sh. 4	5	Manual vents	SGB-4-118	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	316		BV		0.750	310	0.5	No	HT	verify length; if short run no heat trace b/c high process temp	Y
2401	PTN	4	FWS / 074	5614-M-3074, Sh. 4	7	2 1/2" waste holdup tank connection	SGB-4-069	2.500	0.5	H-I	Y	I	FWH4B	100		H-I		2.000	100	20	Yes	AI		
2401	PTN	4	FWS / 074	5614-M-3074, Sh. 4	7	Flow transmitters	FE-4-6563	N/A	N/A	N/A	N/A	N/A	STRAP ON	100		N/A		Not Analyzed	100		No	N/A		
2401	PTN	4	FWS / 074	5614-M-3074, Sh. 4	7	Manual drains	SGB-4-113	1.000	0.5	VA	Y	HT		100		TV-I		1.000	100	9	Yes	No Protection Required		
2402	PTN	4	FWS / 074	5614-M-3074, Sh. 4	8	2" wet layup line	Piping to Valves SGWL-4-011,31,49	2.000	30.0	TV-I,H	Y	I	Need to verify length of wet layup line with Iso. Assume 30ft since tank is close to BD lines	450		H-I		2.000	400	20	No	AI		
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-476X	0.375	60.0	BV,H,U	N	HT	IN S.STEEL BOX MOUNTED TO SOUTH SIDE OF COULMN FACE (RESTRICED ACCESS ZONE SE - GROUND LVL)	436		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-486X	0.375	60.0	BV,H,U	N	HT	IN S.STEEL BOX MOUNTED TO SOUTH SIDE OF COULMN FACE (RESTRICED ACCESS ZONE SE - GROUND LVL)	436		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-496X	0.375	60.0	BV,H,U	N	HT	IN S.STEEL BOX MOUNTED TO SOUTH SIDE OF COULMN FACE (RESTRICED ACCESS ZONE SE - GROUND LVL)	436		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2453	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	DPIs	DPI-4-497	0.375	55.0	H,D	N	HT	P&id IS WRONG , ONLY SHARES VALVE, 2 TUBING BRANCHES COME OUT (TOOK PHOTO JUNE 21 C2021)	436		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2453	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	DPIs	DPI-4-487	0.375	48.0	H,D	N	HT		436		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2452	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	DPS	DPS-4-2900	0.500	34.0	BV,H,D	N	HT	EAST / REACTOR SIDE OF AREA	436		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	HT	N
2452	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	DPS	DPS-4-2901	0.500	34.0	BV,H,D		HT		436		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	HT	N
2452	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	DPS	DPS-4-2902	0.500	34.0	BV,H,D	N	HT	9' inTD CAGE ~ 100' MEZ - WEST MOST DPS	436		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	HT	N
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-476	0.750	63.0	BV,H,U	N	HT	YELLOW BOX IN GROUNDS CAGE	436		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-477	0.750	10.0	BV,H,U	N	HT	GROUND C AGE	436		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-486	0.750	63.0	BV,H,U	N	HT	YELLOW BOX IN ra - GROUND LEVEL	436		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-487	0.750	10.0	BV,H,U	N	HT	GROUND CAGE - P&ID WRONG	436		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-496	0.750	71.0	H,D	N	HT	GROUND FLOOR WATER TRIP CAGE IN YELLOW BOX	436		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
2454	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	Venturi flow transmitters	FT-4-497	0.750	10.0	BV,H,U	N	HT	GROUND CAGE p&id WRONG; SHARES ROOT VALVE THAT HAS 2 TUBING LINES OUT OF EACH VALVE	436		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
2453	PTN	4	FWS / 074	5614-M-3074, Sh. 3	1	DPIs	DPI-4-477	0.375	41.0	H,D	N	HT		436		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2459	PTN	4	FWS / 074	5614-M-3074, Sh. 3	4	4" AFW piping connected to main feed headers	4-20-339	4.000	10.0	H-I	Y	I		450		H-I		4.000	400	15	Yes	No Protection Required		
2459	PTN	4	FWS / 074	5614-M-3074, Sh. 3	4	4" AFW piping connected to main feed headers	4-20-239	4.000	10.0	H-I	Y	I		450		H-I		4.000	400	15	Yes	No Protection Required		
2459	PTN	4	FWS / 074	5614-M-3074, Sh. 3	4	4" AFW piping connected to main feed headers	4-20-139	4.000	10.0	H-I	Y	I		450		H-I		4.000	400	15	Yes	No Protection Required		
2461	PTN	4	FWS / 074	5614-M-3074, Sh. 3	6	2" line to/from wet layup	Downstream of 4-20-132	2.000	6.0	H	N	I		450		H		2.000	400	18	Yes	No Protection Required		
2461	PTN	4	FWS / 074	5614-M-3074, Sh. 3	6	2" line to/from wet layup	Downstream of 4-20-232	2.000	6.0	H	N	I		450		H		2.000	400	18	Yes	No Protection Required		
2461	PTN	4	FWS / 074	5614-M-3074, Sh. 3	6	2" line to/from wet layup	Downstream of 4-20-332	2.000	6.0	H	N	I	DIDN'T FIND	450		H		2.000	400	18	Yes	No Protection Required		
2425	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Manual vents & drains	4-20-676	0.750	1.5	H	N	HT	(P&ID A-4)	100		H		0.750	100	2	Yes	No Protection Required		
2423	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Pressure & temperature indication	PT-4-1616X	0.375	37.0	loop	N	HT	(P&ID ZONE A6) OUTSIDE FW PUMP ROOM / WEST WALL	100		BV	BV conservative due to downward portion	0.375	100	Not Analyzed	No	HT	HT	N
2423	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Pressure & temperature indication	PI-4-1435	0.375	2.5	H	N	HT	MEZZ LEVEL - LEFT OF EAST CATWALK, ASSUME 3/8	100		H		0.375	100	0.5	No	HT	take ambient temp; if hot no protection required	Y
2423	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Pressure & temperature indication	PI-4-1436	0.375	2.5	H	N	HT	MEZZ LEVEL - LEFT OF EAST CATWALK, ASSUME 3/8	100		H		0.375	100	0.5	No	HT	take ambient temp; if hot no protection required	Y
2425	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Manual vents & drains	4-30-2414-30-621	0.500	1.0	TV	N	HT	EQU VENT	100		TV		0.500	100	1	Yes	No Protection Required	short run; high process temp no protection required	N
2425	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Manual vents & drains	4-30-6224-30-242	0.500	1.0	TV	N	HT		100		TV		0.500	100	1	Yes	No Protection Required	short run; high process temp no protection required	N
2423	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Pressure & temperature indication	PX-4-1448	1.000	3.0	TV	N	HT	20' HIGH ABOVE TD - ON TOP OF STRESS LOOP FEEDING INTO THE TOP	100		TV		1.000	100	1.5	No	HT	check distance to first isolation valve; if less than 2' no protection required.	Y
2425	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Manual vents & drains	4-20-650	1.000	1.5	BV	N	HT	P&ID B-4) East of mezz in steel	100		BV		1.000	100	0	No	HT	short run; high process temp no protection required	N
2426	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Bypass/warmup valves around FWH 3-way valves	4-20-122	1.000	10.0	H	N	HT	1" BY-PASS	100		H		1.000	100	3.5	No	HT	take ambient and line temp; if hot do not protect	Y
2426	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Bypass/warmup valves around FWH 3-way valves	4-20-222	1.000	10.0	TV	N	HT	1" BY-PASS	100		TV		1.000	100	1.5	No	HT	take ambient and line temp; if hot do not protect	Y
2425	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Manual vents & drains	4-30-557	1.000	2.0	H	N	HT	EQUIPMENT DRAIN	100		H		1.000	100	3.5	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2425	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Manual vents & drains	4-30-558	1.000	2.0	H	N	HT	EQUIPMENT DRAIN	100		H		1.000	100	3.5	Yes	No Protection Required		
2423	PTN	4	FWS / 074	5614-M-3074, Sh. 2	1	Pressure & temperature indication	PX-4-1447	2.000	3.0	TV	N	I	NO CLOSED VALVE - NOT NEEDED	100		TV		2.000	100	15	Yes	No Protection Required		
2430	PTN	4	FWS / 074	5614-M-3074, Sh. 2	4	Manual vents & drains	FDWR-007	0.750	1.5	TV	N	HT	VENT (P&ID @ B-6/7	100		TV		0.750	100	1	No	HT	short line; high process temp; no protection required	N
2430	PTN	4	FWS / 074	5614-M-3074, Sh. 2	4	Manual vents & drains	FDWR-4-005	1.000	1.0	BV	N	HT	DRAIN	100		BV		1.000	100	0	No	HT	short line; high process temp; no protection required	N
2435	PTN	4	FWS / 074	5614-M-3074, Sh. 2	8	Manual vents & drains	FDWR-4-011	0.750	1.0	TV	N	HT	WEST OF STRUCTURE -(UNIT 3)	100		TV		0.750	100	1	Yes	No Protection Required		
2435	PTN	4	FWS / 074	5614-M-3074, Sh. 2	8	Manual vents & drains	FDWR-4-009	1.000	1.5	BV,H	N	HT	IN CONDENSATE PIT	100		BV	BV conservative due to downward portion	1.000	100	0	No	HT	short line; high process temp; no protection required	N
2439	PTN	4	FWS / 074	5614-M-3074, Sh. 2	9	Manual vents	4-20-175	0.750	5.0	BV,H	N	HT	IN PIT NORTH-WEST OF FEEDWATER PUMP ROOM (SMALL TANK DRAIN), ASSUME 3/4	100		BV	BV conservative due to downward portion	0.750	100	0	No	HT	constant trickle flow; no protection required	N
2440	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Pressure & diff. pressure indication	DPI-4-2006	0.500	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.500	100		No	N/A		
2440	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Pressure & diff. pressure indication	DPI-4-2007	0.500	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.500	100		No	N/A		
2440	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Pressure & diff. pressure indication	DPI-4-2009	0.500	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.500	100		No	N/A		
2440	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Pressure & diff. pressure indication	DPI-4-2010	0.500	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.500	100		No	N/A		
2440	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Pressure & diff. pressure indication	PI-4-1580	Not provided	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A			100		No	N/A		
2440	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Pressure & diff. pressure indication	PI-4-1582	Not provided	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A			100		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2440	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Pressure & diff. pressure indication	PI-4-1584	Not provided	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A			100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-1006	0.750	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.750	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-1007	0.750	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.750	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-1008	0.750	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.750	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-1009	0.750	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.750	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-1012	0.500	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.500	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-1014	0.500	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.500	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-1095	Not provided	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A			100		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-173	1.000	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		1.000	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-174	1.000	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		1.000	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-996	1.000	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		1.000	100		No	N/A		
2442	PTN	4	FWS / 074	5614-M-3074, Sh. 2	10	Manual vents and drains	4-20-997	1.000	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		1.000	100		No	N/A		
2446	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Manual vents & drains	4-20-1088	0.500	0.5	TV	N	HT	COPY DATA TO TRAIN B	100		TV		0.500	100	1	Yes	No Protection Required		
2446	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Manual vents & drains	4-20-1015	0.500	0.5	TV	N	HT	COPY DATA TO TRAIN B	100		TV		0.500	100	1	Yes	No Protection Required		
2446	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Manual vents & drains	4-20-170	0.500	1.0	H	N	HT	COPY DATA TO TRAIN B	100		H		0.500	100	1	Yes	No Protection Required		
2443	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Pressure & temperature indication	PI-4-1581	0.500	1.0	TV	N	HT	COPY DATA TO TRAIN B	100		TV		0.500	100	1	Yes	No Protection Required	short run; high process temp no protection required	N
2446	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Manual vents & drains	4-20-1084	0.750	0.5	BV	N	HT	COPY DATA TO TRAIN B	100		BV		0.750	100	0	No	HT	short run; high process temp no protection required	N
2446	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Manual vents & drains	4-20-1083	0.750	1.0	BV	N	HT	*COPY DATA TO TRAIN B* GROUND FLOOR IN OVERHEAD - NEXT VTO U4 INSTRUMENT AIR TANK	100		BV		0.750	100	0	No	HT	short run; high process temp no protection required	N
2446	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	Manual vents & drains	4-20-1085	0.750	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		0.750	100		No	N/A		
2445	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	3" CV bypass line	4-20-047	3.000	18.0	H-I	Y	I	LAST 6' ON td - CAGE - VALVE 042 ON TD	100		H-I		3.000	100	20	Yes	No Protection Required		
2445	PTN	4	FWS / 074	5614-M-3074, Sh. 2	11	3" CV bypass line	CV-4-2211	3.000	16.0	H-I	Y	I		100		H-I		3.000	100	20	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2447	PTN	4	FWS / 074	5614-M-3074, Sh. 2	12	3" FW pump seal water crosstie line	4-20-046	3.000	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		3.000	100		No	N/A		
2447	PTN	4	FWS / 074	5614-M-3074, Sh. 2	12	3" FW pump seal water crosstie line	4-20-045	3.000	N/A	N/A	N/A	N/A	EQUIPMENT LOCATED IN FW PUMP ROOM. THE PUMP ROOM IS ENCLOSED ON ALL FOUR SIDES AND CIELING WITH DOOR OPENINGS AT 90 DEGREES TO BLOCK WIND. ROOM EXHAUST FANS CAN BE TURNED OFF OR CYCLED. PUMP AND PIPING HEAT WILL MAINTAIN ROOM ABOVE FREEZING	100		N/A		3.000	100		No	N/A		
2436	PTN	4	FWS / 074	5614-M-3074, Sh. 2	13	LC	LC-4-2210	0.375	20.0	H,D	N	HT	IN PIT NORTH-WEST OF FEEDWATER PUMP ROOM, ASSUME 3/8	100		BV	BV conservative due to downward portion	0.375	100	Not Analyzed	No	HT	verify ambient temp; if hot no protection required	Y
2449	PTN	4	FWS / 074	5614-M-3074, Sh. 2	13	Manual vents & drains	4-20-178	1.500	5.0	H,D	N	I		100		BV	BV conservative due to downward portion	1.500	100	0.5	No	I		
2450	PTN	4	FWS / 074	5614-M-3074, Sh. 2	14	1/2" chemical injection lines	4-20-036	0.500	3.0	H,D	N	HT	MEZZ LEVEL - EAST OF EAST CATWALK, ASSUMED HORRIZONTAL	100		BV	BV conservative due to downward portion	0.500	100	0	No	HT	check ambient temp; if hot no protection required	Y
2450	PTN	4	FWS / 074	5614-M-3074, Sh. 2	14	1/2" chemical injection lines	4-20-037	0.500	3.0	H,D	N	HT	MEZZ LEVEL - EAST OF EAST CATWALK, ASSUMED HORRIZONTAL	100		BV	BV conservative due to downward portion	0.500	100	0	No	HT	check ambient temp; if hot no protection required	Y
2420	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Manual drains	4-20-288	0.750	1.0	BV	N	HT	IN PIT NEAR CNDSR 4E7A	Ambient	This is a feedwater standby system when not in use, pipping is expected to be at ambient temperature. When operating its going to be at 436 F	BV		0.750	400	0.5	No	HT	HT	N
2420	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Manual drains	4-20-345	0.750	1.0	BV	N	HT	IN PIT NEAR CNDSR 4E7B	Ambient	This is a feedwater standby system when not in use, pipping is expected to be at ambient temperature. When operating its going to be at 436 F	BV		0.750	400	0.5	No	HT	HT	N
2420	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Manual drains	4-20-422	0.750	1.0	BV	N	HT	IN MEZZ - WEST CATWALK - JUST EAST OF 48" STEAM LINE *CAN'T SEE* CAN'T LOCATE* ASSUME 1' long and 3/4 dia based on similar for the line	Ambient	This is a feedwater standby system when not in use, pipping is expected to be at ambient temperature. When operating its going to be at 436 F	BV		0.750	400	0.5	No	HT	HT	N
2420	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Manual drains	4-20-290	0.750	1.0	BV	N	HT	IN PIT NEAR CNDSR 4E7A	Ambient	This is a feedwater standby system when not in use, pipping is expected to be at ambient temperature. When operating its going to be at 436 F	BV		0.750	400	0.5	No	HT	HT	N
2421	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Manual vents	4-20-247	0.750	1.0	TV	N	HT	IN MEZZ LEVEL - WEST - NO ACCESS - ESTIMATED 1'	Ambient	This is a feedwater standby system when not in use, pipping is expected to be at ambient temperature. When operating its going to be at 436 F	TV		Not Analyzed	400	#N/A	No	HT	HT	N
2420	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Manual drains	4-20-343	0.750	0.5	BV	N	HT	IN PIT NEAR CNDSR 4E7A	Ambient	This is a feedwater standby system when not in use, pipping is expected to be at ambient temperature. When operating its going to be at 436 F	BV		0.750	400	0.5	Yes	No Protection Required		
2421	PTN	4	FWS / 074	5614-M-3074, Sh. 1	4	Manual vents	4-20-147	0.750	1.0	TV	N	HT	IN MEZZ - WEST CATWALK - JUST EAST OF 48" STEAM LINE *CAN'T SEE* CAN'T LOCATE* ASSUME 1'	Ambient	This is a feedwater standby system when not in use, pipping is expected to be at ambient temperature. When operating its going to be at 436 F	TV		0.750	400	19	Yes	No Protection Required		
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-478AX	0.375	40.0	H,D	N	HT	Assumed dia based on similar. RA (restricted acess)	436		BV	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-4-478BX	0.375	40.0	H,D	N	HT	Assumed dia based on similar. RA (restricted acess)	436		BV	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-488AX	0.375	40.0	H,D	N	HT	Assumed dia based on similar. RA (restricted acess)	436		BV	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-4-488BX	0.375	40.0	H,D	N	HT	Assumed dia based on similar. RA (restricted acess)	436		BV	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-4-498AX	0.375	40.0	H,D	N	HT	Assumed dia based on similar. RA (restricted acess)	436		BV	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-4-498BX	0.375	40.0	H,D	N	HT	Assumed dia based on similar. RA (restricted acess)	436		BV	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	4-20-1367	0.375	2.0	H	N	HT	Assumed dia based on similar. RA (restricted acess)	436		H		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	4-20-1365	0.375	1.0	HD	N	HT	Assumed dia based on similar. RA (restricted acess)	436		HD		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	4-20-1366	0.375	1.0	HD	N	HT	Assumed dia based on similar. RA (restricted acess)	436		HD		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-4-478AX	0.375	0.5	H	N	HT	RA (restricted acess)	436		H		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-4-478BX	0.375	0.5	H	N	HT	RA (restricted acess)	436		H		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-4-488AX	0.375	0.5	H	N	HT	RA (restricted acess)	436		H		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-4-488BX	0.375	0.5	H	N	HT	RA (restricted acess)	436		H		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-4-498AX	0.375	0.5	H	N	HT	RA (restricted acess)	436		H		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-4-498BX	0.375	0.5	H	N	HT	RA (restricted acess)	436		H		Not Analyzed	400	#N/A	No	HT	HT	N
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	FE-4-478	N/A	N/A	N/A	N/A	N/A	LEFM external to pipe	436		N/A		Not Analyzed	400		No	N/A		
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	FE-4-488	N/A	N/A	N/A	N/A	N/A	LEFM external to pipe	436		N/A		Not Analyzed	400		No	N/A		
2405	PTN	4	FWS / 074	5614-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	FE-4-498	N/A	N/A	N/A	N/A	N/A	LEFM external to pipe	436		N/A		Not Analyzed	400		No	N/A		
2260	PTN	4		5614-M-3073, Sh. 2	1	manual vent, drain lines	4-30-018	0.500	0.5	BV	N	HT		373		BV		0.500	370	0.5	Yes	No Protection Required		
2259	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	temperature & pressure gages	I-1427From Header To PI	0.500	1.0	H	N	HT		373		H		0.500	370	7.6	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2259	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	temperature & pressure gages	PI-1428 From Header to PI	0.500	1.0	H	N	HT		373		H		0.500	370	7.6	Yes	No Protection Required		
2258	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	Condensate line flow transmitter / indication	FE-4-1400	0.375	30.0	H	N	HT		373		H		0.375	370	4.2	No	HT	check ambient temp; if hot no protection required	Y
2259	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	temperature & pressure gages	PI-1427 to PI-1428	0.375	11.0	H	N	HT		373		H		0.375	370	4.2	No	HT	verify if root valve is within 2' of process line no heat trace required; Isolate valve	Y
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	manual vent, drain lines	SS Tubing 4-10-1661	0.375	5.5	H	N	HT		373		H		0.375	370	4.2	No	HT	verify valve is in east condeser pit-if so no heat trace required	Y
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	manual vent, drain lines	To Valve 4-20-894 Not In Service	0.750	1.0	BV	N	HT		373		BV		0.750	370	0.5	No	HT	short run; high process temp-no protection required	N
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	manual vent, drain lines	4-20-084 Condenser Drain	0.750	1.0	BV	N	HT		373		BV		0.750	370	0.5	No	HT	short run; high process temp-no protection required	N
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	4-24"-3-D TO 4-20-973A	4" pipe to 4-20-973A	4.000	25.0	H	N	I	FWH3B	373		H		4.000	370	15	No	I		
2260	PTN	4		5614-M-3073, Sh. 2	1	PIPE TO 4-20-009	PIPE TO 4-20-009	18.000	12.0	N/A	N	N/A	FWH3A (INSULATION MAY CAUSE ACTUATOR ON RV TO NOT FUNCTION PROPERLY, MAY HINDER OPENING OR CAUSE TO BE STUCK OPEN. SEE RV PHOTOS)	373		N/A		Not Analyzed	370		No	N/A		
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	4-24"-3-D TO 4-20-973A	Dead Leg Through Turbine Bldg. Wall 4-20-973A	24.000	6.0	H	N	N/A	WILL NOT FREEZE 100%	373		H		Not Analyzed	370	#N/A	No	N/A		
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	manual vent, drain lines	Dead Leg Through Turbine Bldg. Wall 4-20-974A	24.000	75.0	N/A	N	N/A	FWH3B (INSULATION MAY CAUSE ACTUATOR ON RV TO NOT FUNCTION PROPERLY, MAY HINDER OPENING OR CAUSE TO BE STUCK OPEN. SEE RV PHOTOS)	373		N/A		Not Analyzed	370		No	N/A		
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	manual vent, drain lines	CDPL-4-063	1.000	0.5	TV	N	HT		373		TV		1.000	370	20	Yes	No Protection Required		
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	manual vent, drain lines	To Valve 4-20-627 , 629 Not In Service	2.000	1.0	BV	N	I	MAY NOT BE POSSIBLE TO INSULATE AND ALOW THE ACTUATOR TO OPERATE PROPERLY	373		BV		2.000	370	1.1	Yes	No Protection Required		
2260	PTN	4	COND / 073	5614-M-3073, Sh. 2	1	manual vent, drain lines	To Valve 4-20-628 Not In Service	2.000	1.0	H	N	I		373		H		2.000	370	18	Yes	No Protection Required		
2262	PTN	4	COND / 073	5614-M-3073, Sh. 2	3	14" condensate bypass line to LP heaters bypass and FW pump discharge	CV-4-2011	8.000	60.0	HD	N	I	Measured to where Insulation starts	373		HD		Not Analyzed	370	#N/A	No	I		
2263	PTN	4	COND / 073	5614-M-3073, Sh. 2	3	manual drain lines	4-20-302	0.750	0.5	BV	N	HT		373		BV		0.750	370	0.5	Yes	No Protection Required		
2264	PTN	4	COND / 073	5614-M-3073, Sh. 2	4	1/2" condensate line to SJAE loop seal fill	4-20-621	0.500	N/A	N/A	N/A	N/A	Starts in Cond East pit and on first floor. Condenser heat will prevent freezing	373		N/A		0.500	370		No	N/A		
2266	PTN	4	COND / 073	5614-M-3073, Sh. 2	5	1" condensate line to desuperheater valve (abandoned) and chem. addition	4-20-069 4-20-941	1.000	150.0	BD	N	HT	If this line is out-of-service it should be disconnected at the valve in the basement. Or where it attaches to the other branch			BD		1.000		#N/A	No	HT	check ambient temp; if high do not HT	Y
2266	PTN	4	COND / 073	5614-M-3073, Sh. 2	5	1" condensate line to desuperheater valve (abandoned) and chem. addition	4-20-069 4-20-071	1.000	150.0	BD	N	HT				BD		1.000		#N/A	No	HT	check ambient temp; if high do not HT	Y
2265	PTN	4	COND / 073	5614-M-3073, Sh. 2	5	2" condensate line for surge tank makeup	4-20-070	2.000	300.0	HV	N	I		373		HV		2.000	370	#N/A	No	I		
2267	PTN	4	COND / 073	5614-M-3073, Sh. 2	6	1/2" & 4" abandoned line	4-20-622	0.500	1.0	H	N	HT	In basement. Condensate Sump Area. Always Warm	373		H		0.500	370	7.6	Yes	No Protection Required		
2268	PTN	4	COND / 073	5614-M-3073, Sh. 2	7	6" wet layup line	N/A	N/A	N/A	N/A	N/A	N/A	COVERED BY SGWL PID			N/A					No	N/A		
2269	PTN	4	COND / 073	5614-M-3073, Sh. 2	8	4" condensate line to discharge canal	4-20-973C	4.000	40.0	HD	N	I		373		HD		4.000	370	#N/A	No	I		
2270	PTN	4	COND / 073	5614-M-3073, Sh. 2	8	manual drain lines	4-20-973B	4.000	1.0	BD	N	I		373		BD		4.000	370	#N/A	No	I		
2271	PTN	4	COND / 073	5614-M-3073, Sh. 2	9	4" condensate line to heater drain pump suction	4-4"-3-D	4.000	200.0	HD	N	I		373		HD		4.000	370	#N/A	No	I		
2274	PTN	4	COND / 073	5614-M-3073, Sh. 2	10	manual drain lines	4-30-052	0.750	1.0	BV	N	HT		373		BV		0.750	370	0.5	No	HT	high process temp; short run no protection required	N
2274	PTN	4	COND / 073	5614-M-3073, Sh. 2	10	manual drain lines	4-30-053	0.750	1.0	BV	N	HT		373		BV		0.750	370	0.5	No	HT	high process temp; short run no protection required	N
2273	PTN	4	COND / 073	5614-M-3073, Sh. 2	10	3/4" Relief valve off a 1" line	RV-4-1404	0.750	0.5	H	N	HT		373		H		0.750	370	14	Yes	No Protection Required		
2274	PTN	4		5614-M-3073, Sh. 2	10	manual VENT	4-30-051	0.750	1.0	TV	N	HT		373		TV		0.750	370	17.2	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2274	PTN	4	COND / 073	5614-M-3073, Sh. 2	10	pressure gage	PI-4-6680	0.750	2.0	TV	N	HT		373		TV		0.750	370	17.2	Yes	No Protection Required		
2275	PTN	4	COND / 073	5614-M-3073, Sh. 2	11	pressure gage	N/A	N/A	N/A	N/A	N/A	N/A	CAPPED FROM CONDENSATE. OTHER END COVERD BY PID 3018			N/A					No	N/A		
2277	PTN	4	COND / 073	5614-M-3073, Sh. 2	11	manual drain lines	N/A	N/A	N/A	N/A	N/A	N/A	CAPPED FROM CONDENSATE. OTHER END COVERD BY PID 3018			N/A					No	N/A		
2276	PTN	4	COND / 073	5614-M-3073, Sh. 2	11	6" condensate line to DWST (capped)	N/A	N/A	N/A	N/A	N/A	N/A	CAPPED FROM CONDENSATE. OTHER END COVERD BY PID 3018			N/A					No	N/A		
2281	PTN	4	COND / 073	5614-M-3073, Sh. 2	13	8" control valve bypass	8"	16.000	12.0	N/A	Y	N/A	length estimated based on similar			N/A		Not			No	N/A		
2280	PTN	4	COND / 073	5614-M-3073, Sh. 2	13	18" condensate branch line to condenser (downstream of valve 4-20-009)	CV-4-1400	18.000	3.0	N/A	N	N/A		373		N/A		Not Analyzed	370		No	N/A		
2282	PTN	4	COND / 073	5614-M-3073, Sh. 2	14	1/2" chemical injection line	4-20-004 4-20-005	0.500	80.0	H	N	HT		373		H		0.500	370	7.6	No	HT	chemical feed doesn't freeze-no protection required	N
2283	PTN	4	COND / 073	5614-M-3073, Sh. 2	15	1/2" chemical injection line	4-20-003 4-20-002	0.500	80.0	H	N	HT		373		H		0.500	370	7.6	No	HT	chemical does not freeze-no protection required	N
2284	PTN	4	COND / 073	5614-M-3073, Sh. 2	16	18"SJAE condenser bypass line	4-20-049	18.000	24.0	N/A	N	N/A		373		N/A		Not Analyzed	370		No	N/A		
2235	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	suction pressure gages	4-20-739 Pump A Feed	0.500	N/A	N/A	N/A	N/A		109		N/A		0.500	100		No	N/A		
2235	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	suction pressure gages	PX-4-1407 Pump A Feed	0.375	N/A	N/A	N/A	N/A		109		N/A		0.375	100		No	N/A		
2235	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	suction pressure gages	PI-4-1599 Pump C Feed	0.500	N/A	N/A	N/A	N/A		109		N/A		0.500	100		No	N/A		
2235	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	suction pressure gages	4-20-745	0.500	N/A	N/A	N/A	N/A		109		N/A		0.500	100		No	N/A		
2235	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	suction pressure gages	PX-4-1406 Pump A Feed	0.375	N/A	N/A	N/A	N/A		109		N/A		0.375	100		No	N/A		
2236	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	relief valve	RV-4-1417 Pump B Feed	0.750	N/A	N/A	N/A	N/A		109		N/A		0.750	100		No	N/A		
2236	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	relief valve	RV-4-1449 Pump C Feed	1.000	N/A	N/A	N/A	N/A		109		N/A		1.000	100		No	N/A		
2236	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	relief valve	RV-4-1416 Pump A Feed	0.750	N/A	N/A	N/A	N/A		109		N/A		0.750	100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-199 Drain Pump A Feed	2.000	N/A	N/A	N/A	N/A		109		N/A		2.000	100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-547 Drain Pump C Feed	2.000	N/A	N/A	N/A	N/A		109		N/A		2.000	100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-099 Drain Pump A Feed	2.000	N/A	N/A	N/A	N/A		109		N/A		2.000	100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-976B Pump 4P6B Seal Flush Vent	N/A	N/A	N/A	N/A	N/A		109		N/A			100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-976C Pump 4P6C Seal Flush Vent	N/A	N/A	N/A	N/A	N/A		109		N/A			100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-976A Pump 4P6A Seal Flush Vent	N/A	N/A	N/A	N/A	N/A		109		N/A			100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-580B Pump 4P6B Tank Vent	N/A	N/A	N/A	N/A	N/A		109		N/A			100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-580C Pump 4P6C Tank Vent	N/A	N/A	N/A	N/A	N/A		109		N/A			100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vents & drains	4-20-598A Pump 4P6C Tank Vent	N/A	N/A	N/A	N/A	N/A		109		N/A			100		No	N/A		
2237	PTN	4	COND / 073	5614-M-3073, Sh. 1	1	manual vent, drain lines	Dead Leg 4-20-974A	4.000	N/A	N/A	N/A	N/A		109		N/A		4.000	100		No	N/A		
2213	PTN	4	COND / 072	5614-M-3073, Sh. 1	2	condensate pump seal supply flow indicator	condensate pump seal supply flow indicator	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2242	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Condensate Pumps discharge line flow transmitter / indication	Pump Seal Flush FI-4-597B	TBD	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		
2242	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Condensate Pumps discharge line flow transmitter / indication	Pump Seal Flush FI-4-597C	TBD	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		
2242	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Condensate Pumps discharge line flow transmitter / indication	Pump Seal Flush FI-4-597A	TBD	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	local condensate pump discharge pressure instruments	PI-4-1426 Pump B	0.500	N/A	N/A	N/A	N/A		373		N/A		0.500	370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Condensate Pumps discharge line flow transmitter / indication	Pump B FE-4-1420 4-20-465F	N/A	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual drains	Pump B From FE-4-1420 To 4-20-465F	N/A	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual drains	FE-4-1420	N/A	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual drains	FE-4-1421	N/A	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual drains	FE-4-1419	N/A	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	local condensate pump discharge pressure instruments	PI-4-3426 Pump B Discharge	0.500	N/A	N/A	N/A	N/A		373		N/A		0.500	370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	local condensate pump discharge pressure instruments	PX-4-3412 Pump B Discharge	0.375	N/A	N/A	N/A	N/A		373		N/A		0.375	370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	local condensate pump discharge pressure instruments	PI-4-1422 Pump B Discharge	0.500	N/A	N/A	N/A	N/A		373		N/A		0.500	370		No	N/A		
2243	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	local condensate pump discharge pressure instruments	PX-4-3411 Pump B Discharge	0.375	N/A	N/A	N/A	N/A		373		N/A		0.375	370		No	N/A		
2246	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual drains	4-20-079 Drain By Pump B Check Valve Discharge Line	0.750	N/A	N/A	N/A	N/A		373		N/A		0.750	370		No	N/A		
2246	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual drains	4-20-747 Drain By Pump C Check Valve Discharge Line	1.000	N/A	N/A	N/A	N/A		373		N/A		1.000	370		No	N/A		
2246	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual drains	4-20-103 Drain By Pump A Check Valve Discharge Line	1.000	N/A	N/A	N/A	N/A		373		N/A		1.000	370		No	N/A		
2246	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual vents	4-20-203 By Pump B Check Valve Discharge Line	0.500	N/A	N/A	N/A	N/A		373		N/A		0.500	370		No	N/A		
2246	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	Manual vents	4-20-249 Vent By Pump B Check Valve Discharge Line	TBD	N/A	N/A	N/A	N/A		373		N/A			370		No	N/A		
2247	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	bypass/warmup valves around main isolation gate valves	4-20-205 Pump B Valve Bypass	1.000	N/A	N/A	N/A	N/A		373		N/A		1.000	370		No	N/A		
2247	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	bypass/warmup valves around main isolation gate valves	4-20-255 Pump C Valve Bypass	1.000	N/A	N/A	N/A	N/A		373		N/A		1.000	370		No	N/A		
2247	PTN	4	COND / 073	5614-M-3073, Sh. 1	3	bypass/warmup valves around main isolation gate valves	4-20-105 Pump A Valve Bypass	1.000	N/A	N/A	N/A	N/A		373		N/A		1.000	370		No	N/A		
2249	PTN	4	COND / 073	5614-M-3073, Sh. 1	5	Condensate Pumps recirc. line flow transmitter / indication	FE-4-1420B	Tubing	N/A	N/A	N/A	N/A		115		N/A		0.375	110		No	N/A		
2249	PTN	4	COND / 073	5614-M-3073, Sh. 1	5	Condensate Pumps recirc. line flow transmitter / indication	FE-4-1421B	Tubing	N/A	N/A	N/A	N/A		115		N/A		0.375	110		No	N/A		
2249	PTN	4	COND / 073	5614-M-3073, Sh. 1	5	Vents / Drains / Misc. Connections	FE-4-1419B	Tubing	N/A	N/A	N/A	N/A		115		N/A		0.375	110		No	N/A		
2251	PTN	4	COND / 073	5614-M-3073, Sh. 1	5	Manual drains	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2252	PTN	4	COND / 073	5614-M-3073, Sh. 1	5	Manual vents	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2250	PTN	4	COND / 073	5614-M-3073, Sh. 1	5	10" condensate pump recirc lines upstream of normally closed isolation	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2250	PTN	4	COND / 073	5614-M-3073, Sh. 1	5	10" condensate pump recirc lines upstream of normally closed isolation	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2250	PTN	4	COND / 073	5614-M-3073, Sh. 1	5	10" condensate pump recirc lines upstream of normally closed isolation	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2254	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	1/2", 3/8" & 1/4" condensate header sample lines	4-20-832 To Sample Panel Pump B	0.250	N/A	N/A	N/A	N/A		373		N/A		Not Analyzed	370		No	N/A		
2254	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	1/2", 3/8" & 1/4" condensate header sample lines	PX-4-3413 Pump C	0.250	N/A	N/A	N/A	N/A		373		N/A		Not Analyzed	370		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2254	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	1/2", 3/8" & 1/4" condensate header sample lines	Reducer by PX 1408 to Secondary Sample System Panel Pump A	0.250	N/A	N/A	N/A	N/A		373		N/A		Not Analyzed	370		No	N/A		
2254	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	1/2", 3/8" & 1/4" condensate header sample lines	Secondary Sample System Panel Pump C	0.250	N/A	N/A	N/A	N/A		373		N/A		Not Analyzed	370		No	N/A		
2254	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	1/2", 3/8" & 1/4" condensate header sample lines	4-20-746 Pump C	0.375	N/A	N/A	N/A	N/A		373		N/A		0.375	370		No	N/A		
2254	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	1/2", 3/8" & 1/4" condensate header sample lines	Reducer by PX 1408 to Reducer to 0.25 Pump A	0.375	N/A	N/A	N/A	N/A		373		N/A		0.375	370		No	N/A		
2254	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	1/2", 3/8" & 1/4" condensate header sample lines	4-20-831 Pump C	0.375	N/A	N/A	N/A	N/A		373		N/A		0.375	370		No	N/A		
2253	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	local condensate discharge sample line pressure instruments	N/A	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2253	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	local condensate discharge sample line pressure instruments	PX-4-1409 Pump B	0.500	N/A	N/A	N/A	N/A		373		N/A		0.500	370		No	N/A		
2253	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	local condensate discharge sample line pressure instruments	PI-4-1598 Pump C	0.500	N/A	N/A	N/A	N/A		373		N/A		0.500	370		No	N/A		
2253	PTN	4	COND / 073	5614-M-3073, Sh. 1	6	local condensate discharge sample line pressure instruments	Reducer by PX 1408 Pump A	0.500	N/A	N/A	N/A	N/A		373		N/A		0.500	370		No	N/A		
2256	PTN	4	COND / 073	5614-M-3073, Sh. 1	8	1/4", 1/2", & 1" hotwell sample pumps seal supply from condensate storage & condensate header	1/4", 1/2", & 1" hotwell sample pumps seal supply from condensate storage & condensate header	N/A	N/A	N/A	N/A	N/A		50		N/A			50		No	N/A		
2257	PTN	4	COND / 073	5614-M-3073, Sh. 1	9	2" LP turbine steam exhaust hood spray	2" LP turbine steam exhaust hood spray	N/A	N/A	N/A	N/A	N/A	No Items	50		N/A			50		No	N/A		
2221	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure connections	PX-4-1442	0.500	0.5	TV	N	HT	15 2A	169		TV		0.500	160	2.3	Yes	No Protection Required		
2221	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure connections	PX-4-1432	0.500	0.5	H	N	HT	17 3A Out	200		H		0.500	200	3.5	Yes	No Protection Required		
2222	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure instruments and temperature elements	PS-4-2054	0.500	1.0	TV	N	HT	26 Pressure Switch Header	200		TV		0.500	200	3.5	Yes	No Protection Required		
2221	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure connections	PX-4-1439	0.500	2.0	H	N	HT	18	200		H		0.500	200	3.5	Yes	No Protection Required		
2221	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure connections	PX-4-1438	0.500	0.5	H	N	HT	19 4 out	255		H		0.500	250	5	Yes	No Protection Required		
2221	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure connections	PX-4-1444	0.500	0.5	H	N	HT	20 5A	255		H		0.500	250	5	Yes	No Protection Required		
2222	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure instruments and temperature elements	PS-4-2027	0.500	1.0	TV	N	HT	27 Pressure Switch Header	255		TV		0.500	250	5	Yes	No Protection Required		
2219	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual drains	4-20-093	0.500	0.5	TV	N	HT	9	307		TV		0.500	300	6	Yes	No Protection Required		
2220	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual vents	4-30-521	0.500	0.5	TV	N	HT	14 Vent	307		TV		0.500	300	6	Yes	No Protection Required		
2221	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure connections	PX-4-1443	0.500	0.5	H	N	HT	21 5A out	307		H		0.500	300	6	Yes	No Protection Required		
2221	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure connections	PX-4-1512	0.375	3.0	HD	N	HT	must be on mezzanine. Assumed dia and length	307		HD		Not Analyzed	300	#N/A	No	HT	verify line to first isolation valve; if short run do not protect	Y
2221	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure connections	PX-4-1433	0.500	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	169		BV		0.500	160	0	No	HT	verify line to first isolation valve; if short run do not protect	Y
2219	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual drains	4-20-635	0.500	0.5	BV	N	HT	10 Pressure Switch Header	110		BV		0.500	110	0	No	HT	short run; high process line do not protect	Y
2222	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure instruments and temperature elements	PI-4-1424	0.750	1.0	H	N	HT	23 1A Feed Line	110		H		0.750	110	2.4	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2222	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure instruments and temperature elements	PS-4-2011	0.500	20.0	H	N	HT	25 Pressure Switch Header	169		H		0.500	160	2.3	No	HT	HT	N
2220	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual vents	4-30-121	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	110		BV		0.750	110	0	No	HT	verify line to first isolation valve; if short run do not protect	Y
2222	PTN	4	COND / 073	5614-M-3073, SH 3	2	Pressure instruments and temperature elements	PI-4-1423	0.375	N/A	N/A	N/A	N/A	This has to be located very close to condenser on the east side close to 1A/2A HXs. As such, local temperature will be above freezing.	110		N/A		Not Analyzed	110		No	N/A		
2218	PTN	4	COND / 073	5614-M-3073, SH 3	2	LP heater condensate side relief valves	RV-4-3410	0.750	N/A	N/A	N/A	N/A	This has to be located very close to condenser on the east side close to 1A/2A HXs. As such, local temperature will be above freezing.	110		N/A		Not Analyzed	110		No	N/A		
2220	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual vents	4-30-221 4-30-243	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	169		BV		0.750	160	0.2	No	HT	verify line to first isolation valve; if short run do not protect	Y
2219	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual drains	4-30-123	0.750	0.5	BV	N	HT	5 From Head 1A	110		BV		0.750	110	0	No	HT	short run; high process temp; no protection required	N
2219	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual drains	FWHR-4-014	0.750	0.5	BV	N	HT	6 2A	169		BV		0.750	160	0.2	No	HT	short run; high process temp; no protection required	N
2218	PTN	4	COND / 073	5614-M-3073, SH 3	2	LP heater condensate side relief valves	RV-4-3412	0.750	0.5	H	N	HT	Assumed dia 3/4". These are thermal reliefs	200		H		Not Analyzed	200	#N/A	No	HT	short run; high process temp; no protection required	N
2218	PTN	4	COND / 073	5614-M-3073, SH 3	2	LP heater condensate side relief valves	RV-4-3414	0.750	0.5	H-I	Y	HT	Assumed dia 3/4". These are thermal reliefs	307		H-I		Not Analyzed	300	#N/A	No	HT	short run; high process temp; no protection required	N
2219	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual drains	4-30-527	0.750	0.5	BV	N	HT	8 5A	255		BV		0.750	250	0.5	Yes	No Protection Required		
2220	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual vents	4-20-417	0.750	1.0	H	N	HT	13 Line drain 4B	255		H		0.750	250	8	Yes	No Protection Required		
2218	PTN	4	COND / 073	5614-M-3073, SH 3	2	LP heater condensate side relief valves	RV-4-1418	0.750	0.5	TV-I	y	HT	4 Could not Find	307		TV-I		0.750	300	20	Yes	No Protection Required		
2219	PTN	4	COND / 073	5614-M-3073, SH 3	2	Manual drains	4-30-429A	1.000	0.5	H	N	HT	7 4A	200		H		1.000	200	10	Yes	No Protection Required		
2225	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual drains	4-30-0164-30-017	0.500	1.0	H	N	HT	38 Drain 4B	110		H		0.500	110	1.2	Yes	No Protection Required		
2228	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure instruments and temperature elements	PS-4-2014	0.500	1.0	TV	N	HT	54 PS Header	169		TV		0.500	160	2.3	Yes	No Protection Required		
2228	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure instruments and temperature elements	PS-4-2055	0.500	1.0	TV	N	HT	55 PS Header	200		TV		0.500	200	3.5	Yes	No Protection Required		
2227	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure test connections	PX-4-1441	0.500	2.0	H	N	HT	48 Between 3B & 4B	200		H		0.500	200	3.5	Yes	No Protection Required		
2227	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure test connections	PX-4-1446	0.500	0.5	BV,H	N	HT	4-30-524, 49 Feed Line 5B	255		BV	BV conservative due to downward portion	0.500	250	0.5	Yes	No Protection Required		
2226	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual vents	4-20-091	0.500	0.5	TV	N	HT	44 Top Vent 5B	307		TV		0.500	300	6	Yes	No Protection Required		
2227	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure test connections	PX-4-1445	0.500	0.5	TV,H	N	HT	50 Feed Line 5B	307		H		0.500	300	6	Yes	No Protection Required		
2227	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure test connections	PX-4-1513	0.375	3.0	HD	N	HT	must be on mezzanine. Assumed dia and length	307		HD		Not Analyzed	300	#N/A	No	HT	verify line to first isolation valve; if short run do not protect	Y
2225	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual drains	4-20-634	0.500	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	110		BV		0.500	110	0	No	HT	verify line to first isolation valve; if short run do not protect	Y
2227	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure test connections	PX-4-1435	0.500	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	169		BV		0.500	160	0	No	HT	verify line to first isolation valve; if short run do not protect	Y
2228	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure instruments and temperature elements	PS-4-2032	0.500	17.0	TV	N	HT	56 PS Header	255		TV		0.500	250	5	No	HT	HT	N
2227	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure test connections	PX-4-1434	0.500	0.5	HD	N	HT	47 Between 3B & 4B	200		HD		0.500	200	#N/A	No	HT	short line; hight process; no protection	N
2227	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure test connections	PX-4-1431	0.500	0.5	H	N	HT	Assumed Dia based on similar	169		H		Not	160	#N/A	No	HT	short line; hight process; no protection	N
2228	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure instruments and temperature elements	PI-4-1419	0.500	0.5	TV	N	HT	Assumed Dia based on similar	110		TV		Not Analyzed	110	#N/A	No	HT	short line; hight process; no protection	N
2228	PTN	4	COND / 073	5614-M-3073, SH 3	3	Pressure instruments and temperature elements	PI-4-1420	0.500	0.5	H	N	HT	Assumed Dia based on similar	110		H		Not Analyzed	110	#N/A	No	HT	short line; hight process; no protection	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2224	PTN	4	COND / 073	5614-M-3073, SH 3	3	LP heater condensate side relief valves	RV-30-3411	0.750	N/A	N/A	N/A	N/A	This has to be located very close to condenser on the east side close to 1A/2A HXs. As such, local temperature will be above freezing.	110		N/A		Not Analyzed	110		No	N/A		
2224	PTN	4	COND / 073	5614-M-3073, SH 3	3	LP heater condensate side relief valves	RV-4-1419	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	307		BV		0.750	300	0.5	No	HT	verify line to first isolation valve; if short run do not protect	Y
2225	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual drains	4-20-089	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	200		BV		0.750	200	0.5	No	HT	verify line to first isolation valve; if short run do not protect	Y
2226	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual vents	4-30-122	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	110		BV		0.750	110	0	No	HT	verify line to first isolation valve; if short run do not protect	Y
2226	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual vents	4-30-222	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	169		BV		0.750	160	0.2	No	HT	verify line to first isolation valve; if short run do not protect	Y
2225	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual drains	4-30-124	0.750	0.5	BV,H	N	HT	32 Drain 1B	110		BV	BV conservative due to downward portion	0.750	110	0	No	HT	short line; hight process; no protection	N
2225	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual drains	4-30-224	0.750	0.5	BV	N	HT	33 Drain 2B	169		BV		0.750	160	0.2	No	HT	short line; hight process; no protection	N
2224	PTN	4	COND / 073	5614-M-3073, SH 3	3	LP heater condensate side relief valves	RV-4-3413	0.750	0.5	TV	N	HT	Assumed dia 3/4". These are thermal reliefs	200		TV		Not Analyzed	200	#N/A	No	HT	short line; hight process; no protection	N
2224	PTN	4	COND / 073	5614-M-3073, SH 3	3	LP heater condensate side relief valves	RV-4-3415	0.750	0.5	TV-I	Y	HT	Assumed dia 3/4". These are thermal reliefs	307		TV-I		Not Analyzed	300	#N/A	No	HT	short line; hight process; no protection	N
2225	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual drains	4-20-960	1.000	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	307		BV		1.000	300	0.5	No	HT	verify line to first isolation valve; if short run do not protect	Y
2226	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual vents	4-20-245	0.750	0.5	TV-I	Y	HT	42	200		TV-I		0.750	200	18	Yes	No Protection Required		
2226	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual vents	4-30-522	0.750	0.5	TV	N	HT	43 5B	255		TV		0.750	250	10	Yes	No Protection Required		
2225	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual drains	4-30-528	0.750	0.5	BV	N	HT	36 Drain 5B	255		BV		0.750	250	0.5	Yes	No Protection Required		
2225	PTN	4	COND / 073	5614-M-3073, SH 3	3	Manual drains	4-30-429B	1.000	0.5	H	N	HT	35 Drain 4B	255		H		1.000	250	16	Yes	No Protection Required		
2229	PTN	4	COND / 073	5614-M-3073, SH 3	4	14" FWH 1A, 1B, 2A, 2B bypass	4-20-206 4-20-106	14.000	12.0	N/A	N	N/A	57 In-line Valve	110		N/A		Not Analyzed	110		No	N/A		
2230	PTN	4	COND / 073	5614-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	Upstream of 4-20-107	2.000	12.0	H-I	Y	I		110		H-I		2.000	110	20	Yes	AI		
2230	PTN	4	COND / 073	5614-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	LP Heater 1A	2.000	COULD NOT FIND			I	COULD NOT FIND	169				2.000	160		No	I		
2230	PTN	4	COND / 073	5614-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	Upstream of 4-20-111	3.000	COULD NOT FIND			I	COULD NOT FIND	169				3.000	160		No	I		
2230	PTN	4	COND / 073	5614-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	Upstream of 4-20-211	3.000	COULD NOT FIND			I	COULD NOT FIND, LAST 6' ON td - CAGE INSULATED 007 ON TD	255				3.000	250		No	I		
2230	PTN	4	COND / 073	5614-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	Upstream of 4-20-207	2.000	8.0	H	N	I		255		H		2.000	250	18	Yes	No Protection Required		
2233	PTN	4	COND / 073	5614-M-3073, SH 3	6	Manual vents	4-30-524	0.500	0.5	H-I	Y	HT	5B, confirm with Dennis	110		H-I		0.500	110	3.6	Yes	No Protection Required		
2232	PTN	4	COND / 073	5614-M-3073, SH 3	6	Manual drains	4-20-088	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	110		BV		0.750	110	0	No	HT	verify line to first isolation valve; if short run do not protect	Y
2232	PTN	4	COND / 073	5614-M-3073, SH 3	6	Manual drains	4-20-034	1.000	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	110		BV		1.000	110	0	No	HT	verify line to first isolation valve; if short run do not protect	Y
2231	PTN	4	COND / 073	5614-M-3073, SH 3	6	14" bypass lines around LP htrs 3A, 3B, 4A, 4B, 5A, and 5B	4-20-108 4-20-208 4-20-112 4-20-212	14.000	24.0	N/A	Y	N/A	63	110		N/A		Not Analyzed	110		No	N/A		
2518	PTN	4	MSS / 072	5614-M-3072, SH 2	1	misc vent (assume 3/4")(closed root valve)	4-10-140	0.750	1.0	tv	n	HT	Assumed 3/4" dia based on similar. lost in mezz - assumed typ	523		tv		Not Analyzed	400	#N/A	No	HT	short run; high process temp; no protection required	N
2520	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PX-4-1522	0.375	0.5	H	N	HT	TAG MISSING - VERIFIED BY SUPPLY VALVE 1065	513		H		0.375	400	4.5	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2520	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PX-4-1523	0.375	0.5	H	N	HT		513		H		0.375	400	4.5	Yes	No Protection Required		
2520	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PX-4-1524	0.375	0.5	H	N	HT	STUB OFF PI TD SOUTHWEST	513		H		0.375	400	4.5	Yes	No Protection Required		
2520	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PX-4-1525	0.375	0.5	h	N	HT	TD - SE OF TURBINE	513		h		0.375	400	4.5	Yes	No Protection Required		
2520	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-4-1510	0.375	51.0	H,D	N	HT	TD - SE CORNER - TD level next to steel platform	513		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2520	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-4-1509	0.375	45.0	H,D	N	HT	TUBING OFF LINE @ ~EL:20' IN AIR, GOES DOWN PLATFORM TO PI - SOUTHWEST CORNER ON TURBINE Deck (TD)	513		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2520	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-4-1508	0.375	29.0	H,D	N	HT	TD EAST SIDE - PI IS UNDER PLATFORM	513		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FI-4-6645A	0.375	62.0	TV,H	N	HT	GROUND LEVEL - BETWEEN TRANSFORMER AND PHASE A/B/C (Unit 4) REGULATOR	513		H		0.375	400	4.5	No	HT	HT	N
2520	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-4-1507	0.375	28.0	H,D	N	HT	WEST SIDE OF TD - PI UNDER PLATFORM	513		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FI-4-6645B	0.375	25.0	BV,H,D	N	HT	Below TD(turbine deck) - NEAR ST-11	513		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FX-4-1420	0.375	5.0	TV	N	HT	GROUND LEVEL - BETWEEN TRANSFORMER AND PHASE A/B/C (Unit 4) REGULATOR	513		TV		0.375	400	4.5	No	HT	check temp and if isolated or hot no protection required	Y
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FI-4-6645D	0.375	14.0	BV,H,D	N	HT	**FI BROKEN** (SEE PHOTO) - Below TD(turbine deck) -	513		BV	BV conservative due to downward portion	0.375	400	Not Analyzed	No	HT	HT	N
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FX-4-1423	0.375	5.0	BV	N	HT	Below TD(turbine deck) - MEZZ LEVEL - BEHIND BLOWERS	513		BV		0.375	400	Not Analyzed	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FE-4-6645C	1.250	5.0	H,D	N	HT	Below TD(turbine deck) unable to locate, use typical lengths	513		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	HT	N
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FI-4-6645C	1.250	60.0	H,D	N	HT	Below TD(turbine deck) unable to locate, use typical lengths	513		BV	BV conservative due to downward portion	1.000	400	0.5	No	HT	HT	N
2523	PTN	4	MSS / 072	5614-M-3072, SH 2	2	3/4" vent one per MSR inlet	4-10-1134	0.750	1.0	TV	N	HT	TD SE CORNER	513		TV		0.750	400	19	Yes	No Protection Required		
2523	PTN	4	MSS / 072	5614-M-3072, SH 2	2	3/4" vent one per MSR inlet	4-10-149	0.750	1.0	TV	N	HT	TD WEST - OFF PLATFORM - EL~20' NEAR	513		TV		0.750	400	19	Yes	No Protection Required		
2523	PTN	4	MSS / 072	5614-M-3072, SH 2	2	3/4" vent one per MSR inlet	4-10-170	0.750	1.0	TV	N	HT	TD WEST - OFF PLATFORM - EL~22' NEAR / ABOVE PLATFORM	513		TV		0.750	400	19	Yes	No Protection Required		
2523	PTN	4	MSS / 072	5614-M-3072, SH 2	2	3/4" vent one per MSR inlet	4-10-1133	0.750	1.5	TV	N	HT	TD +15FT UP - SW CORNER, NO ACCESS - VISUAL ESTIMATE	513		TV		0.750	400	19	Yes	No Protection Required		
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FE-4-6645D	1.250	1.0	H	N	HT	Below TD(turbine deck) - MEZZ LEVEL - SOUTH STAIR - BEHIND BLOWERS	513		H		1.000	400	18	Yes	No Protection Required		
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FE-4-6645B	1.250	1.5	H	N	HT	Below TD(turbine deck) unable to locate, use typical lengths from unit 3	513		H		1.000	400	18	Yes	No Protection Required		
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FE-4-6645A	1.250	2.0	H	N	HT	Below TD(turbine deck) - ~30 FT EL WEST SIDE - NEXT TO MEZZ STAIRS - CAN SEE FROM GROUND LEVEL, ABOVE H FILTER	513		H		1.000	400	18	Yes	No Protection Required		
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FX-4-1421	1.250	5.0	TV	N	HT	Below TD(turbine deck) - MEZZ LEVEL - NEAR ST-11 - RIGHT SIDE OF HANDRAIL	513		TV		1.000	400	20	Yes	No Protection Required		
2519	PTN	4	MSS / 072	5614-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FX-4-1422	1.250	5.0	H	N	HT	Below TD(turbine deck) unable to locate, use typical	513		H		1.000	400	18	Yes	No Protection Required		
2525	PTN	4	MSS / 072	5614-M-3072, SH 2	3	Drain (size unkown - estimate 3/4") one per timing loop	4-20-284	0.750	2.0	BV,H,D	N	HT	Assumed 3/4" dia based on similar. TD SW CORNER - N SIDE OF PLATFORM	523		BV	BV conservative due to downward portion	Not Analyzed	400	#N/A	No	HT	short run; high process temp; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2525	PTN	4	MSS / 072	5614-M-3072, SH 2	3	Drain (size unkown - estimate 3/4") one per timing loop	4-20-283	0.750	1.0	BV	N	HT	Assumed 3/4" dia based on similar. TD WEST - ON PLATFORM	523		BV		Not Analyzed	400	#N/A	No	HT	short run; high process temp; no protection required	N
2525	PTN	4	MSS / 072	5614-M-3072, SH 2	3	Drain (size unkown - estimate 3/4") one per timing loop	4-20-285	0.750	1.0	BV	N	HT	Assumed 3/4" dia based on similar. TD EAST- ON PLATFORM	523		BV		Not Analyzed	400	#N/A	No	HT	short run; high process temp; no protection required	N
2525	PTN	4	MSS / 072	5614-M-3072, SH 2	3	Drain (size unkown - estimate 3/4") one per timing loop	4-20-286	0.750	1.0	BV	N	HT	Assumed 3/4" dia based on similar. TD SE ON PLATFORM	523		BV		Not Analyzed	400	#N/A	No	HT	short run; high process temp; no protection required	N
2527	PTN	4	MSS / 072	5614-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FI-4-6646A	0.500	24.0	BV,H,D	N	HT	CAN'T LOCATE - COPIED "B" DATA - P&ID zone D-5	523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	HT	N
2527	PTN	4	MSS / 072	5614-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FI-4-6646B	0.500	24.0	BV,H,D	N	HT	mezz level next to fire extinguisher - SEE PHOTO- ON LEFT BEFOR THE EAST CATWALK (P&ID zone F-5)	523		BV	BV conservative due to downward portion	0.500	400	0.5	No	HT	HT	N
2527	PTN	4	MSS / 072	5614-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FX-4-1424	0.500	3.0	BV	N	HT	CAN'T LOCATE - COPIED "B" DATA - P&ID zone D-5	523		BV		0.500	400	0.5	No	HT	check temp and if isolated or hot no protection required	Y
2527	PTN	4	MSS / 072	5614-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FX-4-1425	0.500	3.0	BV	N	HT	mezz level next to fire extinguisher - SEE PHOTO- ON LEFT BEFOR THE EAST CATWALK (P&ID zone F-5)	523		BV		0.500	400	0.5	No	HT	check temp and if isolated or hot no protection required	Y
2527	PTN	4	MSS / 072	5614-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FE-4-6646A	0.500	1.5	H-I	Y	HT	CAN'T LOCATE - COPIED "B" DATA - P&ID zone D-5	523		H-I		0.500	400	20	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2527	PTN	4	MSS / 072	5614-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FE-4-6646B	0.500	1.5	H-I	Y	HT	mezz level next to fire extinguisher - SEE PHOTO- ON LEFT BEFOR THE EAST CATWALK (P&ID zone F-5)	523		H-I		0.500	400	20	Yes	No Protection Required		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-10	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-11	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-12	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-13	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-1405	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-1406	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-6	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-7	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-8	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	ST-4-9	1.000	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212			BV-I		1.000			No	N/A		
2530	PTN	4	MSS / 072	5614-M-3072, SH 2	5	misc drains upstream of steam traps	NOT PROVIDED	N/A	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A			400		No	N/A		
2532	PTN	4	MSS / 072	5614-M-3072, SH 2	6	3/4" Drain (upstream of CV-3-2827)	4-10-021	0.750	1.0	H	N	HT	taken from typ	600	Assumption based on spec	H		0.750	400	14	Yes	No Protection Required		
2536	PTN	4	MSS / 072	5614-M-3072, SH 2	MSR A, B, C, and D	Temperature Element (TE), temperature measurement is used as input into temperature control valve on "timing loop" (MSR steam inlet)	N/A	N/A	N/A	N/A	N/A	N/A	TE are either in thermo well or direct emmersion. Both cases will not expose process fluid and the line flow will prevent freezing.			N/A					No	N/A		
2493	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-4-1608-7	0.375	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	523		BV		0.375	400	Not Analyzed	No	HT	ERROR LINE-DELETE-DOES NOT EXIST	N
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-494	0.375	50.0	TV	N	HT		523		TV		0.375	400	4.5	No	HT	HT	N
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-495	0.375	50.0	TV	N	HT		523		TV		0.375	400	4.5	No	HT	HT	N
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-496	0.375	50.0	TV	N	HT	4-10-307 not shown on drawing	523		TV		0.375	400	4.5	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-484	0.375	50.0	TV-I	Y	HT		523		TV-I		0.375	400	23.5	No	HT	HT	N
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-485	0.375	50.0	TV	N	HT		523		TV		0.375	400	4.5	No	HT	HT	N
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-486	0.375	50.0	TV	N	HT	also has root valve not on drawing	523		TV		0.375	400	4.5	No	HT	HT	N
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-474	0.375	50.0	TV	N	HT		523		TV		0.375	400	4.5	No	HT	HT	N
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-475	0.375	50.0	TV	N	HT		523		TV		0.375	400	4.5	No	HT	HT	N
2492	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-4-476	0.375	50.0	TV	N	HT		523		TV		0.375	400	4.5	No	HT	HT	N
2493	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-4-1608-1 PT-4-1608-X	0.375	50.0	TV	N	HT		523		TV		0.375	400	4.5	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2493	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-4-1607-1 PT-4-1607-X	0.375	50.0	TV	N	HT		523		TV		0.375	400	4.5	No	HT	HT	N
2493	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-4-1606-X PT-4-1606-1	0.375	50.0	TV	N	HT	Note Dennis Line 16 Deleted	523		TV		0.375	400	4.5	No	HT	HT	N
2494	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-4-468	0.375	25.0	TV	N	HT	A/B-7	523		TV		0.375	400	4.5	No	HT	HT	N
2494	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-4-466	0.375	25.0	TV	N	HT	D-6.5	523		TV		0.375	400	4.5	No	HT	HT	N
2494	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-4-464	0.375	25.0	TV	N	HT	F-6.5	523		TV		0.375	400	4.5	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2493	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-4-1608-X	N/A	N/A	N/A	N/A	N/A	see PT-1608-1			N/A					No	N/A		
2493	PTN	4	MSS / 072	5614-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-4-1607-X	N/A	N/A	N/A	N/A	N/A	see PT-1607-1			N/A					No	N/A		
2497	PTN	4	MSS / 072	5614-M-3072, SH 1	1	capped pipe (x2, each MS line)	NOT PROVIDED	0.750	1.0	BV-I	Y	HT	ASSUMED LENGTH AND DIA	523		BV-I		0.750	400	2.5	Yes	No Protection Required		
2501	PTN	4	MSS / 072	5614-M-3072, SH 1	4	1/2" and 1 1/2" piping MSIV leakoff drain and steam trap (x1 per MSIV)	ST-4-3	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2501	PTN	4	MSS / 072	5614-M-3072, SH 1	4	1/2" and 1 1/2" piping MSIV leakoff drain and steam trap (x1 per MSIV)	ST-4-2	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2501	PTN	4	MSS / 072	5614-M-3072, SH 1	4	1/2" and 1 1/2" piping MSIV leakoff drain and steam trap (x1 per MSIV)	ST-4-1	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2502	PTN	4	MSS / 072	5614-M-3072, SH 1	4	Steam trap bypass	NOT PROVIDED	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2502	PTN	4	MSS / 072	5614-M-3072, SH 1	4	Steam trap bypass	NOT PROVIDED	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2502	PTN	4	MSS / 072	5614-M-3072, SH 1	4	Steam trap bypass	NOT PROVIDED	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2503	PTN	4	MSS / 072	5614-M-3072, SH 1	4	1/2" steam trap (x1 per line)	ST-4-1	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2503	PTN	4	MSS / 072	5614-M-3072, SH 1	4	1/2" steam trap (x1 per line)	ST-4-2	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2503	PTN	4	MSS / 072	5614-M-3072, SH 1	4	1/2" steam trap (x1 per line)	ST-4-3	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2504	PTN	4	MSS / 072	5614-M-3072, SH 1	4	Drain from 1/2" line w/ 2 closed root valves. Strainer Drain w/ 1 closed root valve.	ST-4-1	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2504	PTN	4	MSS / 072	5614-M-3072, SH 1	4	Drain from 1/2" line w/ 2 closed root valves. Strainer Drain w/ 1 closed root valve.	ST-4-2	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2504	PTN	4	MSS / 072	5614-M-3072, SH 1	4	Drain from 1/2" line w/ 2 closed root valves. Strainer Drain w/ 1 closed root valve.	ST-4-3	0.500	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		0.500	400		No	N/A		
2506	PTN	4	MSS / 072	5614-M-3072, SH 1	6	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	PI-4-1602 Valve 4-10-160	0.375	4.0	H	N	HT	0.375 ASSUMED	523		H		0.375	400	4.5	Yes	No Protection Required		
2506	PTN	4	MSS / 072	5614-M-3072, SH 1	6	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	PI-4-1415	0.375	6.0	H	N	HT	Top floor SW end of HP Turbine. 0.375 ASSUMED	523		H		0.375	400	4.5	No	HT	validate temp at end of line	Y
2506	PTN	4	MSS / 072	5614-M-3072, SH 1	6	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	PI-4-1414	0.375	6.0	H	N	HT	Top floor SE end of HP Turbine 0.375 ASSUMED	523		H		0.375	400	4.5	No	HT	validate temp at end of line	Y
2506	PTN	4	MSS / 072	5614-M-3072, SH 1	6	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	PI-4-3402	0.375	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	523		BV			400	#N/A	No	HT	locate and validate temp at end of line	Y
2512	PTN	4	MSS / 072	5614-M-3072, SH 1	8	Drains from steam traps and active line closed root valves.	ST-4-4	1.000	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		1.000	400		No	N/A		
2512	PTN	4	MSS / 072	5614-M-3072, SH 1	8	Drains from steam traps and active line closed root valves.	ST-4-5	1.000	N/A	N/A	N/A	N/A	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523		N/A		1.000	400		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2515	PTN	4	MSS / 072	5614-M-3072, SH 1	11	3/4" piping; 3/8" tubing Main steam to Secondary sample coolers (x3)	To 4C SEC Sample System Valve 4-10-307	0.375	50.0	H	N	HT	South 4C	523		H		0.375	400	4.5	No	HT	confirm with chemistry constant flow-if so not needed	Y
2515	PTN	4	MSS / 072	5614-M-3072, SH 1	11	3/4" piping; 3/8" tubing Main steam to Secondary sample coolers (x3)	To 4B SEC Sample System 4-10-207	0.375	50.0	H	N	HT	Middle 4B	523		H		0.375	400	4.5	No	HT	confirm with chemistry constant flow-if so not needed	Y
2515	PTN	4	MSS / 072	5614-M-3072, SH 1	11	3/4" piping; 3/8" tubing Main steam to Secondary sample coolers (x3)	To 4A SEC Sample System Valve 4-10-107	0.375	50.0	H	N	HT	North 4A	523		H		0.375	400	4.5	No	HT	confirm with chemistry constant flow-if so not needed	Y
2516	PTN	4	MSS / 072	5614-M-3072, SH 1	12	3/4" piping (x3) Main steam to Wet Layup System	TO SWGL PIC-4-6219C SWGL-4-047	0.375	0.5	TV-I	Y	HT	Root Valve locked closed. Line Disconnected and Capped to SGW. Tubing to PIC-4-6219	523		TV-I		0.375	400	23.5	Yes	No Protection Required	short run; high process temp-no proection required	N
2516	PTN	4	MSS / 072	5614-M-3072, SH 1	12	3/4" piping (x3) Main steam to Wet Layup System	TO SWGL PIC-4-6219B Valve 4-10-029	0.375	0.5	TV	N	HT	Root Valve locked closed. Line Disconnected and Capped to SGW. Tubing to PIC-4-6219	523		TV		0.375	400	4.5	Yes	No Protection Required	short run; high process temp-no proection required	N
2516	PTN	4	MSS / 072	5614-M-3072, SH 1	12	3/4" piping (x3) Main steam to Wet Layup System	TO SWGL PIC-4-6219A Valve 4-1023	0.375	0.5	TV-I	Y	HT	Root Valve locked closed. Line Disconnected and Capped to SGW. Tubing to PIC-4-6219	523		TV-I		0.375	400	23.5	Yes	No Protection Required	short run; high process temp-no proection required	N
2666	PTN	4	SSS / 032	5614-M-3032, SH 3	1	LS-4-6745, -6746, -6747, -6748, PS-4-6745, -6746, -6747, -6748,	N/A	N/A	N/A	N/A	N/A	N/A	All located within the East condenser pit which will prevent freezing due to local equipment/pipe heat loss			N/A					No	N/A		
2667	PTN	4	SSS / 032	5614-M-3032, SH 3	1	PI-4-6751, -6752, -6753, -6754, PI-4-6745, -6746, -6747, -6748, LG-4-3435, -3436, -3437, -3438	N/A	N/A	N/A	N/A	N/A	N/A	All located within the East condenser pit which will prevent freezing due to local equipment/pipe heat loss			N/A					No	N/A		
2668	PTN	4	SSS / 032	5614-M-3032, SH 3	1	Seal Buffer Tank (4 times)	N/A	N/A	N/A	N/A	N/A	N/A	All located within the East condenser pit which will prevent freezing due to local equipment/pipe heat loss			N/A					No	N/A		
2670	PTN	4	SSS / 032	5614-M-3032, SH 3	1	PCV-4-615, -616, -617, -618	N/A	N/A	N/A	N/A	N/A	N/A	All located within the East condenser pit which will prevent freezing due to local equipment/pipe heat loss			N/A					No	N/A		
2671	PTN	4	SSS / 032	5614-M-3032, SH 3	1	Small Bore Vents and Drains	N/A	N/A	N/A	N/A	N/A	N/A	All located within the East condenser pit which will prevent freezing due to local equipment/pipe heat loss			N/A					No	N/A		
2665	PTN	4	SSS / 032	5614-M-3032, SH 2	1	Small Bore Drains to Sample Sink	3/8 line to 4-10-1211 and sample valve 4-10-1214	0.375	N/A	N/A	N/A	N/A	Located east side of mezzanine level. Local are temperatures will remain above freezing. Cover turbine deck grating wit tarp to provide margin			N/A		0.375			No	N/A		
2665	PTN	4	SSS / 032	5614-M-3032, SH 2	1	Small Bore Drains to Sample Sink	4-10-1212 and sample valve 4-10-1215	0.375	N/A	N/A	N/A	N/A	Located east side of mezzanine level. Local are temperatures will remain above freezing. Cover turbine deck grating wit tarp to provide margin			N/A		0.375			No	N/A		
2665	PTN	4	SSS / 032	5614-M-3032, SH 2	1	Small Bore Drains to Sample Sink	4-10-1213 and sample valve 4-10-1216	0.375	N/A	N/A	N/A	N/A	Located east side of mezzanine level. Local are temperatures will remain above freezing. Cover turbine deck grating wit tarp to provide margin			N/A		0.375			No	N/A		
2486	PTN	4	ICW / 019	5614-M-3019, SH 2	1	dPI-4-1402, -1403, FI-4-1407, -1408, -1409, PI-4-1519, -1520, -1521	Not in Turb Bldg	N/A	N/A	N/A	N/A	N/A	Not in Turb Bldg	96		N/A			90		No	N/A		
2490	PTN	4	ICW / 019	5614-M-3019, SH 2	1	Small Bore Vents & Drains	Not in Turb Bldg	N/A	N/A	N/A	N/A	N/A	Not in Turb Bldg	96		N/A			90		No	N/A		
2473	PTN	4	ICW / 019	5614-M-3019, SH 1	1	PI(X)-4-1450, -1451, -1452, PI-4-1488, -1489, -6901, -6902, FE(FI)-3-1430, dPI-4-1400, -1401	DPI-4-1400	0.500	22.0	H	N	HT		96		H		0.500	90	0.8	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2473	PTN	4	ICW / 019	5614-M-3019, SH 1	1	PI(X)-4-1450, -1451, -1452, PI-4-1488, -1489, -6901, -6902, FE(FI)-3-1430, dPI-4-1400, -1401	DPI-4-1401	0.500	13.0	H	N	HT		96		H		0.500	90	0.8	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2473	PTN	4	ICW / 019	5614-M-3019, SH 1	1	PI(X)-4-1450, -1451, -1452, PI-4-1488, -1489, -6901, -6902, FE(FI)-3-1430, dPI-4-1400, -1401	FI-4-1430	0.750	14.0	H	N	HT		96		H		0.750	90	1.4	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	RV-4-128A	0.750	25.0	VA	N	HT		96		TV		0.750	90	0.8	No	HT	no protection required	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	RV-4-128B	0.750	25.0	VA	N	HT		96		TV		0.750	90	0.8	No	HT	no protection required	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-117A	1.000	25.0	VA	N	HT		96		TV		1.000	90	1.1	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-117A2	1.000	31.0	VA	N	HT		96		TV		1.000	90	1.1	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-117B	1.000	25.0	VA	N	HT		96		TV		1.000	90	1.1	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-117B2	1.000	31.0	H	N	HT		96		H		1.000	90	2.7	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-118A1	1.000	30.0	VA	N	HT		96		TV		1.000	90	1.1	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-118A2	1.000	10.0	BV	N	HT	VALVE TO SOFT HOSE	96		BV		1.000	90	0	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-118B1	1.000	25.0	VA	N	HT		96		TV		1.000	90	1.1	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-118B2	1.000	10.0	BV	N	HT	VALVE TO SOFT HOSE	96		BV		1.000	90	0	No	HT	short run worse case fish mouth break; mitigate if breaks; margin in TC flow-if heat trace in area add in	N
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-118	2.000	1.0	BV	N	I	FWH4A - mezz next to heater - hot area	96		BV		2.000	90	0.3	No	I		
2479	PTN	4	ICW / 019	5614-M-3019, SH 1	1	ICW strainer backwash piping	Pipe 4-8"-13-L TO 4-50-335	8.000	10.0	H,U	N	N/A		96		H	Upward bend not credited for conservatism	Not Analyzed	90	#N/A	No	N/A		
2479	PTN	4	ICW / 019	5614-M-3019, SH 1	1	ICW strainer backwash piping	Pipe 4-8"-13-L TO 4-50-315	8.000	10.0	H,U	N	N/A		96		H	Upward bend not credited for conservatism	Not Analyzed	90	#N/A	No	N/A		
2479	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Non-Safety Related Piping 4-2"-12-L	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB	96		N/A			90		No	N/A		
2472	PTN	4	ICW / 019	5614-M-3019, SH 1	1	PS-4-1619, -1620, PI-4-1619, -1620, PT-4-1619, -1620	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB	96		N/A			90		No	N/A		
2473	PTN	4	ICW / 019	5614-M-3019, SH 1	1	PI(X)-4-1450, -1451, -1452, PI-4-1488, -1489, -6901, -6902, FE(FI)-3-1430, dPI-4-1400, -1401	PI-4-6901	1.000	2.0	H	N	HT		96		H		1.000	90	2.7	Yes	No Protection Required		
2473	PTN	4	ICW / 019	5614-M-3019, SH 1	1	PI(X)-4-1450, -1451, -1452, PI-4-1488, -1489, -6901, -6902, FE(FI)-3-1430, dPI-4-1400, -1401	PI-4-6902	1.000	2.0	H	N	HT		96		H		1.000	90	2.7	Yes	No Protection Required		
2484	PTN	4	ICW / 019	5614-M-3019, SH 1	1	Small Bore Vents & Drains	4-50-404	2.000	1.6	VA	N	I	FWH4B - mezz next to heater - hot area	96		TV		2.000	90	2	Yes	No Protection Required		
2479	PTN	4	ICW / 019	5614-M-3019, SH 1	1	ICW strainer backwash piping	4-4"-13-L BS-4-1401	4.000	9.0	H,U	N	N/A		96		H	Upward bend not credited for conservatism	4.000	90	15	Yes	No Protection Required		
2479	PTN	4	ICW / 019	5614-M-3019, SH 1	1	ICW strainer backwash piping	4-4"-13-L BS-4-1400	4.000	9.0	H,U	N	N/A		96		H	Upward bend not credited for conservatism	4.000	90	15	Yes	No Protection Required		
2286	PTN	4	CS / 018	5614-M-3018, Sh. 1	1	8" & 10" AFW pumps supply	8" pipe from reducer through valve 4-20-401 outside CST cage north side	8.000	20.0	H,U	N	I		100		H	Upward bend not credited for conservatism	Not Analyzed	100	#N/A	No	I		
2286	PTN	4	CS / 018	5614-M-3018, Sh. 1	1	8" & 10" AFW pumps supply	10" pipe from CST through valve 4-20-400 to reducer	10.000	6.0	H	N	I		100		H		Not Analyzed	100	#N/A	No	I		
2287	PTN	4	CS / 018	5614-M-3018, Sh. 1	1	TWO 10" blind flange connections	downstream of 4-20-400	10.000	6.0	H	N	I		100		H		Not Analyzed	100	#N/A	No	I		
2288	PTN	4	CS / 018	5614-M-3018, Sh. 1	1	manual vent	4-20-381	0.750	1.0	TV	N	HT		100		TV		0.750	100	1	Yes	No Protection Required		
2291	PTN	4	CS / 018	5614-M-3018, Sh. 1	2	Condensate Transfer pump vent	4-20-539	0.375	1.0	TV	N	HT		255		TV		0.375	250	3	Yes	No Protection Required	repair/patch if damaged; no protection required	N
2292	PTN	4	CS / 018	5614-M-3018, Sh. 1	2	manual drain	4-20-360	0.500	1.0	BV,H	N	HT		255		BV	BV conservative due to downward portion	0.500	250	0.5	No	HT	repair/patch if damaged; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2289	PTN	4	CS / 018	5614-M-3018, Sh. 1	2	10" condensate transfer pump suction	10" pipe from reducer to cage wall	10.000	22.0	H,U	N	M	remainder covered by DWST line see 5610-M-3074 sh2	255		H	Upward bend not credited for conservatism	Not Analyzed	250	#N/A	No	M		
2290	PTN	4	CS / 018	5614-M-3018, Sh. 1	2	chemical addition tank valve 4-20-445	4-20-405	1.000	3.0	TV	N	HT		255		TV		1.000	250	20	Yes	No Protection Required		
2289	PTN	4	CS / 018	5614-M-3018, Sh. 1	2	4" condensate transfer pump suction	4-20-402	4.000	4.0	H	N	I		255		H		4.000	250	15	Yes	No Protection Required		
2293	PTN	4	CS / 018	5614-M-3018, Sh. 1	3	Condensate Transfer pump discharge pressure PI	PI-4-1496	0.500	1.0	TV	N	HT		90		TV		0.500	90	0.8	No	HT	repair/patch if damaged; no protection required	N
2289	PTN	4	CS / 018	5614-M-3018, Sh. 1	3	6" condensate transfer pump discharge piping	from U4 to U3 pump	6.000	435.0	H,U	N	M	Remainder covered by 5610-M-3018	90		H	Upward bend not credited for conservatism	Not Analyzed	90	#N/A	No	M		
2289	PTN	4	CS / 018	5614-M-3018, Sh. 1	3	CWS 1 1/2" PIPE ABANDON	CWS-0018	1.500	1.0	H	N	I		90		H		1.500	90	6.4	Yes	No Protection Required		
2297	PTN	4	CS / 018	5614-M-3018, Sh. 1	5	10" condensate reject to/from DWST	DWST	10.000	N/A	N/A	N/A	N/A	SEE 5610-M-3074 SH2	90		N/A		Not Analyzed	90		No	N/A		
2298	PTN	4	CS / 018	5614-M-3018, Sh. 1	6	3" condensate recovery return	4-3"-3-F	3.000	20.0	H	N	I		109		H		3.000	100	16	No	I		
2299	PTN	4	CS / 018	5614-M-3018, Sh. 1	7	6" condensate return	From XFR pump suction to valves 4-20-16 and 4-20-14	6.000	184.0	H,U	N	I	RUNS N-S EAST OF CONDENSER ALONG j LINE	255		H	Upward bend not credited for conservatism	Not Analyzed	250	#N/A	No	I		
2300	PTN	4	CS / 018	5614-M-3018, Sh. 1	8	2" surge tank supply	pipe up to 4-20-443	2.000	6.0	H	N	I		109		H		2.000	100	16	Yes	No Protection Required		
2302	PTN	4	CS / 018	5614-M-3018, Sh. 1	10	manual drain	4-20-447	0.750	N/A	N/A	N/A	M		109		N/A		0.750	100		No	M		
2301	PTN	4	CS / 018	5614-M-3018, Sh. 1	10	2" alternate surge tank supply from Unit 3	4-20-442	2.000	10.0	HV	N	I		109		HV		2.000	100	#N/A	No	I		
2303	PTN	4	CS / 018	5614-M-3018, Sh. 1	11	1", 4" & 6" supply to chemical feed and wet layup from primary water header and condensate transfer pump	Water to Cold Chem Lab 4	1.000	N/A	N/A	N/A	M		90		N/A		1.000	90		No	M		
2303	PTN	4	CS / 018	5614-M-3018, Sh. 1	11	1", 4" & 6" supply to chemical feed and wet layup from primary water header and condensate transfer pump	ed up to closed valve SGV	1.000	20.0	H,U	N	M		90		H	Upward bend not credited for conservatism	1.000	90	2.7	No	M		
2303	PTN	4	CS / 018	5614-M-3018, Sh. 1	11	1", 4" & 6" supply to chemical feed and wet layup from primary water header and condensate transfer pump	6" pipe from Primary water header	6.000	10.0	H,U	N	M	Remainder covered by Unit 3 feed see 5613-M-3018 Sh1, over 300 ft	90		H	Upward bend not credited for conservatism	Not Analyzed	90	#N/A	No	M		
2303	PTN	4	CS / 018	5614-M-3018, Sh. 1	11	1", 4" & 6" supply to chemical feed and wet layup from primary water header and condensate transfer pump	From 6" header down stream of valve 4-20-416 to 6" Primary ater header	4.000	25.0	H,U	N	I		90		H	Upward bend not credited for conservatism	4.000	90	15	No	I		
2306	PTN	4	CS / 018	5614-M-3018, Sh. 1	13	6" primary water makeup supply to CST	CV-4-1540	6.000	95.0	H,U	N	M		90		H	Upward bend not credited for conservatism	Not Analyzed	90	#N/A	No	M		
2306	PTN	4	CS / 018	5614-M-3018, Sh. 1	13	4" flow indicator and control valve bypass line	4-20-410	4.000	23.0	H,U	N	I		110		H	Upward bend not credited for conservatism	4.000	110	15	No	I		
2306	PTN	4	CS / 018	5614-M-3018, Sh. 1	13	flow indicator	FI-4-1437	6.000	1.0	H,U	N	M		90		H	Upward bend not credited for conservatism	Not Analyzed	90	#N/A	No	M		
2307	PTN	4	CS / 018	5614-M-3018, Sh. 1	14	2 1/2" AFW Pump recirc line	CST	2.500	N/A	N/A	N/A	N/A	covered by DWST 5610-M-3074 sh2	100		N/A		2.000	100		No	N/A		
2310	PTN	4	CS / 018	5614-M-3018, Sh. 1	16	1/2" Flex connection	4-20-419	0.500	N/A	N/A	N/A	M		100		N/A		0.500	100		No	M		
2310	PTN	4	CS / 018	5614-M-3018, Sh. 1	16	4" CST drain	4-20-420	4.000	5.0	H,U	N/A	I		100		H	Upward bend not credited for conservatism	4.000	100	15	Yes	No Protection Required		
2313	PTN	4	CS / 018	5614-M-3018, Sh. 1	17	manual drain lines	4-20-438 4-20-440	0.750	2.0	BV,H	N	HT		100		BV	BV conservative due to downward portion	0.750	100	0	No	HT	repair/patch if damaged; no protection required	N
2311	PTN	4	CS / 018	5614-M-3018, Sh. 1	17	CST level switch for CST makeup CV	LS-4-1502 LS-4-1541	1.000	14.0	TV	N	HT		100		TV		1.000	100	1.5	No	HT	repair/patch if damaged; no protection required	N
2311	PTN	4	CS / 018	5614-M-3018, Sh. 1	17	manual drain lines	4-20-439	1.000	1.0	BV	N	HT		100		BV		1.000	100	0	No	HT	repair/patch if damaged; no protection required	N
2311	PTN	4	CS / 018	5614-M-3018, Sh. 1	17	CST level switch for CST makeup CV	LS-4-1503	1.000	10.0	TV	N	HT		100		TV		1.000	100	1.5	No	HT	repair/patch if damaged; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2314	PTN	4	CS / 018	5614-M-3018, Sh. 1	18	CST level transmitter / indication	LT-4-6384A	0.375	4.0	H,D	N	HT		50		BV	BV conservative due to downward portion	0.375	50	Not Analyzed	No	HT	HT	N
2314	PTN	4	CS / 018	5614-M-3018, Sh. 1	18	3/8", 1", & 3" level transmitter piping	LT-4-6584 LT-4-6384B LT-4-6384A	0.375	4.0	H,D	N	HT		50		BV	BV conservative due to downward portion	0.375	50	Not Analyzed	No	HT	HT	N
2316	PTN	4	CS / 018	5614-M-3018, Sh. 1	18	manual vents, drains and test connections	4-20-418	0.375	1.0	BV	N	HT		50		BV		0.375	50	Not Analyzed	No	HT	HT	N
2316	PTN	4	CS / 018	5614-M-3018, Sh. 1	18	manual vents, drains and test connections	4-20-409A	0.375	2.0	TV	N	HT		50		TV		0.375	50	0	No	HT	HT	N
2316	PTN	4	CS / 018	5614-M-3018, Sh. 1	18	manual vents, drains and test connections	4-20-409B	0.375	2.0	TV	N	HT		50		TV		0.375	50	0	No	HT	HT	N
2316	PTN	4	CS / 018	5614-M-3018, Sh. 1	18	manual vents, drains and test connections	4-20-444	3.000	5.0	H	N	I	LAST 6' ON td - CAGE INSULATED 025 ON TD	50		H		3.000	50	1	No	I		
2317	PTN	4	CS / 018	5614-M-3018, Sh. 1	19	6" condensate supply to feedwater system	4-20-404	6.000	85.0	H,U	N	I	Length based on Elv change and FW platform	90		H	Upward bend not credited for conservatism	Not Analyzed	90	#N/A	No	I		
2191	PTN	4	CNDSR / 014	5614-M-3014, SH 3	1	1/2" Drain (Piping & valve)(wye strainer drain)	4-30-175	0.500	1.0	TV-I	Y	HT	Assumed length based on similar, could not locate	600		TV-I		0.500	400	20	Yes	No Protection Required		
2187	PTN	4	CNDSR / 014	5614-M-3014, SH 3	1	Pressure Switch (PS) with control room annunciation. Local Pressure indication (PI) 1/2" tubing and open root valve.	PS-4-1622 PI-4-1569	0.500	6.0	H	N	HT		600		H		0.500	400	8.5	Yes	No Protection Required		
2188	PTN	4	CNDSR / 014	5614-M-3014, SH 3	1	Local Pressure indication (PI) 1/2" tubing and open root valve.	PI-4-1568	0.500	6.0	TV-I	Y	HT		600		TV-I		0.500	400	20	Yes	No Protection Required		
2194	PTN	4	CNDSR / 014	5614-M-3014, SH 3	2	1" Drain (Piping & valve)	4-30-039	1.000	1.0	H-I	Y	HT	Assumed length based on similar, could not locate	600		H-I		1.000	400	19	Yes	No Protection Required		
2195	PTN	4	CNDSR / 014	5614-M-3014, SH 3	3	Local Pressure indication (PI) 1/4" tubing and open root valve; branch from 8" vacuum breaker line	PI-4-1447	0.250	1.0	H	N	HT		400		H		Not Analyzed	400	#N/A	No	HT	verify line temp; ambient temp; if hot no protection required	Y
2198	PTN	4	CNDSR / 014	5614-M-3014, SH 3	3	8" Vent/Vacuum breaker	4-30-001	8.000	COULD NOT			I	COULD NOT FIND	400				Not Analyzed	400		No	I	Verify already Insulated	Y
2196	PTN	4	CNDSR / 014	5614-M-3014, SH 3	3	Local Pressure indication (PI) (x2) 1/2" tubing and open root valve; branch from 8" lines into SJAEs	PI-4-1434	0.500	0.5	TV	N	HT		400		TV		0.500	400	8.5	Yes	No Protection Required		
2196	PTN	4	CNDSR / 014	5614-M-3014, SH 3	3	Local Pressure indication (PI) (x2) 1/2" tubing and open root valve; branch from 8" lines into SJAEs	PI-4-1407	0.500	1.0	TV	N	HT		400		TV		0.500	400	8.5	Yes	No Protection Required		
2203	PTN	4	CNDSR / 014	5614-M-3014, SH 3	7	Local level gauge (x2) indicates liquid level in condenser drain line.	LG (not numered)	0.500	0.5	H	N	HT		90		H		0.500	90	0.8	Yes	No Protection Required		
2203	PTN	4	CNDSR / 014	5614-M-3014, SH 3	7	Local level gauge (x2) indicates liquid level in condenser drain line.	LG (not numered)	0.500	0.5	H	N	HT		90		H		0.500	90	0.8	Yes	No Protection Required		
2205	PTN	4	CNDSR / 014	5614-M-3014, SH 3	8	Local level gauge and 1/2" tubing indicates liquid level in condenser drain line.	LG-4-3411	0.500	0.5	H	N	HT	BETWEEN 3A AND 3B HEATER. WILL STAY WARM.	350		H		0.500	350	7	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2207	PTN	4	CNDSR / 014	5614-M-3014, SH 3	8	1/2" capped pipe (closed root valve) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	LG-4-3412	0.500	N/A	N/A	N/A	N/A	FWIB 5614-M-3081 SH6 NOT IN THIS SYSTEM DELETE ENTRY	350		N/A		0.500	350		No	N/A		
2209	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	Local gauges and 3/8" tubing press differential (dPI) Flow indication (FI) Flow element (FE)	FI-4-1416	0.375	2.0	H	N	HT		200		H		0.375	200	2	Yes	No Protection Required		
2209	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	Local gauges and 3/8" tubing press differential (dPI) Flow indication (FI) Flow element (FE)	DPI-4-1406	0.375	12.0	H	N	HT		200		H		0.375	200	2	No	HT	non condensable gas; air; not protection required	N
2212	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 7) 1" line (isolated) from Condensate Sys Loop Seal Fill	4-30-223	0.375	0.5	BV	N	HT		200		BV		0.375	200	Not Analyzed	No	HT	no protection required; air	N
2212	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 7) 1" line (isolated) from Condensate Sys Loop Seal Fill	4-30-220	0.375	0.5	BV	N	HT		200		BV		0.375	200	Not Analyzed	No	HT	no protection required; air	N
2212	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 7) 1" line (isolated) from Condensate Sys Loop Seal Fill	4-30-178	0.500	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	200		BV		0.500	200	0	No	HT	non condensable gas; air; not protection required	N
2212	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 7) 1" line (isolated) from Condensate Sys Loop Seal Fill	4-30-015	0.500	0.5	BV	N	HT		200		BV		0.500	200	0	No	HT	non condensable gas; air; not protection required	N
2209	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	Local gauges and 3/8" tubing press differential (dPI) Flow indication (FI) Flow element (FE)	FE-4-3400	0.375	Not in TB	N/A	N/A	HT	IN PIPE NOT IN SCOPE	200		N/A		0.375	200		No	HT	non condensable gas; air; not protection required	N
2212	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 7) 1" line (isolated) from Condensate Sys Loop Seal Fill	4-30-176	1.000	10.0	H	N	HT		200		H		1.000	200	10	Yes	No Protection Required		
2208	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	Radiation detector (RD) with control room alarm/annunciation	RD-4-15	4.000	0.5	TV	N	I		90		TV		4.000	90	20	Yes	No Protection Required		
2210	PTN	4	CNDSR / 014	5614-M-3014, SH 3	9	Local flow indicator (FI)	FI-4-1419	4.000	0.5	TV	N	I		90		TV		4.000	90	20	Yes	No Protection Required		
2176	PTN	4	CNDSR / 014	5614-M-3014, SH 2	3	10" header, and 2" piping and control valves (air operated) Condensate Makeup Spray (from Demineralized Water Storage Tank)	4-20-051	2.000	N/A	N/A	N/A	N/A	NORMAL OPERATION OPEN AND FLOWING	200	Class E was used from Condensate section.	N/A		2.000	200		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2176	PTN	4	CNDSR / 014	5614-M-3014, SH 2	3	10" header, and 2" piping and control valves (air operated) Condensate Makeup Spray (from Demineralized Water Storage Tank)	4-20-053	2.000	N/A	N/A	N/A	N/A	NORMAL OPERATION OPEN AND FLOWING	200	Class E was used from Condensate section.	N/A		2.000	200		No	N/A		
2176	PTN	4	CNDSR / 014	5614-M-3014, SH 2	3	10" header, and 2" piping and control valves (air operated) Condensate Makeup Spray (from Demineralized Water Storage Tank)	CV-4-1519	10.000	N/A	N/A	N/A	N/A	NORMAL OPERATION OPEN AND FLOWING	200	Class E was used from Condensate section.	N/A		Not Analyzed	200		No	N/A		
2179	PTN	4	CNDSR / 014	5614-M-3014, SH 2	5	3 Pressure Indicating Transmitter (PIT) PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-4-1612A	0.500	1.0	H	N	HT	TUBING IN SERIES WITH B	200	Class E was used from Condensate section.	H		0.500	200	3.5	Yes	No Protection Required		
2179	PTN	4	CNDSR / 014	5614-M-3014, SH 2	5	3 Pressure Indicating Transmitter (PIT) PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-4-1612B	0.500	1.0	H	N	HT	TUBING IN SERIES WITH C	200	Class E was used from Condensate section.	H		0.500	200	3.5	Yes	No Protection Required		
2179	PTN	4	CNDSR / 014	5614-M-3014, SH 2	5	3 Pressure Indicating Transmitter (PIT) PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-4-1612C	0.500	5.0	H	N	HT		200	Class E was used from Condensate section.	H		0.500	200	3.5	No	HT	verify in east pit; if so no heat trace required	Y
2183	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1623	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2183	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1624	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2183	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1625	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2183	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1626	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2183	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1627	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2183	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1628	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2183	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	TX-4-1557	NOT PROVIDED	N/A	N/A	N/A	N/A	Either direct immersion or in thermo well. Neither expose fluid. Process flow will prevent freeze	200	Class E was used from Condensate section.	N/A			200		No	N/A		
2184	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Local level guage (x3)	LG-4-3401	0.750	N/A	N/A	N/A	N/A	Condensing steam will provide flow through glass and prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2184	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Local level guage (x3)	LG-4-3401	0.750	N/A	N/A	N/A	N/A	Condensing steam will provide flow through glass and prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2185	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Vent (screened open flange) with Motor Op Valve MOV-4-VAB	MOV-4-VAB	NOT PROVIDED	N/A	N/A	N/A	N/A	WILL DRAIN TO CONDENSER	200	Class E was used from Condensate section.	N/A			200		No	N/A		
2182	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Level Controler (LC) Condenser level control with signal input to condenser water makeup spray valves (suction from DWST)	LC-4-1519	1.000	5.0	HD	N	HT	COULD NOT SEE ORIENTATION	200	Class E was used from Condensate section.	HD		1.000	200	#N/A	No	HT	verify ambient temp; if hot no heat trace required	Y
2186	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Capped piping 1 1/2" pipe (leak detect) (x8)	NOT PROVIDED	1.500	COULD NOT FIND			I	COULD NOT FIND	200	Class E was used from Condensate section.			1.500	200		No	I		
2184	PTN	4	CNDSR / 014	5614-M-3014, SH 2	North Condenser 4A	Local level guage (x3)	LG-4-3401	0.750	N/A	N/A	N/A	N/A	Condensing steam will provide flow through glass and prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2164	PTN	4	CNDSR / 014	5614-M-3014, SH 1	4	3 pipe studs with closed valves (30-1041, 4-30-984, 4-30-981, and 4-30-981A)	4-30-1041	1.000	1.0	TV	N	HT	COULDT IDENTIFY ON HEADER BUT ALL VALVES COMING OFF WERE 1FT FROM HEADER.	200	Class E was used from Condensate section.	TV		1.000	200	20	Yes	No Protection Required		
2164	PTN	4	CNDSR / 014	5614-M-3014, SH 1	4	3 pipe studs with closed valves (30-1041, 4-30-984, 4-30-981, and 4-30-981A)	4-30-984	1.000	1.0	TV	N	HT		200	Class E was used from Condensate section.	TV		1.000	200	20	Yes	No Protection Required		
2164	PTN	4	CNDSR / 014	5614-M-3014, SH 1	4	3 pipe studs with closed valves (30-1041, 4-30-984, 4-30-981, and 4-30-981A)	4-30-981	1.000	1.0	TV	N	HT		200	Class E was used from Condensate section.	TV		1.000	200	20	Yes	No Protection Required		
2165	PTN	4	CNDSR / 014	5614-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-4-2612B	0.500	1.0	H	N	HT	If sloped to condenser, condensate will flow and not freeze.	200	Class E was used from Condensate section.	H		0.500	200	3.5	Yes	No Protection Required		
2165	PTN	4	CNDSR / 014	5614-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-4-2612C	0.500	1.0	H	N	HT	If sloped to condenser, condensate will flow and not freeze.	200	Class E was used from Condensate section.	H		0.500	200	3.5	Yes	No Protection Required		
2165	PTN	4	CNDSR / 014	5614-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-4-2612A	0.500	5.0	H	N	HT	If sloped to condenser, condensate will flow and not freeze.	200	Class E was used from Condensate section.	H		0.500	200	3.5	No	HT	verify in south pit; if so no heat trace required	Y

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2165	PTN	4	CNDSR / 014	5614-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PS-4-1613A	0.500	40.0	H,D	N	HT	IN CONTROL ROOM, LENGTH IN TB ESTIMATED. Diameter based on 1613A. If tubing is sloped to Condenser, condensate will flow and not freeze	200	Class E was used from Condensate section.	BV	BV conservative due to downward portion	0.500	200	0	No	HT	verify in south pit; if so no heat trace required	Y
2165	PTN	4	CNDSR / 014	5614-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PS-4-1613B	0.500	40.0	H,D	N	HT	IN CONTROL ROOM, LENGTH IN TB ESTIMATED. Diameter based on 1613A. If tubing is sloped to Condenser, condensate will flow and not freeze	200	Class E was used from Condensate section.	BV	BV conservative due to downward portion	0.500	200	0	No	HT	verify in south pit; if so no heat trace required	Y
2167	PTN	4	CNDSR / 014	5614-M-3014, SH 1	5	One capped pipe with closed root valve (near PS 4-1613A)	4-20-614	Not provided	N/A	N/A	N/A	N/A	IN CONTROL ROOM	200	Class E was used from Condensate section.	N/A			200		No	N/A		
2170	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1629	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2170	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1643	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2170	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1644	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2170	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1645	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2170	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1646	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2170	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-4-1647	0.750	N/A	N/A	N/A	N/A	INSIDE TURBINE ENCLOSURE which will prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2170	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	TX-4-1556	NOT PROVIDED	N/A	N/A	N/A	N/A	Either direct imersion or thermal well. Therefore process fluid flow will prevent freezing	200	Class E was used from Condensate section.	N/A			200		No	N/A		
2171	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Local level guage (x2)	LG-4-3400	0.750	N/A	N/A	N/A	N/A	Condensing steam will provide flow through glass and prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		
2171	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Local level guage (x2)	LG-4-3400	0.750	N/A	N/A	N/A	N/A	Condensing steam will provide flow through glass and prevent freezing	200	Class E was used from Condensate section.	N/A		0.750	200		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2172	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Vent (screened open flange) with Motor Op Valve MOV-4-VAB1	MOV-4-VAB1	NOT PROVIDED	N/A	N/A	N/A	N/A	WILL DRAIN TO CONDENSER	200	Class E was used from Condensate section.	N/A			200		No	N/A		
2173	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (4-1"-E) (x1)	NOT PROVIDED	1.000	1.0	BV	N	I	COULD NOT FIND, assumed length based on similar	200	Class E was used from Condensate section.	BV		1.000	200	0.5	No	I		
2169	PTN	4	CNDSR / 014	5614-M-3014, SH 1	South Condenser 4B	Level Transmitter (LT) Condenser level with control room annunciation (high/low)	LT-4-1541	2.000	10.0	H	N	I	MAY NOT BE POSSIBLE TO INSULATE AND ALOW THE ACTUATOR TO OPERATE PROPERLY	200	Class E was used from Condensate section.	H		2.000	200	18	Yes	No Protection Required		
2364	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PS-4-2018	PS-4-2018	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2365	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-4-1700	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2365	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-4-2001	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2365	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-4-2006	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2365	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-4-2012	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2365	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-4-2019	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2365	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-4-2044	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2365	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-4-2045	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2365	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PC-4-1700, PS-4-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-4-2061	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1699	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1700	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1523	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1524	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1525	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1526	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1527	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1528	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1529	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1530	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-3661	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2366	PTN	4	CWS / 010	5614-M-3010, SH 3	1	PI-4-1699, -1700, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, -1530	PI-4-1495	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2367	PTN	4	CWS / 010	5614-M-3010, SH 3	1	FI-4-1414, -1452, -1454, -1403	FI-4-1414	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2367	PTN	4	CWS / 010	5614-M-3010, SH 3	1	FI-4-1414, -1452, -1454, -1403	FI-4-1452	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2367	PTN	4	CWS / 010	5614-M-3010, SH 3	1	FI-4-1414, -1452, -1454, -1403	FI-4-1454	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2367	PTN	4	CWS / 010	5614-M-3010, SH 3	1	FI-4-1414, -1452, -1454, -1403	FI-4-1403	0.500	N/A	N/A	N/A	N/A	Not in TB	95		N/A		0.500	90		No	N/A		
2358	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PS-4-2036, -2037, -2038, -2039, -2040, -2041, -2042, -2043	PI-4-1590	0.500	4.0	VA	N	HT		50		TV		0.500	50	0	No	HT	process is air; no protection required	N
2359	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PS-3-2040, -2041, -2042, 2043	PI-4-1591	0.500	3.0	VA	N	HT		50		TV		0.500	50	0	No	HT	process is air; no protection required	N
2360	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PI-4-1536, -1537. -1538, -1539, -1590,	PS-4-2036	0.500	11.0	VA	N	HT		95		TV		0.500	90	0.8	No	HT	alarm function; can be isolated;no protection required	N
2360	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PI-4-1536, -1537. -1538, -1539, -1590,	PS-4-2037	0.500	8.0	TV	N	HT		95		TV		0.500	90	0.8	No	HT	alarm function; can be isolated;no protection required	N
2360	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PI-4-1536, -1537. -1538, -1539, -1590,	PS-4-2038	0.500	11.0	VA	N	HT		95		TV		0.500	90	0.8	No	HT	alarm function; can be isolated;no protection required	N
2360	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PI-4-1536, -1537. -1538, -1539, -1590,	PS-4-2039	0.500	11.0	VA	N	HT		95		TV		0.500	90	0.8	No	HT	alarm function; can be isolated;no protection required	N
2360	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PI-4-1536, -1537. -1538, -1539, -1590,	PS-4-2040 PI-4-1536	0.500	9.0	TV	N	HT	includes PI-4-1536	95		TV		0.500	90	0.8	No	HT	air service; no protection required	N
2360	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PI-4-1536, -1537. -1538, -1539, -1590,	PS-4-2041PI-4-1537	0.500	9.0	TV	N	HT	includes PI-4-1537	95		TV		0.500	90	0.8	No	HT	air service; no protection required	N
2360	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PI-4-1536, -1537. -1538, -1539, -1590,	PS-4-2042PI-4-1538	0.500	8.0	TV	N	HT	includes PI-4-1538	95		TV		0.500	90	0.8	No	HT	air service; no protection required	N
2360	PTN	4	CWS / 010	5614-M-3010, SH 2	1	PI-4-1536, -1537. -1538, -1539, -1590,	PS-4-2043PI-4-1539	0.500	10.0	TV	N	HT	includes PI-4-1539	95		TV		0.500	90	0.8	No	HT	air service; no protection required	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-271	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	50		BV		0.750	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-271	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	50		BV		0.750	50	0	No	HT	duplicate	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-272	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	50		BV		0.750	50	0	No	HT	repair/patch if damaged; no impact to plant; no protection required	N
2353	PTN	4	CWS / 010	5614-M-3010, SH 1	1	Small Bore Vents & Drains	4-50-273	0.750	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	50		BV		0.750	50	0	No	HT	repair/patch if damaged; no impact to plant; no protection required	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	LG-3-3403	0.750	3.0	H	N	HT	LEVEL GUAGE GLASS	50		H		0.750	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	LG-4-3402	0.750	3.0	H	N	HT	LEVEL GUAGE GLASS	50		H		0.750	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	LG-4-3404	0.750	3.0	H	N	HT		50		H		0.750	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	LG-4-3405	0.750	3.0	H	N	HT	GLASS LEVEL GUAGE	50		H		0.750	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2361	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	LG-4-3404	0.750	3.0	H	N	HT	LEVEL GUAGE GLASS	50		H		0.750	50	0	No	HT	duplicate	N
2353	PTN	4	CWS / 010	5614-M-3010, SH 1	1	Small Bore Vents & Drains	4-50-264	1.000	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	50		BV		1.000	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2353	PTN	4	CWS / 010	5614-M-3010, SH 1	1	Small Bore Vents & Drains	4-50-265	1.000	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	50		BV		1.000	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-269	N/A	N/A	N/A	N/A	N/A	Within East Condenser Pit. Local temperture will remain above freezing due to covered ceiling except over Condensate pumps.	50		N/A			50		No	N/A		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PI-4-1461	N/A	N/A	N/A	N/A	N/A	Within East Condenser Pit. Local temperture will remain above freezing due to covered ceiling except over Condensate pumps.	50		N/A			50		No	N/A		
2353	PTN	4	CWS / 010	5614-M-3010, SH 1	1	Small Bore Vents & Drains	4-50-262	N/A	N/A	N/A	N/A	N/A	Within East Condenser Pit. Local temperture will remain above freezing due to covered ceiling except over Condensate pumps.	50		N/A			50		No	N/A		
2353	PTN	4	CWS / 010	5614-M-3010, SH 1	1	Small Bore Vents & Drains	4-50-263	N/A	N/A	N/A	N/A	N/A	Within East Condenser Pit. Local temperture will remain above freezing due to covered ceiling except over Condensate pumps.	50		N/A			50		No	N/A		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-252	1.000	0.5	H	N	HT	DISCHARGE	50		H		1.000	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-253	1.000	0.5	H	N	HT	DISCHARGE	50		H		1.000	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-256	1.000	0.5	H	N	HT	DISCHARGE	50		H		1.000	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-257	1.000	0.5	H	N	HT	DISCHARGE	50		H		1.000	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-260	1.000	6.0	H	N	HT	DISCHARGE	50		H		1.000	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-261	1.000	6.0	H	N	HT	DISCHARGE	50		H		1.000	50	0	No	HT	repair/patch if damaged; no impact to plant; do nothing	N
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1038	1.500	1.5	H	N	I	Need to confirm how this vent tank works. Vent tank on top and could not access. Assume 10ft long	50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1041	1.500	0.5	H	N	I		50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1042	1.500	0.5	H	N	I		50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1043	1.500	0.5	H	N	I		50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1048	1.500	12.0	H	N	I		50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1049	1.500	0.5	H	N	I		50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1050	1.500	0.5	H	N	I		50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1051	1.500	0.5	H	N	I		50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1052	1.500	0.5	H	N	I	CAN'T FOLLOW THROUGH MEZZ - ESITIMATE 70 FT	50		H		1.500	50	0	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1037	1.500	COULD NOT FIND			I	COULD NOT FIND	50				1.500	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1044	1.500	COULD NOT FIND			I	COULD NOT FIND	50				1.500	50		No	I		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1045	1.500	COULD NOT FIND			I	COULD NOT FIND	50				1.500	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1053	1.500	COULD NOT FIND			I	COULD NOT FIND	50				1.500	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1057	1.500	COULD NOT FIND			I	COULD NOT FIND	50				1.500	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1058	1.500	COULD NOT FIND			I	COULD NOT FIND - looks like nothing sticks out of the insulation	50				1.500	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1059	1.500	COULD NOT FIND			I	COULD NOT FIND	50				1.500	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1060	1.500	COULD NOT FIND			I	COULD NOT FIND	50				1.500	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1061	1.500	COULD NOT FIND			I	COULD NOT FIND, DOESN'T STICK OUT FROM INSULATION	50				1.500	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1035	2.000	1.0	H	N	I		50		H		2.000	50	0.5	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1036	2.000	1.0	H	N	I	MAY NOT BE POSSIBLE TO INSULATE AND ALOW THE ACTUATOR TO OPERATE PROPERLY	50		H		2.000	50	0.5	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1039	2.000	1.0	H	N	I		50		H		2.000	50	0.5	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1040	2.000	2.0	H	N	I		50		H		2.000	50	0.5	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1046	2.000	2.0	H	N	I		50		H		2.000	50	0.5	No	I		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50--1047	2.000	2.0	H	N	I		50		H		2.000	50	0.5	No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1054	2.000	COULD NOT FIND			I	COULD NOT FIND	50				2.000	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1055	2.000	COULD NOT FIND			I	COULD NOT FIND	50				2.000	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-1056	2.000	COULD NOT FIND			I	COULD NOT FIND	50				2.000	50		No	I		
2346	PTN	4	CWS / 010	5614-M-3010, SH 1	1	PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-500B	4.000	1.0	H	N	I	FWH3B	50		H		4.000	50	3.5	Yes	No Protection Required		
2356	PTN	4	CWS / 010	5614-M-3010, SH 1	3	PI-4-3420, -3425	PI-4-3420	0.500	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	50		BV		0.500	50	0	No	HT	not normally connected to plant equipment; flex only; no protection required	N
2356	PTN	4	CWS / 010	5614-M-3010, SH 1	3	PI-4-3420, -3425	PI-4-3425	1.000	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	50		BV		1.000	50	0	No	HT	not normally connected to plant equipment; flex only; no protection required	N
2362	PTN	4	CWS / 010	5614-M-3010, SH 1		PI-4-1006, -1007, -1008, -1009, -1459, -1460, -1461, -1462, PX-4-1504, -1505, -1506, -1507,-1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	4-50-500A	4.000	0.5	H	N	I	FWH3A	50		H		4.000	50	3.5	Yes	No Protection Required		
2734	PTN	4	TPCW / 008	5614-M-3008, SH 4	1	FE(FI)-4-1411, PI-4-1479	PI-4-1479	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2734	PTN	4	TPCW / 008	5614-M-3008, SH 4	1	FE(FI)-4-1411, PI-4-1479	FE(FI)-4-1411	1.000	18.0	H	N	HT		110		H		1.000	110	4.1	No	HT	repair/patch if needed	N
2737	PTN	4	TPCW / 008	5614-M-3008, SH 4	1	Small Bore Drains	4-60-214	1.000	0.6	BV	N	HT		110		BV		1.000	110	0	No	HT	short run; high process temp	N
2737	PTN	4	TPCW / 008	5614-M-3008, SH 4	1	Small Bore Drains	4-60-213	1.000	0.6	BV	N	HT		110		BV		1.000	110	0	No	HT	short run; high process temp	N
2737	PTN	4	TPCW / 008	5614-M-3008, SH 4	1	Small Bore Drains	4-60-327	3.000	1.0	BV	N	I	FWH4A	110		BV		3.000	110	1	Yes	No Protection Required		
2737	PTN	4	TPCW / 008	5614-M-3008, SH 4	1	Small Bore Drains	4-60-328	3.000	1.0	BV	N	I	FWH4B, Length based on 3A	110		BV		3.000	110	1	Yes	No Protection Required		
2737	PTN	4	TPCW / 008	5614-M-3008, SH 4	1	Small Bore Drains	4-60-329	3.000	1.0	BV	N	I	FWH4B	110		BV		3.000	110	1	Yes	No Protection Required		
2738	PTN	4	TPCW / 008	5614-M-3008, SH 4	2	PX-4-1467, -1469, PI-4-1570, -1571	PX-4-1467	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2738	PTN	4	TPCW / 008	5614-M-3008, SH 4	2	PX-4-1467, -1469, PI-4-1570, -1571	PX-4-1469	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2738	PTN	4	TPCW / 008	5614-M-3008, SH 4	2	PX-4-1467, -1469, PI-4-1570, -1571	PI-4-1570	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2738	PTN	4	TPCW / 008	5614-M-3008, SH 4	2	PX-4-1467, -1469, PI-4-1570, -1571	PI-4-1571	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-219	0.375	0.5	TV	N	HT		110		TV		0.375	110	0.6	Yes	No Protection Required	repair/patch if damaged	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PI-4-1554	0.500	0.5	TV	N	HT		110		TV		0.500	110	1.2	Yes	No Protection Required		
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PX-4-1515	0.500	0.5	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PX-4-1516	0.500	0.5	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PX-4-1517	0.500	0.5	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PX-4-1518	0.500	0.5	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-223	0.250	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	110		BV		Not Analyzed	110	#N/A	No	HT	short run; high process temp; no protection required	N
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-224	0.250	0.5	H	N	HT		110		H		Not Analyzed	110	#N/A	No	HT	short run; high process temp; no protection required	N
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-218	0.375	1.0	H	N	HT		110		H		0.375	110	0.6	No	HT	short run; high process temp; no protection required	N
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PX-4-1477	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PX-4-1482	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PI-4-1503	0.500	7.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair/patch if needed; no protection required	N
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PI-4-1504	0.500	7.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair/patch if needed; no protection required	N
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PI-4-1505	0.500	7.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair/patch if needed; no protection required	N
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PI-4-1506	0.500	7.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair/patch if needed; no protection required	N
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	FE(FI)-4-1455	0.500	8.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair/patch if needed; no protection required	N
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-222	0.500	3.0	H	N	HT		110		H		0.500	110	1.2	No	HT	short run; high process temp; no protection required	N
2743	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	PX-4-1477, -1482, -1515, -1516, -1517, -1518 PI-4-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-4-1455,	PI-4-1579	0.500	1.0	TV	N	HT		110		TV		0.500	110	1.2	Yes	No Protection Required		
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-245	1.000	0.5	BV	N	HT		110		BV		1.000	110	0	No	HT	repair/patch if needed; no protection required	N
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-260	1.000	1.0	BV	N	HT		110		BV		1.000	110	0	No	HT	repair/patch if needed; no protection required	N
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-337	4.000	COULD NOT			I	COULD NOT FIND	110				4.000	110		No	I		
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-236	1.000	2.0	H	N	HT		110		H		1.000	110	4.1	Yes	No Protection Required		
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-243	1.000	2.0	H	N	HT		110		H		1.000	110	4.1	Yes	No Protection Required		
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-250	1.000	2.0	H	N	HT		110		H		1.000	110	4.1	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-255	1.000	2.0	H	N	HT		110		H		1.000	110	4.1	Yes	No Protection Required		
2749	PTN	4	TPCW / 008	5614-M-3008, SH 4	3	Small Bore Vents & Drains	4-60-226	1.500	4.0	H	N	I	NO CLOSED VALVE - NOT NEEDED	110		H		1.500	110	10.4	Yes	No Protection Required		
2751	PTN	4	TPCW / 008	5614-M-3008, SH 4	4	PX-4-1478. -1479, -1480, -1481, PI-4-1481, -1482, -1483, -1484	PX-4-1478	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2751	PTN	4	TPCW / 008	5614-M-3008, SH 4	4	PX-4-1478. -1479, -1480, -1481, PI-4-1481, -1482, -1483, -1484	PX-4-1479	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2751	PTN	4	TPCW / 008	5614-M-3008, SH 4	4	PX-4-1478. -1479, -1480, -1481, PI-4-1481, -1482, -1483, -1484	PX-4-1480	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2751	PTN	4	TPCW / 008	5614-M-3008, SH 4	4	PX-4-1478. -1479, -1480, -1481, PI-4-1481, -1482, -1483, -1484	PX-4-1481	0.500	1.0	H	N	HT		110	u8	H		0.500	110	1.2	Yes	No Protection Required		
2751	PTN	4	TPCW / 008	5614-M-3008, SH 4	4	PX-4-1478. -1479, -1480, -1481, PI-4-1481, -1482, -1483, -1484	PI-4-1481	0.500	8.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair/patch if damaged	N
2751	PTN	4	TPCW / 008	5614-M-3008, SH 4	4	PX-4-1478. -1479, -1480, -1481, PI-4-1481, -1482, -1483, -1484	PI-4-1482	0.500	8.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair/patch if damaged	N
2756	PTN	4	TPCW / 008	5614-M-3008, SH 4	4	Small Bore Vents	4-60-199	0.500	8.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair/patch if damaged	N
2733	PTN	4	TPCW / 008	5614-M-3008, SH 3	4	Small Bore Vents & Drains	4-60-669	0.750	0.5	TV	N	HT		110		TV		0.750	110	2.6	Yes	No Protection Required		
2733	PTN	4	TPCW / 008	5614-M-3008, SH 3	4	Small Bore Vents & Drains	4-60-670	0.750	0.6	TV	N	HT		110		TV		0.750	110	2.6	Yes	No Protection Required		
2708	PTN	4	TPCW / 008	5614-M-3008, SH 2	2	PI-4-1475, -1476, -1477, -1478	PI-4-1476	0.500	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.500	110		No	N/A		
2708	PTN	4	TPCW / 008	5614-M-3008, SH 2	2	PI-4-1475, -1476, -1477, -1478	PI-4-1477	0.500	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.500	110		No	N/A		
2708	PTN	4	TPCW / 008	5614-M-3008, SH 2	2	PI-4-1475, -1476, -1477, -1478	PI-4-1478	0.500	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.500	110		No	N/A		
2714	PTN	4	TPCW / 008	5614-M-3008, SH 2	3	RV-4-6720	RV-4-6720	0.250	1.0	TV	N	HT		110		TV			110	#N/A	No	HT	short run; high process temp; no protection required	N
2713	PTN	4	TPCW / 008	5614-M-3008, SH 2	3	4-2"-8-F between 4-60-666 and 4-60-056	4-2"-8-F BETWEEN 4-60-666 AND 4-60-056	2.000	30.0	HD	N	I	FWH4A	110		HD		2.000	110	#N/A	No	I		
2713	PTN	4	TPCW / 008	5614-M-3008, SH 2	3	4-2 1/2"-8-F to 4-60-666	4-2 1/2"-8-F TO 4-60-666	2.500	25.0	HD	N	I	FWH4A	110		HD		2.000	110	#N/A	No	I		
2715	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	PI-4-1471, -1472, -1473, -1474,	PI-4-1471	0.500	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.500	110		No	N/A		
2715	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	PI-4-1471, -1472, -1473, -1474,	PI-4-1472	0.500	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.500	110		No	N/A		
2715	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	PI-4-1471, -1472, -1473, -1474,	PI-4-1473	0.500	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.500	110		No	N/A		
2715	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	PI-4-1471, -1472, -1473, -1474,	PI-4-1474	0.500	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.500	110		No	N/A		
2718	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	Small Bore Vents & Drains	4-60-117	1.000	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		1.000	110		No	N/A		
2718	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	Small Bore Vents & Drains	4-60-106	0.750	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.750	110		No	N/A		
2718	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	Small Bore Vents & Drains	4-60-105	0.750	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.750	110		No	N/A		
2718	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	Small Bore Vents & Drains	4-60-112	0.750	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.750	110		No	N/A		
2718	PTN	4	TPCW / 008	5614-M-3008, SH 2	4	Small Bore Vents & Drains	4-60-111	0.750	N/A	N/A	N/A	N/A	IN FEED PUMP ROOM	110		N/A		0.750	110		No	N/A		
2720	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	FE(FI-4-861, -862, PI-4-861, 862, 863, 864	FI-4-861	0.500	8.0	BV	N	HT		110		BV		0.500	110	0	No	HT	repair/patch if damaged; can isolate; no protection required	N
2720	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	FE(FI-4-861, -862, PI-4-861, 862, 863, 864	FI-4-862	0.500	10.0	BV	N	HT		110		BV		0.500	110	0	No	HT	repair/patch if damaged; can isolate; no protection required	N
2723	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	Small Bore Vents & Drains	4-60-865	1.000	1.0	BV	N	HT		110		BV		1.000	110	0	No	HT	short run; high process temp; can isolate; no protection required	N
2723	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	Small Bore Vents & Drains	4-60-862	1.000	1.0	BV	N	HT		110		BV		1.000	110	0	No	HT	short run; high process temp; can isolate; no protection required	N
2723	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	Small Bore Vents & Drains	4-60-868	1.000	1.0	BV	N	HT		110		BV		1.000	110	0	No	HT	short run; high process temp; can isolate; no protection required	N
2723	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	Small Bore Vents & Drains	4-60-867	1.000	1.0	BV	N	HT		110		BV		1.000	110	0	No	HT	short run; high process temp; can isolate; no protection required	N
2720	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	FE(FI-4-861, -862, PI-4-861, 862, 863, 864	PI-4-861	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2720	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	FE(FI-4-861, -862, PI-4-861, 862, 863, 864	PI-4-862	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2720	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	FE(FI-4-861, -862, PI-4-861, 862, 863, 864	PI-4-863	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2720	PTN	4	TPCW / 008	5614-M-3008, SH 2	5	FE(FI-4-861, -862, PI-4-861, 862, 863, 864	PI-4-864	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2679	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	PT (PS)-4-1621	4-60-674	0.375	0.5	H	N	HT		110		H		0.375	110	0.6	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-677A	0.375	0.5	H	N	HT		110		H		0.375	110	0.6	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-677	0.375	0.5	H	N	HT		110		H		0.375	110	0.6	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-678	0.375	0.5	H	N	HT		110		H		0.375	110	0.6	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-684	0.250	0.5	TV	N	HT		110		TV		Not Analyzed	110	#N/A	No	HT	short run; high process temp; no protection required	N
2679	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	PT (PS)-4-1621	PT (PS)-4-1621	0.500	57.0	BV	N	HT		110		BV		0.500	110	0	No	HT	isolate at valve 673 or 736 if damaged; no protection required	N
2681	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	PI-4-1467, -1468, -1469, -1470, -6900	PI-4-1467	0.500	5.0	H	N	HT		110		H		0.500	110	1.2	No	HT	repair if damaged; no protection required	N
2681	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	PI-4-1467, -1468, -1469, -1470, -6900	PI-4-1468	0.500	1.5	TV	N	HT		110		TV		0.500	110	1.2	No	HT	short run; high process temp; no protection required	N
2681	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	PI-4-1467, -1468, -1469, -1470, -6900	PI-4-1469	0.500	1.5	TV	N	HT		110		TV		0.500	110	1.2	No	HT	short run; high process temp; no protection required	N
2681	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	PI-4-1467, -1468, -1469, -1470, -6900	PI-4-6900	0.500	1.0	BV	N	HT		110		BV		0.500	110	0	No	HT	short run; high process temp; no protection required	N
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-072	0.500	0.5	BV	N	HT		110		BV		0.500	110	0	No	HT	short run; high process temp; no protection required	N
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-038	0.500	0.5	BV	N	HT		110		BV		0.500	110	0	No	HT	short run; high process temp; no protection required	N
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-073	0.500	0.5	BV	N	HT		110		BV		0.500	110	0	No	HT	short run; high process temp; no protection required	N
2680	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	FE (FT)-4-6900	FE (FT)-4-6900	0.375	0.5	BV	N	HT	APPEARS TO BE 2"	110		BV		Not Analyzed	110	#N/A	No	HT	short run; high process temp; no protection required	N
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-732	1.000	1.0	BV	N	HT	COULD NOT FIND, assumed length based on similar	110		BV		1.000	110	0	No	HT	short run; high process temp; no protection required	N
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-033	1.000	0.5	BV	N	HT		110		BV		1.000	110	0	No	HT	short run; high process temp; no protection required	N
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-042A	1.000	6.0	TV	N	HT		110		TV		1.000	110	3	No	HT	repair if damaged; no protection required	N
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-042B	1.000	6.0	TV	N	HT		110		TV		1.000	110	3	No	HT	repair if damaged; no protection required	N
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-733	2.000	2.0	BV	N	I	FWH3A - NO CLOSED VALVES - OK	110		BV		2.000	110	0.5	No	I		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-177A1	2.000	7.5	BV	N	I	FWH3B - NO CLOSED VALVES - OK	110		BV		2.000	110	0.5	No	I		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-683	0.500	0.5	TV	N	HT		110		TV		0.500	110	1.2	Yes	No Protection Required		
2681	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	PI-4-1467, -1468, -1469, -1470, -6900	PI-4-1470	0.500	0.5	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-023	0.500	0.5	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-177B1	2.000	7.5	BV	N	I	FWH3B (by-pass)	110		BV		2.000	110	0.5	No	I		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	RV-4-171A	0.750	0.5	TV	N	HT		110		TV		0.750	110	2.6	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	RV-4-171B	0.750	0.5	TV	N	HT		110		TV		0.750	110	2.6	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-176A1	2.000	7.5	H	N	I	FWH3A (BY-PASS)	110		H		2.000	110	16.8	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-177A2	2.000	7.5	H	N	I	FWH3B (BY-PASS)	110		H		2.000	110	16.8	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-176B1	2.000	7.5	H	N	I	FWH4A	110		H		2.000	110	16.8	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-177B2	2.000	7.5	H	N	I	FWH4A	110		H		2.000	110	16.8	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-176A2	2.000	15.0	TV	N	I	FWH3A (By-pass) - NEXT TO SHELL OF HEATER	110		TV		2.000	110	20	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-176B2	2.000	15.0	TV	N	I	FWH4B	110		TV		2.000	110	20	Yes	No Protection Required		
2686	PTN	4	TPCW / 008	5614-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	4-60-644	3.000	10.0	H	N	I	FWH4A	110		H		3.000	110	16	Yes	No Protection Required		
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-892	0.750	5.0	BV	N	HT		110		BV		0.750	110	0	No	HT	system will be isolated when cold; no protection required	N
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-893	0.750	20.0	TV	N	HT		110		TV		0.750	110	2.6	No	HT	system will be isolated when cold; no protection required	N
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-891	0.750	20.0	TV	N	HT		110		TV		0.750	110	2.6	No	HT	system will be isolated when cold; no protection required	N
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-897	0.750	5.0	BV	N	HT		110		BV		0.750	110	0	No	HT	system will be isolated when cold; no protection required	N
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-895	0.750	0.5	TV	N	HT		110		TV		0.750	110	2.6	Yes	No Protection Required		
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-899	0.750	1.0	TV	N	HT		110		TV		0.750	110	2.6	Yes	No Protection Required		
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-894	0.750	1.0	TV	N	HT		110		TV		0.750	110	2.6	Yes	No Protection Required		
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-896	0.750	1.0	TV	N	HT		110		TV		0.750	110	2.6	Yes	No Protection Required		
2688	PTN	4	TPCW / 008	5614-M-3008, SH 1	2	Small Bore Vents & Drains	4-60-898	2.000	1.0	TV	N	I	FWH4B	110		TV		2.000	110	20	Yes	No Protection Required		
2691	PTN	4	TPCW / 008	5614-M-3008, SH 1	3	4-1"-8-F	Chem add line	1.000	20.0	H,U	N	HT		110		H	Upward bend not credited for conservatism	1.000	110	4.1	No	HT	repair if needed; no protection requred	N
2691	PTN	4	TPCW / 008	5614-M-3008, SH 1	3	4-1"-8-F	4-1"-8-F	1.000	20.0	HD	N	HT		110		HD		1.000	110	#N/A	No	HT	repair if needed; no protection requred	N
2690	PTN	4	TPCW / 008	5614-M-3008, SH 1	3	4-2"-8-F	4-2"-8-F	2.000	15.0	HD	N	I	FWH4A	110		HD		2.000	110	#N/A	No	I		
2690	PTN	4	TPCW / 008	5614-M-3008, SH 1	3	4-2"-8-F	Demin to chem add pipe	2.000	15.0	H,U	N	I	FWH4B	50		H	Upward bend not credited for conservatism	2.000	50	0.5	No	I		
2689	PTN	4	TPCW / 008	5614-M-3008, SH 1	3	T.P.C.W. Additive Tank	Chem Tank	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2692	PTN	4	TPCW / 008	5614-M-3008, SH 1	3	RV-4-1437	Relief	N/A	N/A	N/A	N/A	N/A	TANK NORMALLY ISOLATED AND HAS EXPANSION VOLUME			N/A					No	N/A		
2695	PTN	4	TPCW / 008	5614-M-3008, SH 1	4	FM-4-0540, LG-4-1422, -1423, -1424	FM-4-0540	2.000	N/A	N/A	N/A	N/A	FWH4B	110		N/A		2.000	110		No	N/A		
2693	PTN	4	TPCW / 008	5614-M-3008, SH 1	4	LS-4-1527, -1528	LS-4-1527	1.000	5.0	H	N	HT		110		H		1.000	110	4.1	No	HT	fill as needed; repair if damaged; no protection required	N
2693	PTN	4	TPCW / 008	5614-M-3008, SH 1	4	LS-4-1527, -1528	LS-4-1528	1.000	5.0	H	N	HT		110		H		1.000	110	4.1	No	HT	fill as needed; repair if damaged; no protection required	N
2698	PTN	4	TPCW / 008	5614-M-3008, SH 1	4	Small Bore Vents & Drains	drain	N/A	N/A	N/A	N/A	N/A				N/A					No	N/A		
2695	PTN	4	TPCW / 008	5614-M-3008, SH 1	4	FM-4-0540, LG-4-1422, -1423, -1424	LG-4-1422	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2695	PTN	4	TPCW / 008	5614-M-3008, SH 1	4	FM-4-0540, LG-4-1422, -1423, -1424	LG-4-1423	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2695	PTN	4	TPCW / 008	5614-M-3008, SH 1	4	FM-4-0540, LG-4-1422, -1423, -1424	LG-4-1424	0.500	1.0	H	N	HT		110		H		0.500	110	1.2	Yes	No Protection Required		
2694	PTN	4	TPCW / 008	5614-M-3008, SH 1	4	LC-4-1530	LC-4-1530	1.500	8.0	H	N	I	Likely won't require heat trace.	110		H		1.500	110	10.4	Yes	No Protection Required		
2700	PTN	4	TPCW / 008	5614-M-3008, SH 1	5	Small Bore Vents & Drains	4-60-075	1.000	1.0	BV	N	HT		110		BV		1.000	110	0	No	HT	short run; high process temp; no protection required	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
830	PTN	3	089	5613-M-3089, SH 2	1	Pressure Transmitter (PT) teed off of 4" pipe near HP Turb gland seal inlet. PT instrument has 1/2" tubing. PT has local/remote indication and control room alarm on low pressure.						HT		523					400		No	HT		
831	PTN	3	089	5613-M-3089, SH 2	1	Pressure Control Instrument (PC x2)						HT		523					400		No	HT		
832	PTN	3	089	5613-M-3089, SH 2	1	Pressure Indicator (PI) w/ 3/8" and 1/2" instrument tubing.						HT		523					400		No	HT		
834	PTN	3	089	5613-M-3089, SH 2	1	relief valve (25 psig) and rupture disc (100 psig)						HT		523					400		No	HT		
836	PTN	3	089	5613-M-3089, SH 2	1	1 1/2" drains (x2) and 2" drains (x4) from Wye strainers						HT		523					400		No	HT		
840	PTN	3	089	5613-M-3089, SH 2	4	relief valve teed off the 3" main line (x2)						HT		523					400		No	HT		
842	PTN	3	089	5613-M-3089, SH 2	4	3/4" drains (x2) from Wye strainers						HT		523					400		No	HT		
843	PTN	3	089	5613-M-3089, SH 2	5	Pipe size not shown. LP turbine water trough drain to "Waste Drain Near Bowser Filter"						HT		523					400		No	HT		
844	PTN	3	089	5613-M-3089, SH 2	6	1" loop seal drains from LP Turbine gland seal exhaust to either an equipment drain or gland steam condensate reciever.						HT		523					400		No	HT		
846	PTN	3	089	5613-M-3089, SH 2	8	Temporary Instrument port: TX						HT		523					400		No	HT		
851	PTN	3	089	5613-M-3089, SH 2	Gland Steam Cond	PI (pressure indicator) local indication of gland steam cond shell pressure						HT		523					400		No	HT		
852	PTN	3	089	5613-M-3089, SH 2	HP Turbine	DP controler (x2)						HT		523					400		No	HT		
853	PTN	3	089	5613-M-3089, SH 2	HP Turbine	Temperature Element (TE x5), Pressure indication (PI x4), 1/2" tubing and open root valve.						HT		523					400		No	HT		
854	PTN	3	089	5613-M-3089, SH 2	LP Turbine North & South	TC (Temperature controller) one on each LP Turbine, actuates Exhaust hood sprays to regulate LP turbine exhaust temp.						HT		523					400		No	HT		
855	PTN	3	089	5613-M-3089, SH 2	LP Turbine North & South	Temperature Element (1 per turbine), Temperature indicator (1 per turbine),						HT		523					400		No	HT		
856	PTN	3	089	5613-M-3089, SH 2	LP Turbine North & South	Temporary Instrument ports: PX (x4 on each turbine) with closed root valve						HT		523					400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
800	PTN	3	089	5613-M-3089, SH 1	1	1", 1 1/2" instrument line to Pressure Indication & Transmitter (x4) (control room indication of HP turbine supply pressure)						HT		523					400		No	HT		
801	PTN	3	089	5613-M-3089, SH 1	1	1", 1 1/2" instrument line to Pressure Transmitter (x2) (for steam break protection and control; control of steam dump valves)						HT		523					400		No	HT		
805	PTN	3	089	5613-M-3089, SH 1	1	1/2" drains (closed) off of PIT instrument lines						HT		523					400		No	HT		
806	PTN	3	089	5613-M-3089, SH 1	2	PI and PT instruments 1/2" instrument tubing						HT		523					400		No	HT		
807	PTN	3	089	5613-M-3089, SH 1	2	Temporary Instrument ports: PX (x3) SN (x2) with closed root valve						HT		523					400		No	HT		
809	PTN	3	089	5613-M-3089, SH 1	3	TE (temperature element) (x6) PI/PT (press indicator and transmitter)(x5)(3/4" tubing) (from 4 MSRs to 2 LP Turbines)						HT		523					400		No	HT		
810	PTN	3	089	5613-M-3089, SH 1	3	PIT (x3) (pressure indicator and transmitter) (input to Turbine Control System)						HT		523					400		No	HT		
813	PTN	3	089	5613-M-3089, SH 1	3	1/2" vent (closed)(x4) 3/4" vent (closed)(x4) 3/4" capped end (from 4 MSRs to 2 LP Turbines)						HT		523					400		No	HT		
815	PTN	3	089	5613-M-3089, SH 1	5	PI and PT instruments instrument tubing						HT		523					400		No	HT		
816	PTN	3	089	5613-M-3089, SH 1	5	Temporary Instrument ports: PX (x4) (closed root valve)						HT		523					400		No	HT		
826	PTN	3	089	5613-M-3089, SH 1	--	TE (temperature element) (one per LP Turbine) (LP Turbine 3B South & 3A North)						HT		523					400		No	HT		
825	PTN	3	089	5613-M-3089, SH 1	--	TE (temperature element) (x2 per MSR) (closed root valve) MSR 3A, 3B, 3C, and 3D						HT		523					400		No	HT		
827	PTN	3	089	5613-M-3089, SH 1	--	PI (pressure indicator) (x2 per MSR) 1" instrument tube MSR 3A, 3B, 3C, and 3D						HT		523					400		No	HT		
828	PTN	3	089	5613-M-3089, SH 1	--	Temporary Instrument ports: PX (x2 per MSR) (closed root valve) MSR 3A, 3B, 3C, and 3D						HT		523					400		No	HT		
829	PTN	3	089	5613-M-3089, SH 1	--	One relief valve per shell. MSR 3A, 3B, 3C, and 3D						HT		523					400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
751	PTN	3	084	5613-M-3084, SH 1	2	Piping [3-6"-2-C] Valves [SLWU-3-001, SLWU-3-002 (check vlv)]	Between valves SLWU-4-001 and 4" line to 4-10-080	6	30	H	Y	I	Condensate will drain down stream of SGWL valve and 4" AFW line. Portion between valve and 4" line is less than 30ft. Only measured entire 6" run.	406		H-I		Not Analyzed	400	#N/A	No	AI		
700	PTN	3	081	5613-M-3081, SH 7	1	Level transmitters and associated piping/valves	LIT-3-1504A	2				HT	MSR3D	260				2.000	260		No	HT		
700	PTN	3	081	5613-M-3081, SH 7	1	Level transmitters and associated piping/valves	LIT-3-1504B	2				HT	MSR3D	260				2.000	260		No	HT		
700	PTN	3	081	5613-M-3081, SH 7	1	Level transmitters and associated piping/valves	LIT-3-1504C	2				HT	MSR3D	260				2.000	260		No	HT		
700	PTN	3	081	5613-M-3081, SH 7	1	Level transmitters and associated piping/valves	LIT-3-1525A	2				HT	MSR3C	260				2.000	260		No	HT		
700	PTN	3	081	5613-M-3081, SH 7	1	Level transmitters and associated piping/valves	LIT-3-1525B	2				HT	MSR3C	260				2.000	260		No	HT		
700	PTN	3	081	5613-M-3081, SH 7	1	Level transmitters and associated piping/valves	LIT-3-1525C	2				HT	MSR3C	260				2.000	260		No	HT		
702	PTN	3	081	5613-M-3081, SH 7	1	1" Drains	3-30-1084	1				HT	MSR3D	211				1.000	210		No	HT		
702	PTN	3	081	5613-M-3081, SH 7	1	1" Drains	3-30-1085	1				HT	MSR3D	211				1.000	210		No	HT		
702	PTN	3	081	5613-M-3081, SH 7	1	1" Drains	3-30-1086	1				HT	MSR3D	211				1.000	210		No	HT		
702	PTN	3	081	5613-M-3081, SH 7	1	1" Drains	3-30-1090	1				HT	MSR3C	211				1.000	210		No	HT		
702	PTN	3	081	5613-M-3081, SH 7	1	1" Drains	3-30-1091	1				HT	MSR3C	211				1.000	210		No	HT		
702	PTN	3	081	5613-M-3081, SH 7	1	1" Drains	3-30-1092	1				HT	MSR3C	211				1.000	210		No	HT		
701	PTN	3	081	5613-M-3081, SH 7	1	1" Vents	3-30-1043	1				HT	MSR3D	260				1.000	260		No	HT		
701	PTN	3	081	5613-M-3081, SH 7	1	1" Vents	3-30-1044	1				HT	MSR3D	260				1.000	260		No	HT		
701	PTN	3	081	5613-M-3081, SH 7	1	1" Vents	3-30-1046	1				HT	MSR3D	260				1.000	260		No	HT		
701	PTN	3	081	5613-M-3081, SH 7	1	1" Vents	3-30-1050	1				HT	MSR3C	260				1.000	260		No	HT		
701	PTN	3	081	5613-M-3081, SH 7	1	1" Vents	3-30-1051	1				HT	MSR3C	260				1.000	260		No	HT		
701	PTN	3	081	5613-M-3081, SH 7	1	1" Vents	3-30-1052	1				HT	MSR3C	260				1.000	260		No	HT		
704	PTN	3	081	5613-M-3081, SH 7	2	1/2" Vent	3-30-780	Not Provided				HT	MSR3C	513	Tube OD of 0.5 assumed			0.500	400		No	HT		
704	PTN	3	081	5613-M-3081, SH 7	2	1/2" Vent	3-30-781	Not Provided				HT	MSR3D	513	Tube OD of 0.5 assumed			0.500	400		No	HT		
705	PTN	3	081	5613-M-3081, SH 7	2	capped pipe	Upstream of 3-30-707	Not Provided				HT	MSR3D	513	Tube OD of 0.5 assumed			0.500	400		No	HT		
708	PTN	3	081	5613-M-3081, SH 7	5	PI	PI-3-6687	0.75				HT	MSR3C	441				0.750	400		No	HT		
708	PTN	3	081	5613-M-3081, SH 7	5	PI	PI-3-6688	0.75				HT	MSR3D	441				0.750	400		No	HT		
711	PTN	3	081	5613-M-3081, SH 7	5	1" Drain	3-2110	1				HT	MSR3C	441				1.000	400		No	HT		
711	PTN	3	081	5613-M-3081, SH 7	5	1" Drain	3-2113	1				HT	MSR3D	441				1.000	400		No	HT		
710	PTN	3	081	5613-M-3081, SH 7	5	3/4" Vent	3-2127	0.75				HT	MSR3C	260				0.750	260		No	HT		
710	PTN	3	081	5613-M-3081, SH 7	5	3/4" Vent	3-2131	0.75				HT	MSR3D	260				0.750	260		No	HT		
716	PTN	3	081	5613-M-3081, SH 7	7	1" Drain	3-2111	1				HT	MSR3C	441				1.000	400		No	HT		
716	PTN	3	081	5613-M-3081, SH 7	7	1" Drain	3-2114	1				HT	MSR3D	441				1.000	400		No	HT		
715	PTN	3	081	5613-M-3081, SH 7	7	3/4" Vent	3-2128	0.75				HT	MSR3C	441				0.750	400		No	HT		
715	PTN	3	081	5613-M-3081, SH 7	7	3/4" Vent	3-2132	0.75				HT	MSR3D	441				0.750	400		No	HT		
714	PTN	3	081	5613-M-3081, SH 7	7	Flanges	Downstream of 3-30-1131	Not Provided				HT	MSR3C	441	Tube OD of 0.5 assumed			0.500	400		No	HT		
714	PTN	3	081	5613-M-3081, SH 7	7	Flanges	Downstream of 3-30-1132	Not Provided				HT	MSR3D	441	Tube OD of 0.5 assumed			0.500	400		No	HT		
719	PTN	3	081	5613-M-3081, SH 7	8	3/4" Vent	3-2129	0.75				HT	MSR3C	441				0.750	400		No	HT		
718	PTN	3	081	5613-M-3081, SH 7	8	Flanges	None	Not Provided				HT	MSR3C/MSR3D	441	Tube OD of 0.5 assumed			0.500	400		No	HT		
721	PTN	3	081	5613-M-3081, SH 7	9	Flange	None	Not Provided				HT		441	Tube OD of 0.5 assumed			0.500	400		No	HT		
722	PTN	3	081	5613-M-3081, SH 7	10	1" Pipe	3-2094	1				HT	MSR3C	108				1.000	100		No	HT		
722	PTN	3	081	5613-M-3081, SH 7	10	1" Pipe	3-2096	1				HT	MSR3D	108				1.000	100		No	HT		
723	PTN	3	081	5613-M-3081, SH 7	11	3" Pipe	3-2085	3				HT	MSR3C	108				3.000	100		No	HT		
723	PTN	3	081	5613-M-3081, SH 7	11	3" Pipe	3-2089	3				HT	MSR3D	108				3.000	100		No	HT		
725	PTN	3	081	5613-M-3081, SH 7	11	1" Drain	3-2112	0.75				HT	MSR3C	108				0.750	100		No	HT		
725	PTN	3	081	5613-M-3081, SH 7	11	1" Drain	3-2116	0.75				HT	MSR3D	108				0.750	100		No	HT		
724	PTN	3	081	5613-M-3081, SH 7	11	3/4" Vent	3-2130	0.75				HT	MSR3C	108				0.750	100		No	HT		
724	PTN	3	081	5613-M-3081, SH 7	11	3/4" Vent	3-2133	0.75				HT	MSR3D	108				0.750	100		No	HT		
726	PTN	3	081	5613-M-3081, SH 7	12	1" Pipe	3-2095	1				HT	MSR3C	108				1.000	100		No	HT		
726	PTN	3	081	5613-M-3081, SH 7	12	1" Pipe	3-2097	1				HT	MSR3D	108				1.000	100		No	HT		
728	PTN	3	081	5613-M-3081, SH 7	13	1/2" piping	PX-3-1412	0.5				HT	MSR3C	513				0.500	400		No	HT		
728	PTN	3	081	5613-M-3081, SH 7	13	1/2" piping	PX-3-1413	0.5				HT	MSR3D	513				0.500	400		No	HT		
727	PTN	3	081	5613-M-3081, SH 7	13	Test Connection (PX)	PX-3-1412	0.5				HT	MSR3C	513				0.500	400		No	HT		
727	PTN	3	081	5613-M-3081, SH 7	13	Test Connection (PX)	PX-3-1413	0.5				HT	MSR3D	513				0.500	400		No	HT		
731	PTN	3	081	5613-M-3081, SH 7	14	Flange	Upstream of 3-30-1032	8				I	MSR3D Likely will not require heat trace	441				Not Analyzed	400		No	I	Verify already Insulated	Y
731	PTN	3	081	5613-M-3081, SH 7	14	Flange	Upstream of 3-30-1035	8				I	MSR3C Likely will not require heat trace	441				Not Analyzed	400		No	I	Verify already Insulated	Y
730	PTN	3	081	5613-M-3081, SH 7	14	3/4" Connection	3-30-1119	0.75				HT	MSR3D	441				0.750	400		No	HT		
730	PTN	3	081	5613-M-3081, SH 7	14	3/4" Connection	3-30-1123	0.75				HT	MSR3C	441				0.750	400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
733	PTN	3	081	5613-M-3081, SH 7	15	1/4", 3/8", 1/2" to sample system	3-30-690 3-30-919	0.25				HT	MSR3C	441				Not Analyzed	400		No	HT		
733	PTN	3	081	5613-M-3081, SH 7	15	1/4", 3/8", 1/2" to sample system	3-30-691 3-30-920	0.25				HT	MSR3D	441				Not Analyzed	400		No	HT		
732	PTN	3	081	5613-M-3081, SH 7	15	Pressure Test Connection	PX-3-1451	0.375				HT	MSR3C	441				0.375	400		No	HT		
732	PTN	3	081	5613-M-3081, SH 7	15	Pressure Test Connection	PX-3-1452	0.375				HT	MSR3D	441				0.375	400		No	HT		
735	PTN	3	081	5613-M-3081, SH 7	16	3/4" Connection	3-30-1127	0.75				HT	MSR3C	211				0.750	210		No	HT		
735	PTN	3	081	5613-M-3081, SH 7	16	3/4" Connection	3-30-757	0.75				HT	MSR3D	211				0.750	210		No	HT		
738	PTN	3	081	5613-M-3081, SH 7	18	Flange	Downstream of CV-3-1504B	10				I	MSR3D Likely will not require heat trace	119				Not Analyzed	110		No	I		
738	PTN	3	081	5613-M-3081, SH 7	18	Flange	Downstream of CV-3-1525B	10				I	MSR3C Likely will not require heat trace	119				Not Analyzed	110		No	I		
739	PTN	3	081	5613-M-3081, SH 7	19	8" Pipe	3-30-1021 3-30-1023	8				I	MSR3C	119				Not Analyzed	110		No	I		
739	PTN	3	081	5613-M-3081, SH 7	19	8" Pipe	3-30-758 3-30-760	8				I	MSR3D	119				Not Analyzed	110		No	I		
740	PTN	3	081	5613-M-3081, SH 7	19	3/4" Connection	3-30-1128	0.75				HT	MSR3C	119				0.750	110		No	HT		
740	PTN	3	081	5613-M-3081, SH 7	19	3/4" Connection	3-30-759	0.75				HT	MSR3D	119				0.750	110		No	HT		
743	PTN	3	081	5613-M-3081, SH 7	-	Drain Tank Connections	MSR3C	Not Provided				HT	MSR3C	119	Tube OD of 0.5 assumed			0.500	110		No	HT		
743	PTN	3	081	5613-M-3081, SH 7	-	Drain Tank Connections	MSR3D	Not Provided				HT	MSR3D	119	Tube OD of 0.5 assumed			0.500	110		No	HT		
648	PTN	3	081	5613-M-3081, SH 6	3	3" Pipe	FWHR-3-011	3				HT	FWH2A	119				3.000	110		No	HT		
648	PTN	3	081	5613-M-3081, SH 6	3	3" Pipe	FWHR-3-001	3				HT	FWH2B	119				3.000	110		No	HT		
650	PTN	3	081	5613-M-3081, SH 6	5	1" Pipe	FWHR-3-010	1				HT	FWH2A	119				1.000	110		No	HT		
650	PTN	3	081	5613-M-3081, SH 6	5	1" Pipe	FWHR-3-062	1				HT	FWH2B	119				1.000	110		No	HT		
651	PTN	3	081	5613-M-3081, SH 6	6	10" Pipe	FWH2A	10				I	FWH2A	175				Not	170		No	I	Verify already Insulated	Y
651	PTN	3	081	5613-M-3081, SH 6	6	10" Pipe	FWH2B	10				I	FWH2B	175				Not	170		No	I	Verify already Insulated	Y
652	PTN	3	081	5613-M-3081, SH 6	7	2" Pipe	FWH2A	2				HT	FWH2A	175				2.000	170		No	HT		
652	PTN	3	081	5613-M-3081, SH 6	7	2" Pipe	FWH2B	2				HT	FWH2B	175				2.000	170		No	HT		
653	PTN	3	081	5613-M-3081, SH 6	8	PX	PX-3-1459	0.5				HT	FWH2A	175				0.500	170		No	HT		
653	PTN	3	081	5613-M-3081, SH 6	8	PX	PX-3-1453	0.5				HT	FWH2B	175				0.500	170		No	HT		
655	PTN	3	081	5613-M-3081, SH 6	8	1" Connection	3-30-225	1				HT	FWH2A	175				1.000	170		No	HT		
655	PTN	3	081	5613-M-3081, SH 6	8	1" Connection	3-30-226	1				HT	FWH2B	175				1.000	170		No	HT		
657	PTN	3	081	5613-M-3081, SH 6	9	3/4" Connection	3-30-253	0.75				HT	FWH2A/FWH1A	211				0.750	210		No	HT		
657	PTN	3	081	5613-M-3081, SH 6	9	3/4" Connection	3-30-254	0.75				HT	FWH2B/FWH1B	211				0.750	210		No	HT		
659	PTN	3	081	5613-M-3081, SH 6	10	14" Flange	Upstream of 3-30-261	10				I	FWH1A	211				Not	210		No	I	Verify already Insulated	Y
659	PTN	3	081	5613-M-3081, SH 6	10	14" Flange	Upstream of 3-30-262	10				I	FWH1B	211				Not	210		No	I	Verify already Insulated	Y
660	PTN	3	081	5613-M-3081, SH 6	11	8" Pipe	3-30-257 3-30-259	8				I	FWH2A/FWH1A	211				Not Analyzed	210		No	I	Verify already Insulated	Y
660	PTN	3	081	5613-M-3081, SH 6	11	8" Pipe	3-30-258 3-30-260	8				I	FWH2B/FWH1B	211				Not Analyzed	210		No	I	Verify already Insulated	Y
661	PTN	3	081	5613-M-3081, SH 6	12	10" Pipe	CV-3-1543	10				I	FWH2A	119				Not	110		No	I		
661	PTN	3	081	5613-M-3081, SH 6	12	10" Pipe	CV-3-1526	10				I	FWH2B	119				Not	110		No	I		
662	PTN	3	081	5613-M-3081, SH 6	12	3/4" Connection	3-30-265	0.75				HT	FWH2A	119				0.750	110		No	HT		
662	PTN	3	081	5613-M-3081, SH 6	12	3/4" Connection	3-30-266	0.75				HT	FWH2B	119				0.750	110		No	HT		
663	PTN	3	081	5613-M-3081, SH 6	13	12" Pipe	3-30-273	12				I	FWH2A	119				Not	110		No	I		
663	PTN	3	081	5613-M-3081, SH 6	13	12" Pipe	3-30-274	12				I	FWH2B	119				Not	110		No	I		
664	PTN	3	081	5613-M-3081, SH 6	13	12" Flange	Upstream of 3-30-273	12				I	FWH2A	119				Not	110		No	I		
664	PTN	3	081	5613-M-3081, SH 6	13	12" Flange	Upstream of 3-30-274	12				I	FWH2B	119				Not	110		No	I		
665	PTN	3	081	5613-M-3081, SH 6	14	8" Pipe	3-30-271 3-30-267	8				I	FWH2A	119				Not Analyzed	110		No	I		
665	PTN	3	081	5613-M-3081, SH 6	14	8" Pipe	3-30-272 3-30-268	8				I	FWH2B	119				Not Analyzed	110		No	I		
666	PTN	3	081	5613-M-3081, SH 6	14	3/4" Connection	3-30-269	0.75				HT	FWH2A	119				0.750	110		No	HT		
666	PTN	3	081	5613-M-3081, SH 6	14	3/4" Connection	3-30-270	0.75				HT	FWH2B	119				0.750	110		No	HT		
668	PTN	3	081	5613-M-3081, SH 6	16	1.5" Pipe	FWHR-3-016	1.5				HT	FWH1A	119				1.500	110		No	HT		
668	PTN	3	081	5613-M-3081, SH 6	16	1.5" Pipe	FWHR-3-008	1.5				HT	FWH1B	119				1.500	110		No	HT		
670	PTN	3	081	5613-M-3081, SH 6	18	4" Pipe	FWHR-3-018	4				HT	FWH1A	119				4.000	110		No	HT		
670	PTN	3	081	5613-M-3081, SH 6	18	4" Pipe	FWHR-3-009	4				HT	FWH1B	119				4.000	110		No	HT		
671	PTN	3	081	5613-M-3081, SH 6	19	PX	PX-3-1460	0.5				HT	FWH1A	119				0.500	110		No	HT		
671	PTN	3	081	5613-M-3081, SH 6	19	PX	PX-3-1454	0.5				HT	FWH1B	119				0.500	110		No	HT		
673	PTN	3	081	5613-M-3081, SH 6	19	3/4" & 1" Drains	3-30-275	1				HT	FWH1A	119				1.000	110		No	HT		
673	PTN	3	081	5613-M-3081, SH 6	19	3/4" & 1" Drains	3-30-291	1				HT	FWH1B	119				1.000	110		No	HT		
673	PTN	3	081	5613-M-3081, SH 6	19	3/4" & 1" Drains	3-30-153	0.75				HT	FWH1A	119				0.750	110		No	HT		
673	PTN	3	081	5613-M-3081, SH 6	19	3/4" & 1" Drains	3-30-125	1				HT	FWH1A	119				1.000	110		No	HT		
673	PTN	3	081	5613-M-3081, SH 6	19	3/4" & 1" Drains	3-30-126	1				HT	FWH1B	119				1.000	110		No	HT		
674	PTN	3	081	5613-M-3081, SH 6	20	10" Pipe	3-30-159 3-30-157	10				I	FWH1A	119				Not Analyzed	110		No	I		
674	PTN	3	081	5613-M-3081, SH 6	20	10" Pipe	3-30-158 3-30-160	10				I	FWH1B	119				Not Analyzed	110		No	I		
675	PTN	3	081	5613-M-3081, SH 6	21	12" Pipe	3-30-163 3-30-173	12				I	FWH1A	119				Not Analyzed	110		No	I		
675	PTN	3	081	5613-M-3081, SH 6	21	12" Pipe	3-30-164 3-30-174	12				I	FWH1B	119				Not Analyzed	110		No	I		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
676	PTN	3	081	5613-M-3081, SH 6	22	8" Pipe	CV-3-1545	8				I	FWH1A	119				Not	110		No	I		
676	PTN	3	081	5613-M-3081, SH 6	22	8" Pipe	CV-3-1544	8				I	FWH1B	119				Not	110		No	I		
677	PTN	3	081	5613-M-3081, SH 6	22	3/4" Connection	3-30-165	0.75				HT	FWH1A	119				0.750	110		No	HT		
677	PTN	3	081	5613-M-3081, SH 6	22	3/4" Connection	3-30-166	0.75				HT	FWH1B	119				0.750	110		No	HT		
678	PTN	3	081	5613-M-3081, SH 6	23	10" Pipe	3-30-171 3-30-167	10				I	FWH1A	119				Not Analyzed	110		No	I		
678	PTN	3	081	5613-M-3081, SH 6	23	10" Pipe	3-30-172 3-30-168	10				I	FWH1B	119				Not Analyzed	110		No	I		
679	PTN	3	081	5613-M-3081, SH 6	23	3/4" Connection	3-30-169	0.75				HT	FWH1A	119				0.750	110		No	HT		
679	PTN	3	081	5613-M-3081, SH 6	23	3/4" Connection	3-30-170	0.75				HT	FWH1B	119				0.750	110		No	HT		
680	PTN	3	081	5613-M-3081, SH 6	24	12" Pipe	FWH1A	12				I	FWH1A	120				Not	120		No	I		
680	PTN	3	081	5613-M-3081, SH 6	24	12" Pipe	FWH1B	12				I	FWH1B	120				Not	120		No	I		
681	PTN	3	081	5613-M-3081, SH 6	25	2" Pipe	FWH1A	2				HT	FWH1A	120				2.000	120		No	HT		
681	PTN	3	081	5613-M-3081, SH 6	25	2" Pipe	FWH1B	2				HT	FWH1B	120				2.000	120		No	HT		
685	PTN	3	081	5613-M-3081, SH 6	26	1.5" Pipe	FWH2A	1.5				HT	FWH2A	175				1.500	170		No	HT		
685	PTN	3	081	5613-M-3081, SH 6	26	1.5" Pipe	FWH2B	1.5				HT	FWH2B	175				1.500	170		No	HT		
682	PTN	3	081	5613-M-3081, SH 6	26	LS	LS-3-1516	1				HT	FWH2A	175				1.000	170		No	HT		
682	PTN	3	081	5613-M-3081, SH 6	26	LS	LS-3-1504	1				HT	FWH2B	175				1.000	170		No	HT		
682	PTN	3	081	5613-M-3081, SH 6	26	LS	LS-3-1543	1				HT	FWH2A	175				1.000	170		No	HT		
682	PTN	3	081	5613-M-3081, SH 6	26	LS	LS-3-1526	1				HT	FWH2B	175				1.000	170		No	HT		
683	PTN	3	081	5613-M-3081, SH 6	26	LC	LC-3-1513	1.5				HT	FWH2A	175				1.500	170		No	HT		
683	PTN	3	081	5613-M-3081, SH 6	26	LC	LC-3-1501	1.5				HT	FWH2B	175				1.500	170		No	HT		
684	PTN	3	081	5613-M-3081, SH 6	26	LG	LG-3-3423	1.5				HT	FWH2A	175				1.500	170		No	HT		
684	PTN	3	081	5613-M-3081, SH 6	26	LG	LG-3-3413	1.5				HT	FWH2B	175				1.500	170		No	HT		
684	PTN	3	081	5613-M-3081, SH 6	26	LG	LG-3-1435	1.5				HT	FWH2A	175				1.500	170		No	HT		
684	PTN	3	081	5613-M-3081, SH 6	26	LG	LG-3-1433	1.5				HT	FWH2B	175				1.500	170		No	HT		
684	PTN	3	081	5613-M-3081, SH 6	26	LI	LI-3-1446A	1				HT	FWH2A	175				1.000	170		No	HT		
684	PTN	3	081	5613-M-3081, SH 6	26	LI	LI-3-1446B	1				HT	FWH2B	175				1.000	170		No	HT		
688	PTN	3	081	5613-M-3081, SH 6	26	3/4" Connections	LG-3-3423	0.75				HT	FWH2A	175				0.750	170		No	HT		
688	PTN	3	081	5613-M-3081, SH 6	26	3/4" Connections	LG-3-3413	0.75				HT	FWH2B	175				0.750	170		No	HT		
688	PTN	3	081	5613-M-3081, SH 6	26	3/4" Connections	LG-3-1435	0.75				HT	FWH2A	175				0.750	170		No	HT		
688	PTN	3	081	5613-M-3081, SH 6	26	3/4" Connections	LG-3-1433	0.75				HT	FWH2B	175				0.750	170		No	HT		
687	PTN	3	081	5613-M-3081, SH 6	26	Drains	3-30-283	1				HT	FWH2A	175				1.000	170		No	HT		
687	PTN	3	081	5613-M-3081, SH 6	26	Drains	3-30-282	1				HT	FWH2B	175				1.000	170		No	HT		
687	PTN	3	081	5613-M-3081, SH 6	26	Drains	3-30-279	1				HT	FWH2A	175				1.000	170		No	HT		
687	PTN	3	081	5613-M-3081, SH 6	26	Drains	3-30-278	1				HT	FWH2B	175				1.000	170		No	HT		
686	PTN	3	081	5613-M-3081, SH 6	26	Vents	3-30-281	1				HT	FWH2A	175				1.000	170		No	HT		
686	PTN	3	081	5613-M-3081, SH 6	26	Vents	3-30-280	1				HT	FWH2B	175				1.000	170		No	HT		
686	PTN	3	081	5613-M-3081, SH 6	26	Vents	3-30-277	1				HT	FWH2A	175				1.000	170		No	HT		
686	PTN	3	081	5613-M-3081, SH 6	26	Vents	3-30-276	1				HT	FWH2B	175				1.000	170		No	HT		
692	PTN	3	081	5613-M-3081, SH 6	27	1.5" Pipe	FWH1A	1.5				HT	FWH1A	120				1.500	120		No	HT		
692	PTN	3	081	5613-M-3081, SH 6	27	1.5" Pipe	FWH1B	1.5				HT	FWH1B	120				1.500	120		No	HT		
689	PTN	3	081	5613-M-3081, SH 6	27	LS	LS-3-1545	1				HT	FWH1A	120				1.000	120		No	HT		
689	PTN	3	081	5613-M-3081, SH 6	27	LS	LS-3-1544	1				HT	FWH1B	120				1.000	120		No	HT		
689	PTN	3	081	5613-M-3081, SH 6	27	LS	LS-3-1517	1				HT	FWH1A	120				1.000	120		No	HT		
689	PTN	3	081	5613-M-3081, SH 6	27	LS	LS-3-1505	1				HT	FWH1B	120				1.000	120		No	HT		
690	PTN	3	081	5613-M-3081, SH 6	27	LC	LC-3-1514	1.5				HT	FWH1A	120				1.500	120		No	HT		
690	PTN	3	081	5613-M-3081, SH 6	27	LC	LC-3-1502	1.5				HT	FWH1B	120				1.500	120		No	HT		
691	PTN	3	081	5613-M-3081, SH 6	27	LG	LG-3-1434	1.5				HT	FWH1A	120				1.500	120		No	HT		
691	PTN	3	081	5613-M-3081, SH 6	27	LG	LG-3-1432	1.5				HT	FWH1B	120				1.500	120		No	HT		
691	PTN	3	081	5613-M-3081, SH 6	27	LG	LG-3-3422	1.5				HT	FWH1A	120				1.500	120		No	HT		
691	PTN	3	081	5613-M-3081, SH 6	27	LG	LG-3-3412	1.5				HT	FWH1B	120				1.500	120		No	HT		
691	PTN	3	081	5613-M-3081, SH 6	27	LI	LI-3-1545A	1				HT	FWH1A	120				1.000	120		No	HT		
691	PTN	3	081	5613-M-3081, SH 6	27	LI	LI-3-1545B	1				HT	FWH1B	120				1.000	120		No	HT		
695	PTN	3	081	5613-M-3081, SH 6	27	3/4" Connections	LG-3-1434	0.75				HT	FWH1A	120				0.750	120		No	HT		
695	PTN	3	081	5613-M-3081, SH 6	27	3/4" Connections	LG-3-1432	0.75				HT	FWH1B	120				0.750	120		No	HT		
695	PTN	3	081	5613-M-3081, SH 6	27	3/4" Connections	LG-3-3422	0.75				HT	FWH1A	120				0.750	120		No	HT		
695	PTN	3	081	5613-M-3081, SH 6	27	3/4" Connections	LG-3-3412	0.75				HT	FWH1B	120				0.750	120		No	HT		
694	PTN	3	081	5613-M-3081, SH 6	27	Drains	3-30-195	1				HT	FWH1A	120				1.000	120		No	HT		
694	PTN	3	081	5613-M-3081, SH 6	27	Drains	3-30-194	1				HT	FWH1B	120				1.000	120		No	HT		
694	PTN	3	081	5613-M-3081, SH 6	27	Drains	3-30-183	1				HT	FWH1A	120				1.000	120		No	HT		
694	PTN	3	081	5613-M-3081, SH 6	27	Drains	3-30-182	1				HT	FWH1B	120				1.000	120		No	HT		
693	PTN	3	081	5613-M-3081, SH 6	27	Vents	3-30-193	1				HT	FWH1A	120				1.000	120		No	HT		
693	PTN	3	081	5613-M-3081, SH 6	27	Vents	3-30-192	1				HT	FWH1B	120				1.000	120		No	HT		
693	PTN	3	081	5613-M-3081, SH 6	27	Vents	3-30-181	1				HT	FWH1A	120				1.000	120		No	HT		
693	PTN	3	081	5613-M-3081, SH 6	27	Vents	3-30-180	1				HT	FWH1B	120				1.000	120		No	HT		
699	PTN	3	081	5613-M-3081, SH 6	-	1.5" Drain	3-30-228	1.5				HT	FWH2B	120				1.500	120		No	HT		
699	PTN	3	081	5613-M-3081, SH 6	-	1.5" Drain	3-30-237	1.5				HT	FWH2A	120				1.500	120		No	HT		
699	PTN	3	081	5613-M-3081, SH 6	-	1.5" Drain	3-30-238	1.5				HT	FWH2B	120				1.500	120		No	HT		
699	PTN	3	081	5613-M-3081, SH 6	-	1.5" Drain	3-30-127	1.5				HT	FWH1A	120				1.500	120		No	HT		
699	PTN	3	081	5613-M-3081, SH 6	-	1.5" Drain	3-30-128	1.5				HT	FWH1B	120				1.500	120		No	HT		
698	PTN	3	081	5613-M-3081, SH 6	-	1.5" Drains	3-30-227	1.5				HT	FWH2A	120				1.500	120		No	HT		
598	PTN	3	081	5613-M-3081, SH 5	3	6" Blind Flange Connection	Upstream of 3-30-461	6				I	FWH4A	267				Not Analyzed	260		No	I	Verify already Insulated	Y

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
598	PTN	3	081	5613-M-3081, SH 5	3	6" Blind Flange Connection	Upstream of 3-30-462	6				I	FWH4B	267				Not Analyzed	260		No	I	Verify already Insulated	Y
595	PTN	3	081	5613-M-3081, SH 5	3	FX	FX-3-1406	Not Provided				HT	FWH4A	267	Tube OD of 0.5 assumed			0.500	260		No	HT		
595	PTN	3	081	5613-M-3081, SH 5	3	FX	FX-3-1407	Not Provided				HT	FWH4B	267	Tube OD of 0.5 assumed			0.500	260		No	HT		
595	PTN	3	081	5613-M-3081, SH 5	3	PX	PX-3-1457	Not Provided				HT	FWH4A	267	Tube OD of 0.5 assumed			0.500	260		No	HT		
595	PTN	3	081	5613-M-3081, SH 5	3	PX	PX-3-1458	Not Provided				HT	FWH4B	267	Tube OD of 0.5 assumed			0.500	260		No	HT		
597	PTN	3	081	5613-M-3081, SH 5	3	1" Connection	3-30-425	1				HT	FWH4A	267				1.000	260		No	HT		
597	PTN	3	081	5613-M-3081, SH 5	3	1" Connection	3-30-426	1				HT	FWH4B	267				1.000	260		No	HT		
600	PTN	3	081	5613-M-3081, SH 5	5	4" Pipe	3-30-457 3-30-459	4				HT	FWH3A	267				4.000	260		No	HT		
600	PTN	3	081	5613-M-3081, SH 5	5	4" Pipe	3-30-458 3-30-460	4				HT	FWH3B	267				4.000	260		No	HT		
602	PTN	3	081	5613-M-3081, SH 5	6	6" Blind Flange Connection	Upstream of 3-30-473	6				I	FWH4A	119				Not Analyzed	110		No	I		
602	PTN	3	081	5613-M-3081, SH 5	6	6" Blind Flange Connection	Upstream of 3-30-474	6				I	FWH4B	119				Not Analyzed	110		No	I		
601	PTN	3	081	5613-M-3081, SH 5	6	6" Pipe	3-30-463 3-30-473	6				I	FWH4A	119				Not Analyzed	110		No	I		
601	PTN	3	081	5613-M-3081, SH 5	6	6" Pipe	3-30-464 3-30-474	6				I	FWH4B	119				Not Analyzed	110		No	I		
603	PTN	3	081	5613-M-3081, SH 5	7	3" Pipe	CV-3-1511B	3				HT	FWH4A	119				3.000	110		No	HT		
603	PTN	3	081	5613-M-3081, SH 5	7	3" Pipe	CV-3-1512B	3				HT	FWH4B	119				3.000	110		No	HT		
604	PTN	3	081	5613-M-3081, SH 5	7	3/4" Connection	3-30-465	0.75				HT	FWH4A	119				0.750	110		No	HT		
604	PTN	3	081	5613-M-3081, SH 5	7	3/4" Connection	3-30-466	0.75				HT	FWH4B	119				0.750	110		No	HT		
605	PTN	3	081	5613-M-3081, SH 5	8	4" Pipe	3-30-471 3-30-467	3				HT	FWH4A	119				3.000	110		No	HT		
605	PTN	3	081	5613-M-3081, SH 5	8	4" Pipe	3-30-472 3-30-468	3				HT	FWH4B	119				3.000	110		No	HT		
606	PTN	3	081	5613-M-3081, SH 5	8	3/4" Connection	3-30-469	0.75				HT	FWH4A	119				0.750	110		No	HT		
606	PTN	3	081	5613-M-3081, SH 5	8	3/4" Connection	3-30-470	0.75				HT	FWH4B	119				0.750	110		No	HT		
611	PTN	3	081	5613-M-3081, SH 5	9	8" Flange	None	8				I	FWH3A	211				Not	210		No	I	Verify already Insulated	Y
611	PTN	3	081	5613-M-3081, SH 5	9	8" Flange	None	8				I	FWH3B	211				Not	210		No	I	Verify already Insulated	Y
607	PTN	3	081	5613-M-3081, SH 5	9	FX	FX-3-1408	Not Provided				HT	FWH3A	211	Tube OD of 0.5 assumed			0.500	210		No	HT		
607	PTN	3	081	5613-M-3081, SH 5	9	FX	FX-3-1409	Not Provided				HT	FWH3B	211	Tube OD of 0.5 assumed			0.500	210		No	HT		
607	PTN	3	081	5613-M-3081, SH 5	9	PX	PX-3-1455	Not Provided				HT	FWH3A	211	Tube OD of 0.5 assumed			0.500	210		No	HT		
607	PTN	3	081	5613-M-3081, SH 5	9	PX	PX-3-1456	Not Provided				HT	FWH3B	211	Tube OD of 0.5 assumed			0.500	210		No	HT		
609	PTN	3	081	5613-M-3081, SH 5	9	1" Connection	3-30-325	1				HT	FWH3A	211				1.000	210		No	HT		
610	PTN	3	081	5613-M-3081, SH 5	9	3/4" Connection	3-30-353	0.75				HT	FWH3A	211				0.750	210		No	HT		
610	PTN	3	081	5613-M-3081, SH 5	9	3/4" Connection	3-30-354	0.75				HT	FWH3B	211				0.750	210		No	HT		
612	PTN	3	081	5613-M-3081, SH 5	10	6" Pipe	3-30-357 3-30-359	6				I	FWH3A	119				Not Analyzed	110		No	I		
612	PTN	3	081	5613-M-3081, SH 5	10	6" Pipe	3-30-358 3-30-360	6				I	FWH3B	119				Not Analyzed	110		No	I		
613	PTN	3	081	5613-M-3081, SH 5	11	1.5" Pipe	None	1.5				HT	FWH3A	211				1.500	210		No	HT		
613	PTN	3	081	5613-M-3081, SH 5	11	1.5" Pipe	None	1.5				HT	FWH3B	211				1.500	210		No	HT		
614	PTN	3	081	5613-M-3081, SH 5	12	8" Pipe	Downstream of CV-3-1507B	8				I	FWH3A	119				Not Analyzed	110		No	I		
614	PTN	3	081	5613-M-3081, SH 5	12	8" Pipe	Downstream of CV-3-1508B	8				I	FWH3B	119				Not Analyzed	110		No	I		
615	PTN	3	081	5613-M-3081, SH 5	12	8" Blind Flange Connection	Downstream of CV-3-1507B	8				I	FWH3A	119				Not Analyzed	110		No	I		
615	PTN	3	081	5613-M-3081, SH 5	12	8" Blind Flange Connection	Downstream of CV-3-1508B	8				I	FWH3B	119				Not Analyzed	110		No	I		
616	PTN	3	081	5613-M-3081, SH 5	13	6" Pipe	CV-3-1507B	6				I	FWH3A	119				Not	110		No	I		
616	PTN	3	081	5613-M-3081, SH 5	13	6" Pipe	CV-3-1508B	6				I	FWH3B	119				Not	110		No	I		
617	PTN	3	081	5613-M-3081, SH 5	13	3/4" Connection	3-30-365	0.75				HT	FWH3A	119				0.750	110		No	HT		
617	PTN	3	081	5613-M-3081, SH 5	13	3/4" Connection	3-30-366	0.75				HT	FWH3B	119				0.750	110		No	HT		
618	PTN	3	081	5613-M-3081, SH 5	14	6" Pipe	3-30-371 3-30-367	6				I	FWH3A	119				Not Analyzed	110		No	I		
618	PTN	3	081	5613-M-3081, SH 5	14	6" Pipe	3-30-372 3-30-368	6				I	FWH3B	119				Not Analyzed	110		No	I		
619	PTN	3	081	5613-M-3081, SH 5	14	3/4" Connection	3-30-369	0.75				HT	FWH3A	119				0.750	110		No	HT		
619	PTN	3	081	5613-M-3081, SH 5	14	3/4" Connection	3-30-370	0.75				HT	FWH3B	119				0.750	110		No	HT		
621	PTN	3	081	5613-M-3081, SH 5	16	1.5" Pipe	FWHR-3-021	1.5				HT	FWH3A	260				1.500	260		No	HT		
621	PTN	3	081	5613-M-3081, SH 5	16	1.5" Pipe	FWHR-3-028	1.5				HT	FWH3B	260				1.500	260		No	HT		
621	PTN	3	081	5613-M-3081, SH 5	16	1.5" Pipe	FWHR-3-019	1.5				HT	FWH3A	260				1.500	260		No	HT		
621	PTN	3	081	5613-M-3081, SH 5	16	1.5" Pipe	FWHR-3-027	1.5				HT	FWH3B	260				1.500	260		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
624	PTN	3	081	5613-M-3081, SH 5	19	1" Pipe	FWHR-3-022	1				HT	FWH4A	260				1.000	260		No	HT		
624	PTN	3	081	5613-M-3081, SH 5	19	1" Pipe	FWHR-3-029	1				HT	FWH4B	260				1.000	260		No	HT		
629	PTN	3	081	5613-M-3081, SH 5	21	1.5" Instrument Piping	FWH4A	1.5				HT	FWH4A	279				1.500	270		No	HT		
629	PTN	3	081	5613-M-3081, SH 5	21	1.5" Instrument Piping	FWH4A	1.5				HT	FWH4B	279				1.500	270		No	HT		
626	PTN	3	081	5613-M-3081, SH 5	21	LS	LS-3-1512	1				HT	FWH4A	279				1.000	270		No	HT		
626	PTN	3	081	5613-M-3081, SH 5	21	LS	LS-3-1514	1				HT	FWH4B	279				1.000	270		No	HT		
626	PTN	3	081	5613-M-3081, SH 5	21	LS	LS-3-1513	1				HT	FWH4A	279				1.000	270		No	HT		
626	PTN	3	081	5613-M-3081, SH 5	21	LS	LS-3-1515	1				HT	FWH4B	279				1.000	270		No	HT		
627	PTN	3	081	5613-M-3081, SH 5	21	LC	LC-3-1511	1.5				HT	FWH4A	279				1.500	270		No	HT		
627	PTN	3	081	5613-M-3081, SH 5	21	LC	LC-3-1512	1.5				HT	FWH4B	279				1.500	270		No	HT		
628	PTN	3	081	5613-M-3081, SH 5	21	LG	LG-3-3416	1.5				HT	FWH4A	279				1.500	270		No	HT		
628	PTN	3	081	5613-M-3081, SH 5	21	LG	LG-3-3417	1.5				HT	FWH4B	279				1.500	270		No	HT		
632	PTN	3	081	5613-M-3081, SH 5	21	Connections	LG-3-3416	1.5				HT	FWH4A	279				1.500	270		No	HT		
632	PTN	3	081	5613-M-3081, SH 5	21	Connections	LG-3-3417	1.5				HT	FWH4B	279				1.500	270		No	HT		
631	PTN	3	081	5613-M-3081, SH 5	21	Drains	3-30-483	1.5				HT	FWH4A	279				1.500	270		No	HT		
631	PTN	3	081	5613-M-3081, SH 5	21	Drains	3-30-482	1.5				HT	FWH4B	279				1.500	270		No	HT		
631	PTN	3	081	5613-M-3081, SH 5	21	Drains	3-30-491	1.5				HT	FWH4A	279				1.500	270		No	HT		
631	PTN	3	081	5613-M-3081, SH 5	21	Drains	3-30-490	1.5				HT	FWH4B	279				1.500	270		No	HT		
631	PTN	3	081	5613-M-3081, SH 5	21	Drains	3-30-149	1.5				HT	FWH4A	279				1.500	270		No	HT		
630	PTN	3	081	5613-M-3081, SH 5	21	Vents	3-30-481	1.5				HT	FWH4A	279				1.500	270		No	HT		
630	PTN	3	081	5613-M-3081, SH 5	21	Vents	3-30-480	1.5				HT	FWH4B	279				1.500	270		No	HT		
630	PTN	3	081	5613-M-3081, SH 5	21	Vents	3-30-489	1.5				HT	FWH4A	279				1.500	270		No	HT		
630	PTN	3	081	5613-M-3081, SH 5	21	Vents	3-30-488	1.5				HT	FWH4B	279				1.500	270		No	HT		
636	PTN	3	081	5613-M-3081, SH 5	22	1.5" Instrument Piping	FWH 3A	1.5				HT	FWH3A	225				1.500	220		No	HT		
636	PTN	3	081	5613-M-3081, SH 5	22	1.5" Instrument Piping	FWH 3B	1.5				HT	FWH3B	225				1.500	220		No	HT		
633	PTN	3	081	5613-M-3081, SH 5	22	LS	LS-3-1508	1				HT	FWH3A	225				1.000	220		No	HT		
633	PTN	3	081	5613-M-3081, SH 5	22	LS	LS-3-1510	1				HT	FWH3B	225				1.000	220		No	HT		
633	PTN	3	081	5613-M-3081, SH 5	22	LS	LS-3-1509	1				HT	FWH3A	225				1.000	220		No	HT		
633	PTN	3	081	5613-M-3081, SH 5	22	LS	LS-3-1511	1				HT	FWH3B	225				1.000	220		No	HT		
634	PTN	3	081	5613-M-3081, SH 5	22	LC	LC-3-1507	1.5				HT	FWH3A	225				1.500	220		No	HT		
634	PTN	3	081	5613-M-3081, SH 5	22	LC	LC-3-1508	1.5				HT	FWH3B	225				1.500	220		No	HT		
635	PTN	3	081	5613-M-3081, SH 5	22	LG	LG-3-3414	1.5				HT	FWH3A	225				1.500	220		No	HT		
635	PTN	3	081	5613-M-3081, SH 5	22	LG	LG-3-3415	1.5				HT	FWH3B	225				1.500	220		No	HT		
639	PTN	3	081	5613-M-3081, SH 5	22	Connections	LG-3-3414	1.5				HT	FWH3A	225				1.500	220		No	HT		
639	PTN	3	081	5613-M-3081, SH 5	22	Connections	LG-3-3415	1.5				HT	FWH3B	225				1.500	220		No	HT		
638	PTN	3	081	5613-M-3081, SH 5	22	Drains	3-30-383	1.5				HT	FWH3A	225				1.500	220		No	HT		
638	PTN	3	081	5613-M-3081, SH 5	22	Drains	3-30-382	1.5				HT	FWH3B	225				1.500	220		No	HT		
638	PTN	3	081	5613-M-3081, SH 5	22	Drains	3-30-391	1.5				HT	FWH3A	225				1.500	220		No	HT		
638	PTN	3	081	5613-M-3081, SH 5	22	Drains	3-30-390	1.5				HT	FWH3B	225				1.500	220		No	HT		
637	PTN	3	081	5613-M-3081, SH 5	22	Vents	3-30-381	1.5				HT	FWH3A	225				1.500	220		No	HT		
637	PTN	3	081	5613-M-3081, SH 5	22	Vents	3-30-380	1.5				HT	FWH3B	225				1.500	220		No	HT		
637	PTN	3	081	5613-M-3081, SH 5	22	Vents	3-30-389	1.5				HT	FWH3A	225				1.500	220		No	HT		
637	PTN	3	081	5613-M-3081, SH 5	22	Vents	3-30-388	1.5				HT	FWH3B	225				1.500	220		No	HT		
642	PTN	3	081	5613-M-3081, SH 5	-	FWH3A RV (4" Inlet, 6" Outlet per NAMS)	RV-3-6301A	4				HT	FWH3A	174				4.000	170		No	HT		
642	PTN	3	081	5613-M-3081, SH 5	-	FWH3B RV (4" Inlet, 6" Outlet per NAMS)	RV-3-6301B	4				HT	FWH3B	174				4.000	170		No	HT		
642	PTN	3	081	5613-M-3081, SH 5	-	FWH4A RV (4" Inlet, 6" Outlet per NAMS)	RV-3-3420	4				HT	FWH4A	231				4.000	230		No	HT		
642	PTN	3	081	5613-M-3081, SH 5	-	FWH4B RV (4" Inlet, 6" Outlet per NAMS)	RV-3-3421	4				HT	FWH4B	231				4.000	230		No	HT		
645	PTN	3	081	5613-M-3081, SH 5	-	FWH3A Drains	FWHR-3-024	1.5				HT	FWH3A	211				1.500	210		No	HT		
645	PTN	3	081	5613-M-3081, SH 5	-	FWH3A Drains	FWHR-3-327	1.5				HT	FWH3A	211				1.500	210		No	HT		
645	PTN	3	081	5613-M-3081, SH 5	-	FWH3B Drains	FWHR-3-030	1.5				HT	FWH3B	211				1.500	210		No	HT		
645	PTN	3	081	5613-M-3081, SH 5	-	FWH3B Drains	FWHR-3-328	1.5				HT	FWH3B	211				1.500	210		No	HT		
644	PTN	3	081	5613-M-3081, SH 5	-	FWH4A Drains	FWHR-3-031	1.5				HT	FWH4A	267				1.500	260		No	HT		
644	PTN	3	081	5613-M-3081, SH 5	-	FWH4A Drains	FWHR-3-427	1.5				HT	FWH4A	267				1.500	260		No	HT		
644	PTN	3	081	5613-M-3081, SH 5	-	FWH4B Drains	FWHR-3-034	1.5				HT	FWH4B	267				1.500	260		No	HT		
644	PTN	3	081	5613-M-3081, SH 5	-	FWH4B Drains	FWHR-3-428	1.5				HT	FWH4B	267				1.500	260		No	HT		
538	PTN	3	081	5613-M-3081, SH 4	5	3/4" Drain	3-30-525	0.75				HT		211				0.750	210		No	HT		
539	PTN	3	081	5613-M-3081, SH 4	5	Welded pipe caps (2 of them)	None	Not provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
541	PTN	3	081	5613-M-3081, SH 4	6	Connection (size not marked)	3-30-593	Not provided				HT		387	Tube OD of 0.5 assumed			0.500	380		No	HT		
543	PTN	3	081	5613-M-3081, SH 4	7	Connection (size not marked)	3-30-591	Not provided				HT		387	Tube OD of 0.5 assumed			0.500	380		No	HT		
545	PTN	3	081	5613-M-3081, SH 4	9	3A HDT Level transmitters and associated piping/valves	LG-3-1510A	0.75	17	H	Y	HT	GUAGE NOT INSTALLED	211		H-I		0.750	210	18.4	Yes	No Protection Required	column will have trickle flow, no protection required	N
545	PTN	3	081	5613-M-3081, SH 4	9	3A HDT Level transmitters and associated piping/valves	LIT-3-1510A	1.5	17	BV,U	Y	HT		211		BV-I	Upward bend not credited for conservatism	1.500	210	5.7	No	HT	column will have trickle flow, no protection required	N
546	PTN	3	081	5613-M-3081, SH 4	9	1" drain	3-30-590	1				HT		211				1.000	210		No	HT		
546	PTN	3	081	5613-M-3081, SH 4	9	1" Vent	3-30-588	1				HT		211				1.000	210		No	HT		
546	PTN	3	081	5613-M-3081, SH 4	9	1/2" drain	3-30-579	0.5				HT		211				0.500	210		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
546	PTN	3	081	5613-M-3081, SH 4	9	1/2" Vent	3-30-449	0.5				HT		211				0.500	210		No	HT		
547	PTN	3	081	5613-M-3081, SH 4	10	3B HDT Level transmitters and associated piping/valves	LG-3-1510B	0.75	17	BV,U	Y	HT		211		BV-I	Upward bend not credited for conservatism	0.750	210	2.05	No	HT	column will have trickle flow, no protection required	N
547	PTN	3	081	5613-M-3081, SH 4	10	3B HDT Level transmitters and associated piping/valves	PX-3-6683	0.5				HT		211				0.500	210		No	HT		
547	PTN	3	081	5613-M-3081, SH 4	10	3B HDT Level transmitters and associated piping/valves	LIT-3-1510B	1.5	14	H	Y	N/A		211		H-I		1.500	210	20	Yes	No Protection Required	column will have trickle flow, no protection required	N
547	PTN	3	081	5613-M-3081, SH 4	10	3B HDT Level transmitters and associated piping/valves	LIT-3-1510C	1.5	14	H	Y	N/A		211		H-I		1.500	210	20	Yes	No Protection Required	column will have trickle flow, no protection required	N
548	PTN	3	081	5613-M-3081, SH 4	10	1" and 1/2" Vents and drains, test connection [PX]	3-30-395	0.5				HT		211				0.500	210		No	HT		
548	PTN	3	081	5613-M-3081, SH 4	10	1" and 1/2" Vents and drains, test connection [PX]	3-30-880	1				HT		211				1.000	210		No	HT		
548	PTN	3	081	5613-M-3081, SH 4	10	1" and 1/2" Vents and drains, test connection [PX]	3-30-881	1				HT		211				1.000	210		No	HT		
548	PTN	3	081	5613-M-3081, SH 4	10	1" and 1/2" Vents and drains, test connection [PX]	3-30-882	1				HT		211				1.000	210		No	HT		
548	PTN	3	081	5613-M-3081, SH 4	10	1" and 1/2" Vents and drains, test connection [PX]	3-30-883	1				HT		211				1.000	210		No	HT		
549	PTN	3	081	5613-M-3081, SH 4	11	3B HDT capped connections	HDT 3B	Not provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
549	PTN	3	081	5613-M-3081, SH 4	11	3B HDT capped connections	3-30-559	0.5				HT		211				0.500	210		No	HT		
555	PTN	3	081	5613-M-3081, SH 4	16	3/4" Drain	3-30-526	0.75				HT		211				0.750	210		No	HT		
556	PTN	3	081	5613-M-3081, SH 4	16	Welded pipe caps (2 of them)	None	Not provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
557	PTN	3	081	5613-M-3081, SH 4	17	Local Pressure Indicator PI-3-6695	PI-3-6695 PX-3-1514	0.5				HT		211				0.500	210		No	HT		
560	PTN	3	081	5613-M-3081, SH 4	17	1" drains	3-30-596 3-30-598	1				HT		211				1.000	210		No	HT		
560	PTN	3	081	5613-M-3081, SH 4	17	1" drains	3-30-595 3-30-597	1				HT		211				1.000	210		No	HT		
559	PTN	3	081	5613-M-3081, SH 4	17	Various test connections	PX-3-3423	0.5				HT		211				0.500	210		No	HT		
559	PTN	3	081	5613-M-3081, SH 4	17	Various test connections	PX-3-3422	0.5				HT		211				0.500	210		No	HT		
564	PTN	3	081	5613-M-3081, SH 4	18	1" Drain	3-30-566	1				HT		119				1.000	110		No	HT		
565	PTN	3	081	5613-M-3081, SH 4	19	10" piping from HDT 3A/3B to 3B condenser/ bypass control valve CN-3-1510B [3-10"-5-D]	3-30-568 3-30-572	10				I		119				Not Analyzed	110		No	I		
566	PTN	3	081	5613-M-3081, SH 4	19	Connection (size not marked)	3-30-570	Not Provided				HT		119	Tube OD of 0.5 assumed			0.500	110		No	HT		
568	PTN	3	081	5613-M-3081, SH 4	20	4" piping from Main Condensate Header to HD Pump suction header	CV-3-1900	2				HT		119				2.000	110		No	HT		
568	PTN	3	081	5613-M-3081, SH 4	20	4" piping from Main Condensate Header to HD Pump suction header	3-30-563	4				HT		119				4.000	110		No	HT		
568	PTN	3	081	5613-M-3081, SH 4	20	4" piping from Main Condensate Header to HD Pump suction header	3-30-573	4				HT		119				4.000	110		No	HT		
570	PTN	3	081	5613-M-3081, SH 4	20	3/4" drain/connection	3-30-565	0.75				HT		119				0.750	110		No	HT		
571	PTN	3	081	5613-M-3081, SH 4	21	3" piping from Condensate Header to HD pump suction header - Bypass control valve CN-3-1900 [3-3"-3-D]	3-30-567 3-30-571	3				HT		119				3.000	110		No	HT		
572	PTN	3	081	5613-M-3081, SH 4	21	[3-3"-5-CM]	3-30-569	0.75				HT		119				0.750	110		No	HT		
573	PTN	3	081	5613-M-3081, SH 4	22	3" piping to SWLU connection	None	3				HT		211				3.000	210		No	HT		
574	PTN	3	081	5613-M-3081, SH 4	23	1" piping; HD Pump vent to 3A HDT [3-1"-5-D]	3-30-8223-30-821	1				HT		211				1.000	210		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
576	PTN	3	081	5613-M-3081, SH 4	24	1/2" to 1/4" SS tubing from A HD Pump discharge to sample system	3-30-820	0.375				HT		211				0.375	210		No	HT		
576	PTN	3	081	5613-M-3081, SH 4	24	1/2" to 1/4" SS tubing from A HD Pump discharge to sample system	3-30-837	0.5				HT		211				0.500	210		No	HT		
576	PTN	3	081	5613-M-3081, SH 4	24	1/2" to 1/4" SS tubing from A HD Pump discharge to sample system	None	0.25				HT		211				Not Analyzed	210		No	HT		
575	PTN	3	081	5613-M-3081, SH 4	24	Local Pressure Indicator PI-3-1437	PI-3-1437	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
577	PTN	3	081	5613-M-3081, SH 4	24	Test connection [PX]	PX-3-3424	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
579	PTN	3	081	5613-M-3081, SH 4	25	1/2" to 1/4" SS tubing from B HD Pump discharge to sample system	3-30-844	0.375				HT		211				0.375	210		No	HT		
579	PTN	3	081	5613-M-3081, SH 4	25	1/2" to 1/4" SS tubing from B HD Pump discharge to sample system	3-30-838	0.5				HT		211				0.500	210		No	HT		
579	PTN	3	081	5613-M-3081, SH 4	25	1/2" to 1/4" SS tubing from B HD Pump discharge to sample system	None	0.25				HT		211				Not Analyzed	210		No	HT		
578	PTN	3	081	5613-M-3081, SH 4	25	Local Pressure Indicator PI-3-1438	PI-3-1438	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
580	PTN	3	081	5613-M-3081, SH 4	25	Test connection [PX]	PX-3-3425	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
586	PTN	3	081	5613-M-3081, SH 4	27	drain	3-30-863	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
586	PTN	3	081	5613-M-3081, SH 4	27	drain	3-30-865	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
585	PTN	3	081	5613-M-3081, SH 4	27	Test connection [PX]	PX-3-1471	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
586	PTN	3	081	5613-M-3081, SH 4	27	Vent	3-30-841	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
586	PTN	3	081	5613-M-3081, SH 4	27	Vent	3-30-843	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
587	PTN	3	081	5613-M-3081, SH 4	28	3/4" piping - bypass HD pump A/B discharge check valves	3-30-8453-30-847	0.75				HT		211				0.750	210		No	HT		
587	PTN	3	081	5613-M-3081, SH 4	28	3/4" piping - bypass HD pump A/B discharge check valves	3-30-8463-30-848	0.75				HT		211				0.750	210		No	HT		
589	PTN	3	081	5613-M-3081, SH 4	29	Test points associated with FIT-3-1404	PX-3-3426	0.25				HT		211				Not Analyzed	210		No	HT		
589	PTN	3	081	5613-M-3081, SH 4	29	Test points associated with FIT-3-1404	PX-3-3427	0.25				HT		211				Not Analyzed	210		No	HT		
588	PTN	3	081	5613-M-3081, SH 4	29	Piping/ Tubing/ valves associated with FIT-3-1404	FIT-3-1404	0.375	40	H,D	N	HT		211		BV	BV conservative due to downward portion	0.375	210	Not Analyzed	Yes	No Protection Required	verify line temp-if not high enough heat trace	Y
588	PTN	3	081	5613-M-3081, SH 4	29	Piping/ Tubing/ valves associated with FIT-3-1404	FE-3-1404	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
591	PTN	3	081	5613-M-3081, SH 4	30	Connection (size not marked)	3-30-870	Not Provided				HT		211	Tube OD of 0.5 assumed			0.500	210		No	HT		
590	PTN	3	081	5613-M-3081, SH 4	30	12" piping from A/B HD Pumps to FW PP suction/ bypass control valve CN-3-1510A [3-12"-3-D]	3-30-869 3-30-871	12				I		211				Not Analyzed	210		No	I	Verify already Insulated	Y
592	PTN	3	081	5613-M-3081, SH 4	31	Flex tubing installed to either side of CV-3-1510A; HD pump interlock	DPS-3-1401	0.375	43	H	N	HT		211		H		0.375	210	2.2	No	HT	verify line temp and ambient-if not high enough heat trace	Y
592	PTN	3	081	5613-M-3081, SH 4	31	Flex tubing installed to either side of CV-3-1510A; HD pump interlock	DPS-3-1402	0.375	1	H	N	HT		211		H		0.375	210	2.2	Yes	No Protection Required	short run; high process line; no protection required	N
466	PTN	3	081	5613-M-3081, SH 3	1	6A FW HTR Level transmitters and associated piping/valves	LIT-3-1517A	2				HT		441				2.000	400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
466	PTN	3	082	5613-M-3081, SH 3	1	6A FW HTR Level transmitters and associated piping/valves	LIT-3-1517B	2				HT		380				2.000	380		No	HT		
466	PTN	3	083	5613-M-3081, SH 3	1	6A FW HTR Level transmitters and associated piping/valves	LIT-3-1517C	2				HT		380				2.000	380		No	HT		
467	PTN	3	081	5613-M-3081, SH 3	1	1" drain	3-30-607	1				HT		380				1.000	380		No	HT		
467	PTN	3	081	5613-M-3081, SH 3	1	1" drain	3-30-615	1				HT		380				1.000	380		No	HT		
467	PTN	3	081	5613-M-3081, SH 3	1	1" drain	3-30-721	1				HT		380				1.000	380		No	HT		
467	PTN	3	081	5613-M-3081, SH 3	1	1" Vent	3-30-605	1				HT		441				1.000	400		No	HT		
467	PTN	3	081	5613-M-3081, SH 3	1	1" Vent	3-30-613	1				HT		441				1.000	400		No	HT		
467	PTN	3	081	5613-M-3081, SH 3	1	1" Vent	3-30-720	1				HT		441				1.000	400		No	HT		
470	PTN	3	081	5613-M-3081, SH 3	3	1" piping - bypass Orifice	FWHR-3-080	1				HT		119				1.000	110		No	HT		
475	PTN	3	081	5613-M-3081, SH 3	5	1/2" and 1" connections; Various test connections [PX, TX, FX]	PX-3-1463	0.75				HT		380				0.750	380		No	HT		
475	PTN	3	081	5613-M-3081, SH 3	5	1/2" and 1" connections; Various test connections [PX, TX, FX]	3-30-651	0.5				HT		380				0.500	380		No	HT		
475	PTN	3	081	5613-M-3081, SH 3	5	1/2" and 1" connections; Various test connections [PX, TX, FX]	3-30-625	1				HT		380				1.000	380		No	HT		
475	PTN	3	081	5613-M-3081, SH 3	5	1/2" and 1" connections; Various test connections [PX, TX, FX]	FX-3-1404	Not provided				HT		380	Tube OD of 0.5 assumed			0.500	380		No	HT		
476	PTN	3	081	5613-M-3081, SH 3	5	Blind Flange	Upstream of 3-30-661	10				I	This likely does not require heat trace.	380				Not Analyzed	380		No	I	Verify already insulated	Y
477	PTN	3	081	5613-M-3081, SH 3	6	8" piping/ bypass CV-3-1517A [3-8"-2-D]	3-30-659 3-30-657	8				I		380				Not Analyzed	380		No	I	Verify already Insulated	Y
478	PTN	3	081	5613-M-3081, SH 3	6	3/4" Drain/connection	3-30-499A	0.75				HT		380				0.750	380		No	HT		
483	PTN	3	081	5613-M-3081, SH 3	7	Blind Flange	Upstream of 3-30-673	10				I	This likely does not require heat trace.	119				Not Analyzed	110		No	I		
482	PTN	3	081	5613-M-3081, SH 3	7	3/4" drains	3-30-665	0.75				HT		119				0.750	110		No	HT		
482	PTN	3	081	5613-M-3081, SH 3	7	3/4" drains	3-30-699	0.75				HT		119				0.750	110		No	HT		
484	PTN	3	081	5613-M-3081, SH 3	8	8" piping/ bypass CV-3-1517B [3-8"-5-E]	3-30-667 3-30-671	8				I		119				Not Analyzed	110		No	I		
485	PTN	3	081	5613-M-3081, SH 3	8	3/4" Drain/connection	3-30-669	0.75				HT		119				0.750	110		No	HT		
486	PTN	3	081	5613-M-3081, SH 3	9	5A FW HTR Level transmitters and associated piping/valves	LIT-3-1520A	2				HT		375				2.000	370		No	HT		
486	PTN	3	081	5613-M-3081, SH 3	9	5A FW HTR Level transmitters and associated piping/valves	LIT-3-1520B	2				HT		375				2.000	370		No	HT		
486	PTN	3	081	5613-M-3081, SH 3	9	5A FW HTR Level transmitters and associated piping/valves	LIT-3-1520C	2				HT		375				2.000	370		No	HT		
487	PTN	3	081	5613-M-3081, SH 3	9	1" drain	3-30-515	1				HT		387				1.000	380		No	HT		
487	PTN	3	081	5613-M-3081, SH 3	9	1" drain	3-30-511	1				HT		387				1.000	380		No	HT		
487	PTN	3	081	5613-M-3081, SH 3	9	1" drain	3-30-533	1				HT		387				1.000	380		No	HT		
487	PTN	3	081	5613-M-3081, SH 3	9	1" Vent	3-30-513	1				HT		309				1.000	300		No	HT		
487	PTN	3	081	5613-M-3081, SH 3	9	1" Vent	3-30-509	1				HT		309				1.000	300		No	HT		
487	PTN	3	081	5613-M-3081, SH 3	9	1" Vent	3-30-531	1				HT		309				1.000	300		No	HT		
488	PTN	3	081	5613-M-3081, SH 3	10	1" & 1 1/2" pipe - vent from 5A FW HTR shell to 3B condenser [3-1"-5-D, 3-1 1/2"-5-D]	FWHR-3-047	1				HT		119				1.000	110		No	HT		
488	PTN	3	081	5613-M-3081, SH 3	10	1" & 1 1/2" pipe - vent from 5A FW HTR shell to 3B condenser [3-1"-5-D, 3-1 1/2"-5-D]	FWHR-3-037	1.5				HT		119				1.500	110		No	HT		
489	PTN	3	081	5613-M-3081, SH 3	11	1" pipe - Bypass flow orifice	FWHR-3-035	1				HT		119				1.000	110		No	HT		
492	PTN	3	081	5613-M-3081, SH 3	13	Test connections [TX, PX]	PX-3-1461	0.5				HT		387				0.500	380		No	HT		
493	PTN	3	081	5613-M-3081, SH 3	14	3" piping for SWLU connection to 5A FW HTR drain line 3-3"-5-D	None	3				HT		387				3.000	380		No	HT		
494	PTN	3	081	5613-M-3081, SH 3	15	6B FW HTR Level transmitters and associated piping/valves	LIT-3-1518A	2				HT		441				2.000	400		No	HT		
494	PTN	3	081	5613-M-3081, SH 3	15	6B FW HTR Level transmitters and associated piping/valves	LIT-3-1518B	2				HT		441				2.000	400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
494	PTN	3	081	5613-M-3081, SH 3	15	6B FW HTR Level transmitters and associated piping/valves	LIT-3-1518C	2				HT		441				2.000	400		No	HT		
495	PTN	3	081	5613-M-3081, SH 3	15	1" drain	3-30-606	1				HT		380				1.000	380		No	HT		
495	PTN	3	081	5613-M-3081, SH 3	15	1" drain	3-30-614	1				HT		380				1.000	380		No	HT		
495	PTN	3	081	5613-M-3081, SH 3	15	1" drain	3-30-725	1				HT		380				1.000	380		No	HT		
495	PTN	3	081	5613-M-3081, SH 3	15	1" Vent	3-30-604	1				HT		441				1.000	400		No	HT		
495	PTN	3	081	5613-M-3081, SH 3	15	1" Vent	3-30-612	1				HT		441				1.000	400		No	HT		
495	PTN	3	081	5613-M-3081, SH 3	15	1" Vent	3-30-724	1				HT		441				1.000	400		No	HT		
498	PTN	3	081	5613-M-3081, SH 3	17	1" piping - bypass Orifice	FWHR-3-082	1				HT		119				1.000	110		No	HT		
502	PTN	3	081	5613-M-3081, SH 3	18	1/2" and 1" connections; Various test connections [PX, TX, FX]	PX-3-1464	0.75				HT		380				0.750	380		No	HT		
502	PTN	3	081	5613-M-3081, SH 3	18	1/2" and 1" connections; Various test connections [PX, TX, FX]	FX-3-1405	Not provided				HT		380	Tube OD of 0.5 assumed			0.500	380		No	HT		
502	PTN	3	081	5613-M-3081, SH 3	18	1/2" and 1" connections; Various test connections [PX, TX, FX]	3-30-647	0.5				HT		380				0.500	380		No	HT		
502	PTN	3	081	5613-M-3081, SH 3	18	1/2" and 1" connections; Various test connections [PX, TX, FX]	3-30-626	1				HT		380				1.000	380		No	HT		
503	PTN	3	081	5613-M-3081, SH 3	18	Blind Flange	Upstream of 3-30-662	10				I		380				Not	380		No	I	Verify already insulated	Y
504	PTN	3	081	5613-M-3081, SH 3	19	8" piping/ bypass CV-3-1518A [3-8"-5-D]	3-30-660	8				I		380				Not Analyzed	380		No	I	Verify already Insulated	Y
505	PTN	3	081	5613-M-3081, SH 3	19	3/4" Drain/connection	3-30-499B	0.75				HT		380				0.750	380		No	HT		
510	PTN	3	081	5613-M-3081, SH 3	20	Blind Flange	Upstream of 3-30-674	10				I	This likely does not require heat trace.	119				Not Analyzed	110		No	I		
509	PTN	3	081	5613-M-3081, SH 3	20	3/4" drains	3-30-666	0.75				HT		119				0.750	110		No	HT		
511	PTN	3	081	5613-M-3081, SH 3	21	8" piping/ bypass CV-3-1518B [3-8"-5-D]	3-30-668 3-30-672	8				I		119				Not Analyzed	110		No	I		
512	PTN	3	081	5613-M-3081, SH 3	21	3/4" Drain/connections	3-30-698 3-30-476	0.75				HT		119				0.750	110		No	HT		
513	PTN	3	081	5613-M-3081, SH 3	22	5B FW HTR Level transmitters and associated piping/valves	LIT-3-1521A	2				HT		375				2.000	370		No	HT		
513	PTN	3	081	5613-M-3081, SH 3	22	5B FW HTR Level transmitters and associated piping/valves	LIT-3-1521B	2				HT		375				2.000	370		No	HT		
513	PTN	3	081	5613-M-3081, SH 3	22	5B FW HTR Level transmitters and associated piping/valves	LIT-3-1521C	2				HT		375				2.000	370		No	HT		
514	PTN	3	081	5613-M-3081, SH 3	22	1" drain	3-30-514	1				HT		387				1.000	380		No	HT		
514	PTN	3	081	5613-M-3081, SH 3	22	1" drain	3-30-510	1				HT		387				1.000	380		No	HT		
514	PTN	3	081	5613-M-3081, SH 3	22	1" drain	3-30-537	1				HT		387				1.000	380		No	HT		
514	PTN	3	081	5613-M-3081, SH 3	22	1" Vent	3-30-512	1				HT		309				1.000	300		No	HT		
514	PTN	3	081	5613-M-3081, SH 3	22	1" Vent	3-30-508	1				HT		309				1.000	300		No	HT		
514	PTN	3	081	5613-M-3081, SH 3	22	1" Vent	3-30-535	1				HT		309				1.000	300		No	HT		
516	PTN	3	081	5613-M-3081, SH 3	24	1" pipe - Bypass flow orifice	FWHR-3-042	1				HT		119				1.000	110		No	HT		
519	PTN	3	081	5613-M-3081, SH 3	26	Drain	3-30120	1				HT		387				1.000	380		No	HT		
519	PTN	3	081	5613-M-3081, SH 3	26	Test connections [TX, PX]	PX-3-1462	0.5				HT		387				0.500	380		No	HT		
520	PTN	3	081	5613-M-3081, SH 3	27	3" piping for SWLU connection to 5B FW HTR drain line 3-3"-5-D	None	3				HT		387				3.000	380		No	HT		
522	PTN	3	081	5613-M-3081, SH 3	5A FW	5A FWHTR Tank Relief Valve RV-3-3422	RV-3-3422	Not Provided				HT		387	Tube OD of 0.5 assumed			0.500	380		No	HT		
524	PTN	3	081	5613-M-3081, SH 3	5B FW	5B FWHTR Tank Relief Valve RV-3-3423	RV-3-3423	Not Provided				HT		387	Tube OD of 0.5 assumed			0.500	380		No	HT		
526	PTN	3	081	5613-M-3081, SH 3	6A FW	6A FWHTR Tank Relief Valve RV-3-3424	RV-3-3424	Not Provided				HT		380	Tube OD of 0.5 assumed			0.500	380		No	HT		
527	PTN	3	081	5613-M-3081, SH 3	6A FW	6A FWHTR 1 1/2" drains	FWHR-3-038	1.5				HT		380				1.500	380		No	HT		
527	PTN	3	081	5613-M-3081, SH 3	6A FW	6A FWHTR 1 1/2" drains	3-30-627	1.5				HT		380				1.500	380		No	HT		
528	PTN	3	081	5613-M-3081, SH 3	6A FW	Capped pipe stub on 6A FW HTR	FWH 6A	Not Provided				HT		380	Tube OD of 0.5 assumed			0.500	380		No	HT		
530	PTN	3	081	5613-M-3081, SH 3	6B FW	6B FWHTR Tank Relief Valve RV-3-3425	RV-3-3425	Not Provided				HT		380	Tube OD of 0.5 assumed			0.500	380		No	HT		
531	PTN	3	081	5613-M-3081, SH 3	6B FW	6B FWHTR 1 1/2" tank drains	FWHR-3-039	1.5				HT		380				1.500	380		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
531	PTN	3	081	5613-M-3081, SH 3	6B FW	6B FWHTR 1 1/2" tank drains	3-30-628	1.5				HT		380				1.500	380		No	HT		
532	PTN	3	081	5613-M-3081, SH 3	6B FW	Capped pipe stub on 6B FW HTR	FWH 6B	Not Provided				HT		380	Tube OD of 0.5 assumed			0.500	380		No	HT		
422	PTN	3	081	5613-M-3081, SH 2	1	2" vent RHTR Drain Tank 3A to ES system/ FW HTR 6A [3-2"-2-C]						HT		513					400		No	HT		
424	PTN	3	081	5613-M-3081, SH 2	3	RHTR Drain Tank 3A Level transmitters and associated piping/valves						HT		513					400		No	HT		
425	PTN	3	081	5613-M-3081, SH 2	3	1" Vents and drains						HT		513					400		No	HT		
426	PTN	3	081	5613-M-3081, SH 2	4	Flow indication and associated valves, 1/2" tubing. [FE/FI 3-5120] [3-1/2"-2-C]	FI-3-5120	0.5	12	H	N	HT		513		H		0.500	400	8.5	No	HT	verify ambient temp; if hot no protection required	Y
430	PTN	3	081	5613-M-3081, SH 2	4	3/4" Drain/connection						HT		513					400		No	HT		
431	PTN	3	081	5613-M-3081, SH 2	4	3/4" vent						HT		513					400		No	HT		
432	PTN	3	081	5613-M-3081, SH 2	4	Blind Flange						HT		513					400		No	HT		
434	PTN	3	081	5613-M-3081, SH 2	5	3/4" Drain/connection						HT		513					400		No	HT		
433	PTN	3	081	5613-M-3081, SH 2	5	10" piping/ bypass FE-3-5120 [3-10"-2-C]						I		513					400		No	I		
436	PTN	3	081	5613-M-3081, SH 2	6	3/4"drain/connection						HT		513					400		No	HT		
435	PTN	3	081	5613-M-3081, SH 2	6	8" piping/ bypass CV-3-1505 [3-8"-2-C, 3-8"-5-E]						I		513					400		No	I		
440	PTN	3	081	5613-M-3081, SH 2	7	3/4"drain/connection						HT		513					400		No	HT		
441	PTN	3	081	5613-M-3081, SH 2	7	Blind Flange						HT		513					400		No	HT		
443	PTN	3	081	5613-M-3081, SH 2	8	3/4" Drain/connection						HT		513					400		No	HT		
442	PTN	3	081	5613-M-3081, SH 2	8	8" piping/ bypass CV-3-1515 [3-8"-2-C, 3-8"-5-E]						I		513					400		No	I		
444	PTN	3	081	5613-M-3081, SH 2	9	2" vent RHTR Drain Tank 3B to ES system/ FW HTR 6B [3-2"-2-C]						HT		513					400		No	HT		
446	PTN	3	081	5613-M-3081, SH 2	11	RHTR Drain Tank 3B Level transmitters and associated piping/valves	LIT-3-1506A	0.375	12	TV,D	Y	N/A		513		BV-I	BV conservative due to downward portion	0.375	400	Not Analyzed	No	N/A	Rosemount accoustic level. Will have trickle flow in column	N
446	PTN	3	081	5613-M-3081, SH 2	11	RHTR Drain Tank 3B Level transmitters and associated piping/valves	LIT-3-1506B	0.375	12	TV,D	Y	N/A		513		BV-I	BV conservative due to downward portion	0.375	400	Not Analyzed	No	N/A	Rosemount accoustic level. Will have trickle flow in column	N
446	PTN	3	081	5613-M-3081, SH 2	11	RHTR Drain Tank 3B Level transmitters and associated piping/valves	LIT-3-1506C	0.375	12	TV,D	Y	N/A		513		BV-I	BV conservative due to downward portion	0.375	400	Not Analyzed	No	N/A	Rosemount accoustic level. Will have trickle flow in column	N
446	PTN	3	081	5613-M-3081, SH 2	11	RHTR Drain Tank 3B Level transmitters and associated piping/valves	LIT-3-1505A	0.375	12	TV,D	Y	N/A		513		BV-I	BV conservative due to downward portion	0.375	400	Not Analyzed	No	N/A	Rosemount accoustic level. Will have trickle flow in column	N
446	PTN	3	081	5613-M-3081, SH 2	11	RHTR Drain Tank 3B Level transmitters and associated piping/valves	LIT-3-1506B	0.375	12	TV,D	Y	N/A		513		BV-I	BV conservative due to downward portion	0.375	400	Not Analyzed	No	N/A	Rosemount accoustic level. Will have trickle flow in column	N
446	PTN	3	081	5613-M-3081, SH 2	11	RHTR Drain Tank 3B Level transmitters and associated piping/valves	LIT-3-1505C	0.375	12	TV,D	Y	N/A		513		BV-I	BV conservative due to downward portion	0.375	400	Not Analyzed	No	N/A	Rosemount accoustic level. Will have trickle flow in column	N
447	PTN	3	081	5613-M-3081, SH 2	11	1" Vents and drains						HT		513					400		No	HT		
448	PTN	3	081	5613-M-3081, SH 2	12	Flow indication and associated valves, 1/2" tubing. [FE/FI 3-5121] [3-1/2"-2-C]	FI-3-5121	0.5	8	H	N	HT		513		H		0.500	400	8.5	Yes	No Protection Required	verify ambient temp; if hot no protection required	Y
452	PTN	3	081	5613-M-3081, SH 2	12	3/4" Drain/connection						HT		513					400		No	HT		
453	PTN	3	081	5613-M-3081, SH 2	12	3/4" vent						HT		513					400		No	HT		
454	PTN	3	081	5613-M-3081, SH 2	12	Blind Flange						HT		513					400		No	HT		
456	PTN	3	081	5613-M-3081, SH 2	13	3/4" Drain/connection						HT		513					400		No	HT		
455	PTN	3	081	5613-M-3081, SH 2	13	10" piping/ bypass FE-3-5121 [3-10"-2-C]						HT		513					400		No	HT		
458	PTN	3	081	5613-M-3081, SH 2	14	3/4"drain/connection						HT		513					400		No	HT		
457	PTN	3	081	5613-M-3081, SH 2	14	8" piping/ bypass CV-3-1505 [3-8"-2-C, 3-8"-5-D]						I		513					400		No	I		
462	PTN	3	081	5613-M-3081, SH 2	15	3/4"drain/connection						HT		513					400		No	HT		
463	PTN	3	081	5613-M-3081, SH 2	15	Blind Flange						HT		513					400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
465	PTN	3	081	5613-M-3081, SH 2	16	3/4" Drain/connection						HT		513					400		No	HT		
464	PTN	3	081	5613-M-3081, SH 2	16	8" piping/ bypass CV-3-1516 [3-8"-2-C, 3-8"-5-E]						I		513					400		No	I		
363	PTN	3	081	5613-M-3081, SH 1	1	1/2" Vent; capped pipe	3-30-771	0.5				HT		513				0.500	400		No	HT		
363	PTN	3	081	5613-M-3081, SH 1	1	1/2" Vent; capped pipe	3-30-705	Not provided						513	Tube OD of 0.5 assumed			0.500	400		No	0		
365	PTN	3	081	5613-M-3081, SH 1	2	Test Connection (PX) and 1/2 piping	PX-3-1411	0.5				HT		513				0.500	400		No	HT		
366	PTN	3	081	5613-M-3081, SH 1	3	PI & associated 3/4" pipe & Valve	PI-3-6686	0.75				HT		441				0.750	400		No	HT		
370	PTN	3	081	5613-M-3081, SH 1	3	(4) Blind flanged sections	None	Not provided				HT		441	Tube OD of 0.5 assumed			0.500	400		No	HT		
370	PTN	3	081	5613-M-3081, SH 1	3	(4) Blind flanged sections	None	Not provided						441	Tube OD of 0.5 assumed			0.500	400		No	0		
370	PTN	3	081	5613-M-3081, SH 1	3	(4) Blind flanged sections	None	Not provided						441	Tube OD of 0.5 assumed			0.500	400		No	0		
370	PTN	3	081	5613-M-3081, SH 1	3	(4) Blind flanged sections	None	Not provided						441	Tube OD of 0.5 assumed			0.500	400		No	0		
368	PTN	3	081	5613-M-3081, SH 1	3	1" Drains	3-2106	1				HT		441				1.000	400		No	HT		
368	PTN	3	081	5613-M-3081, SH 1	3	1" Drains	3-2107	1						441				1.000	400		No	0		
369	PTN	3	081	5613-M-3081, SH 1	3	3/4" Vents	3-2124	0.75				HT		441				0.750	400		No	HT		
369	PTN	3	081	5613-M-3081, SH 1	3	3/4" Vents	3-2125	0.75						441				0.750	400		No	0		
371	PTN	3	081	5613-M-3081, SH 1	4	1" piping/ reducers - bypass Valve 3-30-1130	3-2092	1				HT		441				1.000	400		No	HT		
372	PTN	3	081	5613-M-3081, SH 1	5	3" piping to 3B Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	3-2093	1						108				1.000	100		No	0		
372	PTN	3	081	5613-M-3081, SH 1	5	3" piping to 3B Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	RO-3-6686B	3				HT		108				3.000	100		No	HT		
374	PTN	3	081	5613-M-3081, SH 1	5	1" Drain	3-2108	0.75				HT		108				0.750	100		No	HT		
373	PTN	3	081	5613-M-3081, SH 1	5	3/4" Vent	3-2126	0.75				HT		108				0.750	100		No	HT		
376	PTN	3	081	5613-M-3081, SH 1	6	3/4" Vent	3-2122	0.75				HT		441				0.750	400		No	HT		
380	PTN	3	081	5613-M-3081, SH 1	7	3/4" Drain/connection	3-30-1093	0.75				HT		387				0.750	380		No	HT		
381	PTN	3	081	5613-M-3081, SH 1	8	1/2" pipe - 1/4 SS Tubing to Sample System	3-30-689	0.5				HT		387				0.500	380		No	HT		
382	PTN	3	081	5613-M-3081, SH 1	8	Test Connection (PX) and associated piping (3/8")	PX-3-1450	0.375				HT		387				0.375	380		No	HT		
386	PTN	3	081	5613-M-3081, SH 1	9	3/4" Drain/connection	3-30-751	0.75				HT		387				0.750	380		No	HT		
387	PTN	3	081	5613-M-3081, SH 1	10	8" Pipe to 3B Condenser [3-8"-5-D] [Bypass CV-3-1503B]	3-30-754	8				I		387				Not Analyzed	380		No	I	Verify already Insulated	Y
388	PTN	3	081	5613-M-3081, SH 1	10	3/4" Drain/connection	3-30-753	0.75				HT		119				0.750	110		No	HT		
390	PTN	3	081	5613-M-3081, SH 1	12	Level transmitters and associated piping/valves	LIT-3-1503A	2				HT		441				2.000	400		No	HT		
390	PTN	3	081	5613-M-3081, SH 1	12	Level transmitters and associated piping/valves	LIT-3-1503B	2						441				2.000	400		No	0		
390	PTN	3	081	5613-M-3081, SH 1	12	Level transmitters and associated piping/valves	LIT-3-1503C	2						441				2.000	400		No	0		
392	PTN	3	081	5613-M-3081, SH 1	12	1" Drains	3-30-1081	1				HT		387				1.000	380		No	HT		
392	PTN	3	081	5613-M-3081, SH 1	12	1" Drains	3-30-1082	1						387				1.000	380		No	0		
392	PTN	3	081	5613-M-3081, SH 1	12	1" Drains	3-30-1083	1						387				1.000	380		No	0		
391	PTN	3	081	5613-M-3081, SH 1	12	1" Vents	3-30-1040	1				HT		309				1.000	300		No	HT		
391	PTN	3	081	5613-M-3081, SH 1	12	1" Vents	3-30-1041	1						309				1.000	300		No	0		
391	PTN	3	081	5613-M-3081, SH 1	12	1" Vents	3-30-1042	1						309				1.000	300		No	0		
394	PTN	3	081	5613-M-3081, SH 1	13	1/2" Vent; capped pipe	3-30-770	0.75				HT		513				0.750	400		No	HT		
396	PTN	3	081	5613-M-3081, SH 1	14	Test Connection (PX) and 1/2 piping	PX-3-1410	0.5				HT		513				0.500	400		No	HT		
397	PTN	3	081	5613-M-3081, SH 1	15	PI & associated 3/4" pipe & Valve	PI-3-6685	0.75				HT		441				0.750	400		No	HT		
401	PTN	3	081	5613-M-3081, SH 1	15	(4) Blind flanged sections	None	Not provided				HT		441	Tube OD of 0.5 assumed			0.500	400		No	HT		
399	PTN	3	081	5613-M-3081, SH 1	15	1" Drains	3-2102	1				HT		441				1.000	400		No	HT		
399	PTN	3	081	5613-M-3081, SH 1	15	1" Drains	3-2103	1						441				1.000	400		No	0		
399	PTN	3	081	5613-M-3081, SH 1	15	1" Drains	3-2104	1						441				1.000	400		No	0		
400	PTN	3	081	5613-M-3081, SH 1	15	3/4" Vents	3-2120	0.75				HT		441				0.750	400		No	HT		
400	PTN	3	081	5613-M-3081, SH 1	15	3/4" Vents	3-2119	0.75						441				0.750	400		No	0		
402	PTN	3	081	5613-M-3081, SH 1	16	1" piping/ reducers - bypass Valve 3-30-1130	3-2090	1				HT		441				1.000	400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
403	PTN	3	081	5613-M-3081, SH 1	17	3" piping to 3B Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	3-2090	3						441				3.000	400		No	0		
403	PTN	3	081	5613-M-3081, SH 1	17	3" piping to 3B Condenser [3"-5CM] 1" orifice bypass line [1"-3CM]	RO-3-6685B	3				HT		108				3.000	100		No	HT		
405	PTN	3	081	5613-M-3081, SH 1	17	1" Drain	3-2105	1				HT		108				1.000	100		No	HT		
404	PTN	3	081	5613-M-3081, SH 1	17	3/4" Vent	3-2121	0.75				HT		108				0.750	100		No	HT		
409	PTN	3	081	5613-M-3081, SH 1	18	3/4" Drain/connection	3-30-1121	0.75				HT		387				0.750	380		No	HT		
410	PTN	3	081	5613-M-3081, SH 1	19	1/2" pipe - 1/4 SS Tubing to Sample System	3-30-688	0.5				HT		387				0.500	380		No	HT		
411	PTN	3	081	5613-M-3081, SH 1	19	Test Connection (PX) and associated piping (3/8")	PX-3-1449	0.375				HT		387				0.375	380		No	HT		
415	PTN	3	081	5613-M-3081, SH 1	20	3/4" Drain/connection	3-30-1125	0.75				HT		387				0.750	380		No	HT		
416	PTN	3	081	5613-M-3081, SH 1	21	8" Pipe to 3B Condenser [3-8"-5-D] [Bypass CV-3-1523B]	3-30-1020	8				I		387				Not Analyzed	380		No	I	Verify already Insulated	Y
417	PTN	3	081	5613-M-3081, SH 1	21	3/4" Drain/connection	3-30-1126	0.75				HT		387				0.750	380		No	HT		
418	PTN	3	081	5613-M-3081, SH 1	22	10" Piping from Drain Tks outlet control valve [CV-3-1523B) to 3B Condenser	3-30-1017	10				I		119				Not Analyzed	110		No	I		
419	PTN	3	081	5613-M-3081, SH 1	23	Level transmitters and associated piping/valves	LIT-3-1523A	2				HT		441				2.000	400		No	HT		
419	PTN	3	081	5613-M-3081, SH 1	23	Level transmitters and associated piping/valves	LIT-3-1523B	2						441				2.000	400		No	0		
419	PTN	3	081	5613-M-3081, SH 1	23	Level transmitters and associated piping/valves	LIT-3-1523C	2						441				2.000	400		No	0		
421	PTN	3	081	5613-M-3081, SH 1	23	1" Drains	3-30-1087	1				HT		387				1.000	380		No	HT		
421	PTN	3	081	5613-M-3081, SH 1	23	1" Drains	3-30-1088	1						387				1.000	380		No	0		
421	PTN	3	081	5613-M-3081, SH 1	23	1" Drains	3-30-1089	1						387				1.000	380		No	0		
420	PTN	3	081	5613-M-3081, SH 1	23	1" Vents	3-30-1047	1				HT		309				1.000	300		No	HT		
420	PTN	3	081	5613-M-3081, SH 1	23	1" Vents	3-30-1048	1						309				1.000	300		No	0		
420	PTN	3	081	5613-M-3081, SH 1	23	1" Vents	3-30-1049	1						309				1.000	300		No	0		
353	PTN	3	080	5613-M-3080, SH 1	3	Level switches for Gland Steam Condenser Drain Pump Start/stop control of pump and control room annunciation (high level).						HT		350					350		No	HT		
356	PTN	3	080	5613-M-3080, SH 1	5	Level switch for condenser pit sump pump with control room annunciation and alarm (high)						HT		350					350		No	HT		
358	PTN	3	080	5613-M-3080, SH 1	5	1" vent						HT		350					350		No	HT		
357	PTN	3	080	5613-M-3080, SH 1	5	4", 6" piping Condenser Pit Sump						I		350					350		No	I		
1393	PTN	3	SGWLU / 078	5613-M-3078, SH 1	2	2" Pipe up to locked closed valves during normal operation SGWL-3-011, -031, -049						I		518					400		No	I		
1395	PTN	3	SGWLU / 078	5613-M-3078, SH 1	4	2" Pipe up to locked closed valves during normal operation SGWL-3-007, -025, -042						I		518					400		No	I		
1295	PTN	3	MSS / 072	5613-M-3078, SH 1	5	3/4" piping (x3) Main steam to Wet Layup System	SGWL-3-022	0.75	0.5	TV-I	Y	HT		523	Tube OD of 0.5 assumed	TV-I		0.500	400	20	Yes	No Protection Required		
1295	PTN	3	MSS / 072	5613-M-3078, SH 1	5	3/4" piping (x3) Main steam to Wet Layup System	SGWL-3-028	0.75	0.5	TV-I	Y	HT		523	Tube OD of 0.5 assumed	TV-I		0.500	400	20	Yes	No Protection Required		
1295	PTN	3	MSS / 072	5613-M-3078, SH 1	5	3/4" piping (x3) Main steam to Wet Layup System	SGWL-3-046	0.75	0.5	TV-I	Y	HT		523	Tube OD of 0.5 assumed	TV-I		0.500	400	20	Yes	No Protection Required		
1396	PTN	3	SGWLU / 078	5613-M-3078, SH 1	5	3/4" Pipe to SGWL-3-022, -028, -046	N/A	N/A	N/A	N/A	N/A	N/A		518		N/A			400		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	FE-3-478	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-3-478AX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-3-478BX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-478AX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-3-478BX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	3-20-1365	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	FE-3-488	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-3-488AX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-3-488BX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-488AX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-3-488BX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	3-20-1366	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	FE-3-498	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-3-498AX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PX-3-498BX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-498AX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	PT-3-498BX	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1153	PTN	3	FWS / 074	5613-M-3074, SH 5	1	LEFM pressure, flow and temperature transmitters + Pressure test points and Vent	3-20-1367	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1211	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" & 2" CV bypass line	SGB-3-082C	0.75				HT		450				0.750	400		No	HT		
1211	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" & 2" CV bypass line	SGB-3-082B	0.75				HT		450				0.750	400		No	HT		
1211	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" & 2" CV bypass line	SGB-3-082A	0.75				HT		450				0.750	400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1208	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	Flow transmitters	FT-3-6277C	0.75	40	H,D	N	HT		450		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
1208	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	Flow transmitters	FT-3-6277B	0.75	40	H,D	N	HT		450		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
1208	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	Flow transmitters	FT-3-6277A	0.75	40	H,D	N	HT		450		BV	BV conservative due to downward portion	0.750	400	0.5	No	HT	HT	N
1209	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	Temperature indication	N/A	N/A				HT	No heat trace required for TIs.	450					400		No	HT		
1213	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" manual vents	SGB-3-052	0.75				HT		450				0.750	400		No	HT		
1213	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" manual vents	SGB-3-051	0.75				HT		450				0.750	400		No	HT		
1213	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" manual vents	SGB-3-050	0.75				HT		450				0.750	400		No	HT		
1212	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" test connections	SGB-3-044	0.75				HT		450				0.750	400		No	HT		
1212	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" test connections	SGB-3-045	0.75				HT		450				0.750	400		No	HT		
1212	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" test connections	SGB-3-046	0.75				HT		450				0.750	400		No	HT		
1212	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" test connections	SGB-3-047	0.75				HT		450				0.750	400		No	HT		
1212	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" test connections	SGB-3-048	0.75				HT		450				0.750	400		No	HT		
1212	PTN	3	FWS / 074	5613-M-3074, Sh 4	1	3/4" test connections	SGB-3-049	0.75				HT		450				0.750	400		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	LC-3-6265B	0.375	60	H,D	N	N/A		365		BV	BV conservative due to downward portion	0.375	360	Not Analyzed	No	N/A		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	LT-6265	0.375	14	H	Y	HT		365		H-I		0.375	360	20.7	Yes	No Protection Required		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	LSH-3-6266	0.5	N/A	N/A	N/A	N/A	condensation will maintain flow through switch	365		N/A		0.500	360		No	N/A		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	LSL-3-6266	1	N/A	N/A	N/A	N/A	condensation will maintain flow through switch	365		N/A		1.000	360		No	N/A		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	LG-3-6290	0.75				HT		365				0.750	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-087	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-088	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-093	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-094	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-107	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-106	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-097	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-100	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-101	0.5				HT		365				0.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-102	1.5				HT		365				1.500	360		No	HT		
1214	PTN	3	FWS / 074	5613-M-3074, Sh 4	2	Blowdown Tank level instrumentation lines	SGB-3-103	1.5				HT		365				1.500	360		No	HT		
1225	PTN	3	FWS / 074	5613-M-3074, Sh 4	4	3/4" strainer bypass	SGB-3-078	0.75				HT		380				0.750	380		No	HT		
1224	PTN	3	FWS / 074	5613-M-3074, Sh 4	4	1 1/2" & 2" blowdown tank steam discharge to the condenser	ST-3-59	1.5	N/A	N/A	N/A	N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	380		N/A		1.500	380		No	N/A		
1226	PTN	3	FWS / 074	5613-M-3074, Sh 4	4	Manual drains	SGB-3-058	1				HT		380				1.000	380		No	HT		
1226	PTN	3	FWS / 074	5613-M-3074, Sh 4	4	Manual drains	SGB-3-079	0.75				HT		380				0.750	380		No	HT		
1228	PTN	3	FWS / 074	5613-M-3074, Sh 4	5	Manual vents	SGB-3-062	0.5				HT		365				0.500	360		No	HT		
1228	PTN	3	FWS / 074	5613-M-3074, Sh 4	5	Manual vents	SGB-3-063	0.75				HT		365				0.750	360		No	HT		
1227	PTN	3	FWS / 074	5613-M-3074, Sh 4	5	12", 16", & 20" blowdown tank steam discharge to extraction steam	CV-3-6267B	10				I		365				Not Analyzed	360		No	I	Verify already Insulated	Y
1230	PTN	3	FWS / 074	5613-M-3074, Sh 4	7	2 1/2" waste holdup tank connection	SGB-3-069	2.5				HT		380				2.000	380		No	HT		
1231	PTN	3	FWS / 074	5613-M-3074, Sh 4	8	2" wet layup line	Downstream of SGB-3-009	Not provided				HT		450	Tube OD of 0.5 assumed			0.500	400		No	HT		
1231	PTN	3	FWS / 074	5613-M-3074, Sh 4	8	2" wet layup line	Downstream of SGB-3-008	Not provided				HT		450	Tube OD of 0.5 assumed			0.500	400		No	HT		
1231	PTN	3	FWS / 074	5613-M-3074, Sh 4	8	2" wet layup line	Downstream of SGB-3-007	Not provided				HT		450	Tube OD of 0.5 assumed			0.500	400		No	HT		
1199	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	DPIs	DPI-3-497	0.375				HT		436				0.375	400		No	HT		
1199	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	DPIs	DPI-3-487	0.375				HT		436				0.375	400		No	HT		
1199	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	DPIs	DPI-3-477	0.375				HT		436				0.375	400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1198	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	DPS	DPS-3-2902	0.5				HT		436				0.500	400		No	HT		
1198	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	DPS	DPS-3-2901	0.5				HT		436				0.500	400		No	HT		
1198	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	DPS	DPS-3-2900	0.5				HT		436				0.500	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-496X	0.375				HT		436				0.375	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-496	0.75				HT		436				0.750	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-497	0.75				HT		436				0.750	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-486X	0.375				HT		436				0.375	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-486	0.75				HT		436				0.750	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-487	0.75				HT		436				0.750	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-476X	0.375				HT		436				0.375	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-476	0.75				HT		436				0.750	400		No	HT		
1200	PTN	3	FWS / 074	5613-M-3074, Sh 3	1	Venturi flow transmitters	FT-3-477	0.75				HT		436				0.750	400		No	HT		
1203	PTN	3	FWS / 074	5613-M-3074, Sh 3	2	6" line from condensate transfer pumps	3-20-040	6				I		436				Not Analyzed	400		No	I	Verify already Insulated	Y
1204	PTN	3	FWS / 074	5613-M-3074, Sh 3	3	6" FW motor-operated FRV bypass	FCV-3-499	4				I		450				4.000	400		No	I		
1204	PTN	3	FWS / 074	5613-M-3074, Sh 3	3	6" FW motor-operated FRV bypass	FCV-3-489	4				I		450				4.000	400		No	I		
1204	PTN	3	FWS / 074	5613-M-3074, Sh 3	3	6" FW motor-operated FRV bypass	FCV-3-479	4				I		450				4.000	400		No	I		
1205	PTN	3	FWS / 074	5613-M-3074, Sh 3	4	4" AFW piping connected to main feed headers	3-20-339	4				HT		450				4.000	400		No	HT		
1205	PTN	3	FWS / 074	5613-M-3074, Sh 3	4	4" AFW piping connected to main feed headers	3-20-239	4				HT		450				4.000	400		No	HT		
1205	PTN	3	FWS / 074	5613-M-3074, Sh 3	4	4" AFW piping connected to main feed headers	3-20-139	4				HT		450				4.000	400		No	HT		
1207	PTN	3	FWS / 074	5613-M-3074, Sh 3	6	2" line to/from wet layup	Downstream of 3-20-332	2				HT		450				2.000	400		No	HT		
1207	PTN	3	FWS / 074	5613-M-3074, Sh 3	6	2" line to/from wet layup	Downstream of 3-20-232	2				HT		450				2.000	400		No	HT		
1207	PTN	3	FWS / 074	5613-M-3074, Sh 3	6	2" line to/from wet layup	Downstream of 3-20-132	2				HT		450				2.000	400		No	HT		
1171	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Pressure & temperature indication	PI-3-1435	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1171	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Pressure & temperature indication	PI-3-1436	Not provided				HT		436	Tube OD of 0.5 assumed			0.500	400		No	HT		
1171	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Pressure & temperature indication	PT-3-1616X PI-3-1616X	0.375				HT		436				0.375	400		No	HT		
1174	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Bypass/warmup valves around FWH 3-way valves	3-20-122	1				HT		436				1.000	400		No	HT		
1174	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Bypass/warmup valves around FWH 3-way valves	3-20-222	1				HT		436				1.000	400		No	HT		
1173	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Manual vents & drains	3-20-557	1				HT		436				1.000	400		No	HT		
1173	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Manual vents & drains	3-30-621 3-30-242	0.5				HT		436				0.500	400		No	HT		
1173	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Manual vents & drains	SWLU-3-071	1				HT		436				1.000	400		No	HT		
1173	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Manual vents & drains	3-30-558	1				HT		436				1.000	400		No	HT		
1173	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Manual vents & drains	3-30-622 3-30-241	0.5				HT		436				0.500	400		No	HT		
1173	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Manual vents & drains	SWLU-3-072	1				HT		436				1.000	400		No	HT		
1173	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Manual vents & drains	3-20-676	0.75				HT		436				0.750	400		No	HT		
1173	PTN	3	FWS / 074	5613-M-3074, Sh 2	1	Manual vents & drains	3-20-303	0.375				HT		436				0.375	400		No	HT		
1175	PTN	3	FWS / 074	5613-M-3074, Sh 2	2	18" & 24" feedwater bypass around HP heaters 6A/6B	3-20-122 3-20-222	16				I		436				Not Analyzed	400		No	I	Verify already Insulated	Y
1178	PTN	3	FWS / 074	5613-M-3074, Sh 2	4	Manual vents & drains	FDWR-3-005	1				HT		436				1.000	400		No	HT		
1178	PTN	3	FWS / 074	5613-M-3074, Sh 2	4	Manual vents & drains	FDWR-3-014	1				HT		436				1.000	400		No	HT		
1178	PTN	3	FWS / 074	5613-M-3074, Sh 2	4	Manual vents & drains	FDWR-3-007	0.75				HT		436				0.750	400		No	HT		
1177	PTN	3	FWS / 074	5613-M-3074, Sh 2	4	12" branch line off main FW header	FDWR-3-006	12				I		436				Not Analyzed	400		No	I	Verify already Insulated	Y
1179	PTN	3	FWS / 074	5613-M-3074, Sh 2	5	10" line to the condenser	FDWR-3-013	10				I		373				Not	370		No	I	Verify already Insulated	Y
1180	PTN	3	FWS / 074	5613-M-3074, Sh 2	6	10" line to the condenser	FDWR-3-012	10				I		373				Not	370		No	I	Verify already Insulated	Y
1181	PTN	3	FWS / 074	5613-M-3074, Sh 2	7	6" line to wet layup	FDWR-3-008	6				I		100				Not	100		No	I		
1182	PTN	3	FWS / 074	5613-M-3074, Sh 2	8	10" line to circ water and the discharge canal	FDWR-3-010	10				I		100				Not Analyzed	100		No	I		
1183	PTN	3	FWS / 074	5613-M-3074, Sh 2	8	Manual vents & drains	FDWR-3-009	1				HT		100				1.000	100		No	HT		
1183	PTN	3	FWS / 074	5613-M-3074, Sh 2	8	Manual vents & drains	FDWR-3-011	0.75				HT		100				0.750	100		No	HT		
1184	PTN	3	FWS / 074	5613-M-3074, Sh 2	9	Temperature indication and LC	LC-3-2210	1.5				HT	No heat trace required on TIs.	200				1.500	200		No	HT		
1187	PTN	3	FWS / 074	5613-M-3074, Sh 2	9	Manual vents	3-20-175	Not provided				HT		200	Tube OD of 0.5 assumed			0.500	200		No	HT		
1188	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Pressure & diff. pressure indication	PI-3-1580	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		
1188	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Pressure & diff. pressure indication	PI-3-1582	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1188	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Pressure & diff. pressure indication	DPI-3-2010	0.5				HT		373				0.500	370		No	HT		
1188	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Pressure & diff. pressure indication	DPI-3-2009	0.5				HT		373				0.500	370		No	HT		
1188	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Pressure & diff. pressure indication	DPI-3-2007	0.5				HT		373				0.500	370		No	HT		
1188	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Pressure & diff. pressure indication	DPI-3-2006	0.5				HT		373				0.500	370		No	HT		
1188	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Pressure & diff. pressure indication	PI-3-1584	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1087	0.75				HT		373				0.750	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1086	0.75				HT		373				0.750	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1013	0.5				HT		373				0.500	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1014	0.5				HT		373				0.500	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1009	0.75				HT		373				0.750	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1008	0.75				HT		373				0.750	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1007	0.75				HT		373				0.750	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1006	0.75				HT		373				0.750	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-174	1				HT		373				1.000	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-173	1				HT		373				1.000	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-997	1				HT		373				1.000	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-998	1				HT		373				1.000	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1002	0.5				HT		373				0.500	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1004	0.5				HT		373				0.500	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1000	0.5				HT		373				0.500	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-998	0.5				HT		373				0.500	370		No	HT		
1190	PTN	3	FWS / 074	5613-M-3074, Sh 2	10	Manual drains	3-20-1012	0.5				HT		373				0.500	370		No	HT		
1193	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	3" CV bypass line	3-20-047	3				HT		373				3.000	370		No	HT		
1193	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	3" CV bypass line	3-20-048	3				HT		373				3.000	370		No	HT		
1191	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Pressure & temperature indication	PI-3-1581	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		
1191	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Pressure & temperature indication	PI-3-1583	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-170	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-172	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	2-20-1088	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1082	0.75				HT		373				0.750	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1081	0.75				HT		373				0.750	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1084	0.75				HT		373				0.750	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1010	0.75				HT		373				0.750	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1083	0.75				HT		373				0.750	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1015	0.5				HT		373				0.500	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1089	0.5				HT		373				0.500	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1085	0.75				HT		373				0.750	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1016	0.75				HT		373				0.750	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1011	0.5				HT		373				0.500	370		No	HT		
1194	PTN	3	FWS / 074	5613-M-3074, Sh 2	11	Manual vents & drains	3-20-1090	0.5				HT		373				0.500	370		No	HT		
1195	PTN	3	FWS / 074	5613-M-3074, Sh 2	12	3" FW pump seal water crosstie line	3-20-046	3				HT		373				3.000	370		No	HT		
1195	PTN	3	FWS / 074	5613-M-3074, Sh 2	12	3" FW pump seal water crosstie line	3-20-045	3				HT		373				3.000	370		No	HT		
1197	PTN	3	FWS / 074	5613-M-3074, Sh 2	13	Manual vents & drains	CV-3-2210	4				HT		200				4.000	200		No	HT		
1164	PTN	3	FWS / 074	5613-M-3074, SH 1	3	8" FW recirc line back to FW pump suction	CV-3-1413	6				I		450				Not Analyzed	400		No	I	Verify already Insulated	Y
1164	PTN	3	FWS / 074	5613-M-3074, SH 1	3	8" FW recirc line back to FW pump suction	CV-3-1414	6				I		450				Not Analyzed	400		No	I	Verify already Insulated	Y
1167	PTN	3	FWS / 074	5613-M-3074, SH 1	4	6" & 8" FW recirc line back to condenser	CV-3-1415 CV-3-1416	6				I		380				Not Analyzed	380		No	I	Verify already Insulated	Y
1167	PTN	3	FWS / 074	5613-M-3074, SH 1	4	6" & 8" FW recirc line back to condenser	CV-3-1417 CV-3-1418	6				I		380				Not Analyzed	380		No	I	Verify already Insulated	Y
1168	PTN	3	FWS / 074	5613-M-3074, SH 1	4	Manual drains	3-20-277	0.75				HT		450				0.750	400		No	HT		
1168	PTN	3	FWS / 074	5613-M-3074, SH 1	4	Manual drains	3-20-146	0.75				HT		450				0.750	400		No	HT		
1168	PTN	3	FWS / 074	5613-M-3074, SH 1	4	Manual drains	3-20-349	0.75				HT		450				0.750	400		No	HT		
1168	PTN	3	FWS / 074	5613-M-3074, SH 1	4	Manual drains	3-20-290	0.75				HT		450				0.750	400		No	HT		
1169	PTN	3	FWS / 074	5613-M-3074, SH 1	4	Manual vents	3-20-147	0.75				HT		450				0.750	400		No	HT		
1169	PTN	3	FWS / 074	5613-M-3074, SH 1	4	Manual vents	3-20-247	0.75				HT		450				0.750	400		No	HT		
1170	PTN	3	FWS / 074	5613-M-3074, SH 1	5	14" line from heater drain system	FWHR-3-001	14				I		373				Not Analyzed	370		No	I	Verify already Insulated	Y
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PS-3-2011	0.5	24	H	N	HT		307		H		0.500	300	6	No	HT	HT	N
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PS-3-2027	0.5	4	H	N	HT		307		H		0.500	300	6	Yes	No Protection Required		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PS-3-2054	0.5	0.5	H	N	HT		307		H		0.500	300	6	Yes	No Protection Required		
1048	PTN	3	COND / 073	5613-M-3073, SH 3	2	LP heater condensate side relief valves	RV-3-1418	0.75				HT		307				0.750	300		No	HT		
1048	PTN	3	COND / 073	5613-M-3073, SH 3	2	LP heater condensate side relief valves	RV-3-3410	Not provided				HT		110	Tube OD of 0.5 assumed			0.500	110		No	HT		
1048	PTN	3	COND / 073	5613-M-3073, SH 3	2	LP heater condensate side relief valves	RV-3-3412	Not provided				HT		200	Tube OD of 0.5 assumed			0.500	200		No	HT		
1048	PTN	3	COND / 073	5613-M-3073, SH 3	2	LP heater condensate side relief valves	RV-3-3414	Not provided				HT		307	Tube OD of 0.5 assumed			0.500	300		No	HT		
1049	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual drains	3-20-145	0.5				HT		307				0.500	300		No	HT		
1049	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual drains	3-20-635	0.5				HT		307				0.500	300		No	HT		
1049	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual drains	3-30-123	0.75				HT		110				0.750	110		No	HT		
1049	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual drains	3-30-429A	1				HT		255				1.000	250		No	HT		
1049	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual drains	3-30-527	0.75				HT		307				0.750	300		No	HT		
1049	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual drains	FWHR-3-014	0.75				HT		169				0.750	160		No	HT		
1050	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual vents	3-20-093	2				HT		307				2.000	300		No	HT		
1050	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual vents	3-20-417	0.75				HT		255				0.750	250		No	HT		
1050	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual vents	3-30-121	0.75				HT		110				0.750	110		No	HT		
1050	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual vents	3-30-221	0.75				HT		200				0.750	200		No	HT		
1050	PTN	3	COND / 073	5613-M-3073, SH 3	2	Manual vents	3-30-521	0.75				HT		307				0.750	300		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PI-3-1423	0.5				HT		110				0.500	110		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PI-3-1424	0.5				HT		110				0.500	110		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PI-3-1426	0.5				HT		200				0.500	200		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PX-3-1432	0.375				HT		200				0.375	200		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PX-3-1433	0.5				HT		169				0.500	160		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PX-3-1438	0.5				HT		255				0.500	250		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PX-3-1439	0.5				HT		200				0.500	200		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PX-3-1442	0.5				HT		169				0.500	160		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PX-3-1443	0.5				HT		307				0.500	300		No	HT		
1051	PTN	3	COND / 073	5613-M-3073, SH 3	2	Pressure connections	PX-3-1444	0.5				HT		255				0.500	250		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PS-3-2014	0.5	1	H	N	HT		307		H		0.500	300	6	Yes	No Protection Required		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PS-3-2032	0.5	26	H	N	HT		307		H		0.500	300	6	No	HT	HT	N
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PS-3-2055	0.5	1	H	N	HT		307		H		0.500	300	6	Yes	No Protection Required		
1053	PTN	3	COND / 073	5613-M-3073, SH 3	3	LP heater condensate side relief valves	RV-3-1419	0.75				HT		307				0.750	300		No	HT		
1053	PTN	3	COND / 073	5613-M-3073, SH 3	3	LP heater condensate side relief valves	RV-3-3411	Not provided				HT		110	Tube OD of 0.5 assumed			0.500	110		No	HT		
1053	PTN	3	COND / 073	5613-M-3073, SH 3	3	LP heater condensate side relief valves	RV-3-3413	Not provided				HT		200	Tube OD of 0.5 assumed			0.500	200		No	HT		
1053	PTN	3	COND / 073	5613-M-3073, SH 3	3	LP heater condensate side relief valves	RV-3-3415	Not provided				HT		307	Tube OD of 0.5 assumed			0.500	300		No	HT		
1054	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual drains	3-30-4298	1				HT		255				1.000	250		No	HT		
1054	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual drains	3-20-089	0.75				HT		169				0.750	160		No	HT		
1054	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual drains	3-20-634	0.5				HT		307				0.500	300		No	HT		
1054	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual drains	3-20-732	2				HT		307				2.000	300		No	HT		
1054	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual drains	3-20-960	0.75				HT		255				0.750	250		No	HT		
1054	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual drains	3-30-124	0.75				HT		110				0.750	110		No	HT		
1054	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual drains	3-30-224	0.75				HT		169				0.750	160		No	HT		
1054	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual drains	3-30-528	0.75				HT		307				0.750	300		No	HT		
1055	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual vents	3-20-245	0.75				HT		255				0.750	250		No	HT		
1055	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual vents	3-30-122	0.75				HT		110				0.750	110		No	HT		
1055	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual vents	3-30-222	0.75				HT		169				0.750	160		No	HT		
1055	PTN	3	COND / 073	5613-M-3073, SH 3	3	Manual vents	3-30-240 3-30-522	0.75				HT		307				0.750	300		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PI-3-1419	Not provided				HT		110	Tube OD of 0.5 assumed			0.500	110		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PI-3-1420					HT		110					110		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PI-3-6696	0.75				HT		307				0.750	300		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PX-3-1431	Not provided				HT		169	Tube OD of 0.5 assumed			0.500	160		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PX-3-1434	Not provided				HT		200	Tube OD of 0.5 assumed			0.500	200		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PX-3-1435	0.5				HT		169				0.500	160		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PX-3-1440	0.75				HT		255				0.750	250		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PX-3-1441	0.5				HT		200				0.500	200		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PX-3-1445	0.5				HT		307				0.500	300		No	HT		
1056	PTN	3	COND / 073	5613-M-3073, SH 3	3	Pressure connections	PX-3-1446	0.5				HT		255				0.500	250		No	HT		
1057	PTN	3	COND / 073	5613-M-3073, SH 3	4	14" FWH 1A, 1B, 2A, 2B bypass	3-20-206 3-20-106	14				N/A	Likely no heat trace required.	110				Not Analyzed	110		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1058	PTN	3	COND / 073	5613-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	LP heater 1A	2				HT		110				2.000	110		No	HT		
1058	PTN	3	COND / 073	5613-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	Upstream of 3-20-107	2				HT		110				2.000	110		No	HT		
1058	PTN	3	COND / 073	5613-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	Upstream of 3-20-207	2				HT		169				2.000	160		No	HT		
1058	PTN	3	COND / 073	5613-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	Upstream of 3-20-111	3				HT		255				3.000	250		No	HT		
1058	PTN	3	COND / 073	5613-M-3073, SH 3	5	2" and 3" connection to wet layup system (condensate side of isolation)	Upstream of 3-20-211	3				HT		255				3.000	250		No	HT		
1060	PTN	3	COND / 073	5613-M-3073, SH 3	6	Manual drains	3-20-034	1				HT		110				1.000	110		No	HT		
1060	PTN	3	COND / 073	5613-M-3073, SH 3	6	Manual drains	3-20-088	0.75				HT		110				0.750	110		No	HT		
1061	PTN	3	COND / 073	5613-M-3073, SH 3	6	Manual vents	3-20-094	0.75				HT		110				0.750	110		No	HT		
1059	PTN	3	COND / 073	5613-M-3073, SH 3	6	14" bypass lines around LP htrs 3A, 3B, 4A, 4B, 5A, and 5B	3-20-108 3-20-089 3-20-112 3-20-212	14				I		110				Not Analyzed	110		No	I		
1020	PTN	3	COND / 073	5613-M-3073, SH 2	1	Condensate line flow transmitter / indication	FT-3-1400	Not provided	27	H	N	HT	each leg 27/2	115	Tube OD of 0.5 assumed	H		0.500	110	1.2	No	HT	check ambient temp; if hot no protection required	Y
1021	PTN	3	COND / 073	5613-M-3073, SH 2	1	temperature & pressure gages	PI-3-1427	Not provided				HT		115	Tube OD of 0.5 assumed			0.500	110		No	HT		
1021	PTN	3	COND / 073	5613-M-3073, SH 2	1	temperature & pressure gages	PI-3-1428	Not provided						115	Tube OD of 0.5 assumed			0.500	110		No	0		
1021	PTN	3	COND / 073	5613-M-3073, SH 2	1	temperature & pressure gages	PX-3-1436	Not provided						115	Tube OD of 0.5 assumed			0.500	110		No	0		
1023	PTN	3	COND / 073	5613-M-3073, SH 2	1	manual vent, drain lines	CDPL-3-063	1				HT		115				1.000	110		No	HT		
1023	PTN	3	COND / 073	5613-M-3073, SH 2	1	manual vent, drain lines	3-20-894	0.75						115				0.750	110		No	0		
1023	PTN	3	COND / 073	5613-M-3073, SH 2	1	manual vent, drain lines	3-20-974A	4						115				4.000	110		No	0		
1023	PTN	3	COND / 073	5613-M-3073, SH 2	1	manual vent, drain lines	3-20-084	1						115				1.000	110		No	0		
1026	PTN	3	COND / 073	5613-M-3073, SH 2	3	manual drain lines	3-20-302	Not provided				HT		110	Tube OD of 0.5 assumed			0.500	110		No	HT		
1025	PTN	3	COND / 073	5613-M-3073, SH 2	3	14" condensate bypass line to LP heaters bypass and FW pump discharge	CV-3-2011	14				I		110				Not Analyzed	110		No	I		
1027	PTN	3	COND / 073	5613-M-3073, SH 2	4	2" condensate line for surge tank makeup	3-20-070	2				HT		115				2.000	110		No	HT		
1028	PTN	3	COND / 073	5613-M-3073, SH 2	5	2" condensate line to desuperheater valve (abandoned) and chem. Addition	3-20-069	2				HT		115				2.000	110		No	HT		
1029	PTN	3	COND / 073	5613-M-3073, SH 2	6	1/2" condensate line from CST	3-20-942	0.5				HT		115				0.500	110		No	HT		
1030	PTN	3	COND / 073	5613-M-3073, SH 2	7	6" wet layup line	3-6"-3-D	6				I		115				Not	110		No	I		
1031	PTN	3	COND / 073	5613-M-3073, SH 2	8	4" condensate line to discharge canal	3-20-973A	4				HT		115				4.000	110		No	HT		
1032	PTN	3	COND / 073	5613-M-3073, SH 2	8	manual drain lines	3-20-973B	4				HT		115				4.000	110		No	HT		
1032	PTN	3	COND / 073	5613-M-3073, SH 2	8	manual drain lines	3-20-973C	4						115				4.000	110		No	0		
1033	PTN	3	COND / 073	5613-M-3073, SH 2	9	4" condensate line to heater drain pump suction	3-4"-3-D	4				HT		115				4.000	110		No	HT		
1035	PTN	3	COND / 073	5613-M-3073, SH 2	10	manual drain lines	3-30-051	0.75				HT		115				0.750	110		No	HT		
1035	PTN	3	COND / 073	5613-M-3073, SH 2	10	manual drain lines	3-30-052	0.75						115				0.750	110		No	0		
1035	PTN	3	COND / 073	5613-M-3073, SH 2	10	manual drain lines	3-30-053	0.75						115				0.750	110		No	0		
1035	PTN	3	COND / 073	5613-M-3073, SH 2	10	manual drain lines	3-30-244	0.75						115				0.750	110		No	0		
1037	PTN	3	COND / 073	5613-M-3073, SH 2	11	6" & 18" condensate line to DWST	CV-3-1500	6				I		115				Not Analyzed	110		No	I		
1036	PTN	3	COND / 073	5613-M-3073, SH 2	11	pressure gage	PI-3-3633	Not provided				HT		115	Tube OD of 0.5 assumed			0.500	110		No	HT		
1038	PTN	3	COND / 073	5613-M-3073, SH 2	11	manual drain lines	3-20-015	0.75				HT		115				0.750	110		No	HT		
1042	PTN	3	COND / 073	5613-M-3073, SH 2	13	8" control valve bypass	3-20-063	8				I		115				Not	110		No	I		
1043	PTN	3	COND / 073	5613-M-3073, SH 2	14	1/2" chemical injection line	3-20-004	0.5				HT		115				0.500	110		No	HT		
1044	PTN	3	COND / 073	5613-M-3073, SH 2	15	1/2" chemical injection line	3-20-002	0.5				HT		115				0.500	110		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1045	PTN	3	COND / 073	5613-M-3073, SH 2	16	18"SJAE condenser bypass line	3-20-049	18				I		115				Not Analyzed	110		No	I		
995	PTN	3	COND / 073	5613-M-3073, SH 1	1	suction pressure gages	PX-3-1407	0.375				HT		109				0.375	100		No	HT		
995	PTN	3	COND / 073	5613-M-3073, SH 1	1	suction pressure gages	PI-3-1599	2						109				2.000	100		No	0		
995	PTN	3	COND / 073	5613-M-3073, SH 1	1	suction pressure gages	PX-3-1406	0.375						109				0.375	100		No	0		
997	PTN	3	COND / 073	5613-M-3073, SH 1	1	relief valve	RV-3-1417	0.75				HT		109				0.750	100		No	HT		
997	PTN	3	COND / 073	5613-M-3073, SH 1	1	relief valve	RV-3-1449	1						109				1.000	100		No	0		
997	PTN	3	COND / 073	5613-M-3073, SH 1	1	relief valve	RV-3-1416	0.75						109				0.750	100		No	0		
998	PTN	3	COND / 073	5613-M-3073, SH 1	1	manual vent, drain lines	3-20-199	2				HT		109				2.000	100		No	HT		
998	PTN	3	COND / 073	5613-M-3073, SH 1	1	manual vent, drain lines	3-20-739	0.5						109				0.500	100		No	0		
998	PTN	3	COND / 073	5613-M-3073, SH 1	1	manual vent, drain lines	3-20-547	2						109				2.000	100		No	0		
998	PTN	3	COND / 073	5613-M-3073, SH 1	1	manual vent, drain lines	3-20-099	2						109				2.000	100		No	0		
998	PTN	3	COND / 073	5613-M-3073, SH 1	1	manual vent, drain lines	3-20-745	0.5						109				0.500	100		No	0		
999	PTN	3	COND / 073	5613-M-3073, SH 1	2	condensate pump seal supply pressure gages	PI-3-3634	0.5				HT		109				0.500	100		No	HT		
1002	PTN	3	COND / 073	5613-M-3073, SH 1	2	manual drains	3-20-028	0.5				HT		109				0.500	100		No	HT		
1002	PTN	3	COND / 073	5613-M-3073, SH 1	2	manual drains	3-20-596B	Not provided						109	Tube OD of 0.5 assumed			0.500	100		No	0		
1002	PTN	3	COND / 073	5613-M-3073, SH 1	2	manual drains	3-20-543	Not provided						109	Tube OD of 0.5 assumed			0.500	100		No	0		
1002	PTN	3	COND / 073	5613-M-3073, SH 1	2	manual drains	3-20-596C	Not provided						109	Tube OD of 0.5 assumed			0.500	100		No	0		
1002	PTN	3	COND / 073	5613-M-3073, SH 1	2	manual drains	3-20-025	0.5						109				0.500	100		No	0		
1002	PTN	3	COND / 073	5613-M-3073, SH 1	2	manual drains	3-20-596A	Not provided						109	Tube OD of 0.5 assumed			0.500	100		No	0		
1004	PTN	3	COND / 073	5613-M-3073, SH 1	3	local condensate pump discharge pressure instruments	PI-3-1422	0.25						373				Not Analyzed	370		No	0		
1004	PTN	3	COND / 073	5613-M-3073, SH 1	3	local condensate pump discharge pressure instruments	PX-3-3411	0.25						373				Not Analyzed	370		No	0		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FE-3-1419	Not provided				HT		373	Tube OD of 0.5 assumed			0.500	370		No	HT		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FE-3-1420	Not provided						373	Tube OD of 0.5 assumed			0.500	370		No	0		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FE-3-1421	Not provided						373	Tube OD of 0.5 assumed			0.500	370		No	0		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FIT-3-1419A	Not provided						373	Tube OD of 0.5 assumed			0.500	370		No	0		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FIT-3-1420A	Not provided						373	Tube OD of 0.5 assumed			0.500	370		No	0		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FIT-3-1421A	Not provided						373	Tube OD of 0.5 assumed			0.500	370		No	0		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FIT-3-1419C	Not provided						373	Tube OD of 0.5 assumed			0.500	370		No	0		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FIT-3-1420C	Not provided						373	Tube OD of 0.5 assumed			0.500	370		No	0		
1003	PTN	3	COND / 073	5613-M-3073, SH 1	3	Condensate Pumps discharge line flow transmitter / indication	FIT-3-1421C	Not provided						373	Tube OD of 0.5 assumed			0.500	370		No	0		
1004	PTN	3	COND / 073	5613-M-3073, SH 1	3	local condensate pump discharge pressure instruments	PX-3-1409	0.5				HT		373				0.500	370		No	HT		
1008	PTN	3	COND / 073	5613-M-3073, SH 1	3	bypass/warmup valves around main isolation gate valves (x3)	3-20-105	1				HT		373				1.000	370		No	HT		
1008	PTN	3	COND / 073	5613-M-3073, SH 1	3	bypass/warmup valves around main isolation gate valves (x3)	3-20-205	1						373				1.000	370		No	0		
1008	PTN	3	COND / 073	5613-M-3073, SH 1	3	bypass/warmup valves around main isolation gate valves (x3)	3-20-555	1						373				1.000	370		No	0		
1006	PTN	3	COND / 073	5613-M-3073, SH 1	3	Manual drains	3-20-203	1				HT		373				1.000	370		No	HT		
1006	PTN	3	COND / 073	5613-M-3073, SH 1	3	Manual drains	3-20-896	1						373				1.000	370		No	0		
1006	PTN	3	COND / 073	5613-M-3073, SH 1	3	Manual drains	3-20-560	0.5						373				0.500	370		No	0		
1006	PTN	3	COND / 073	5613-M-3073, SH 1	3	Manual drains	3-20-747	1						373				1.000	370		No	0		
1006	PTN	3	COND / 073	5613-M-3073, SH 1	3	Manual drains	3-20-161	1						373				1.000	370		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1007	PTN	3	COND / 073	5613-M-3073, SH 1	3	Manual vents	3-20-580A	0.5				HT		373				0.500	370		No	HT		
1007	PTN	3	COND / 073	5613-M-3073, SH 1	3	Manual vents	3-20-580B	0.5						373				0.500	370		No	0		
1007	PTN	3	COND / 073	5613-M-3073, SH 1	3	Manual vents	3-20-580C	0.5						373				0.500	370		No	0		
1010	PTN	3	COND / 073	5613-M-3073, SH 1	5	Condensate Pumps recirc. line flow transmitter / indication	FE-3-1420B FIT-3-1420B	Not provided				HT		115	Tube OD of 0.5 assumed			0.500	110		No	HT		
1010	PTN	3	COND / 073	5613-M-3073, SH 1	5	Condensate Pumps recirc. line flow transmitter / indication	FE-3-1421B FIT-3-1421B	Not provided						115	Tube OD of 0.5 assumed			0.500	110		No	0		
1012	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual drains	3-20-472	1				HT		115				1.000	110		No	HT		
1012	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual drains	3-20-471	1						115				1.000	110		No	0		
1012	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual drains	3-20-571	1						115				1.000	110		No	0		
1012	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual drains	3-20-572	1						115				1.000	110		No	0		
1012	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual drains	3-20-271	1						115				1.000	110		No	0		
1012	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual drains	3-20-272	1						115				1.000	110		No	0		
1013	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual vents	3-20-162A	0.5				HT		115				0.500	110		No	HT		
1013	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual vents	3-20-162B	0.5						115				0.500	110		No	0		
1013	PTN	3	COND / 073	5613-M-3073, SH 1	5	Manual vents	3-20-162C	0.5						115				0.500	110		No	0		
1011	PTN	3	COND / 073	5613-M-3073, SH 1	5	10" condensate pump recirc lines upstream of normally closed isolation	CV-3-1419	10				I		115				Not Analyzed	110		No	I		
1011	PTN	3	COND / 073	5613-M-3073, SH 1	5	10" condensate pump recirc lines upstream of normally closed isolation	CV-3-1420	10				I		115				Not Analyzed	110		No	I		
1011	PTN	3	COND / 073	5613-M-3073, SH 1	5	10" condensate pump recirc lines upstream of normally closed isolation	CV-3-1421	10						115				Not Analyzed	110		No	0		
1014	PTN	3	COND / 073	5613-M-3073, SH 1	6	local condensate discharge sample line pressure instruments	PI-3-1426	0.25				HT		115				Not Analyzed	110		No	HT		
1014	PTN	3	COND / 073	5613-M-3073, SH 1	6	local condensate discharge sample line pressure instruments	PX-3-3412	0.25						115				Not Analyzed	110		No	0		
1014	PTN	3	COND / 073	5613-M-3073, SH 1	6	local condensate discharge sample line pressure instruments	PI-3-1598	0.25						115				Not Analyzed	110		No	0		
1014	PTN	3	COND / 073	5613-M-3073, SH 1	6	local condensate discharge sample line pressure instruments	PX-3-3413	0.25						115				Not Analyzed	110		No	0		
1014	PTN	3	COND / 073	5613-M-3073, SH 1	6	local condensate discharge sample line pressure instruments	PX-3-1408	0.25						115				Not Analyzed	110		No	0		
1015	PTN	3	COND / 073	5613-M-3073, SH 1	6	1/2" & 1/4" condensate header sample lines	3-20-830	0.5				HT		115				0.500	110		No	HT		
1015	PTN	3	COND / 073	5613-M-3073, SH 1	6	1/2" & 1/4" condensate header sample lines	3-20-831	0.5						115				0.500	110		No	0		
1015	PTN	3	COND / 073	5613-M-3073, SH 1	6	1/2" & 1/4" condensate header sample lines	3-20-832	0.5						115				0.500	110		No	0		
1017	PTN	3	COND / 073	5613-M-3073, SH 1	8	1/4", 1/2", & 1" hotwell sample pumps seal supply from condensate storage & condensate header	None	0.25	N/A	N/A	N/A	N/A		115		N/A		Not Analyzed	110		No	N/A		
1017	PTN	3	COND / 073	5613-M-3073, SH 1	8	1/4", 1/2", & 1" hotwell sample pumps seal supply from condensate storage & condensate header	3-20-841	0.5						115				0.500	110		No	0		
1017	PTN	3	COND / 073	5613-M-3073, SH 1	8	1/4", 1/2", & 1" hotwell sample pumps seal supply from condensate storage & condensate header	3-20-018	1				HT		115				1.000	110		No	HT		
1018	PTN	3	COND / 073	5613-M-3073, SH 1	9	2" LP turbine steam exhaust hood spray	None	Not provided				HT		115	Tube OD of 0.5 assumed			0.500	110		No	HT		
1019	PTN	3	COND / 073	5613-M-3073, SH 1	10	3/8" & 1/2" loop seal fill line	None	0.375				HT		115				0.375	110		No	HT		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FI-3-6645A	0.375	80	H	N	HT		523		H		0.375	400	4.5	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FI-3-6645B	0.375	24	H	N	HT		523		H		0.375	400	4.5	No	HT	HT	N
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FI-3-6645C	0.375	12	H	N	HT		523		H		0.375	400	4.5	No	HT	HT	N
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FE-3-6645A	0.5				HT		523				0.500	400		No	HT		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FX-3-1426	0.375						523				0.375	400		No	0		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FE-3-6645B	0.5						523				0.500	400		No	0		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FX-3-1427	0.375						523				0.375	400		No	0		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FE-3-6645C	0.5						523				0.500	400		No	0		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FX-3-1428	0.375						523				0.375	400		No	0		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FE-3-6645D	0.5						523				0.500	400		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FX-3-1429	0.375						523				0.375	400		No	0		
1297	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing MSR inlet steam flow (x4)	FI-3-6645D	0.375	12	H	N	HT		523		H		0.375	400	4.5	No	HT	HT	N
1298	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-3-1522	0.375				HT		523				0.375	400		No	HT		
1298	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-3-1507	0.375						523				0.375	400		No	0		
1298	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-3-1523	0.375						523				0.375	400		No	0		
1298	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-3-1508	0.375						523				0.375	400		No	0		
				5613-M-3072, SH 2		Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing												0.375	400		No	0		
1298	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-3-1524	0.375						523				0.375	400		No	0		
1298	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-3-1509	0.375						523				0.375	400		No	0		
1298	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-3-1525	0.375						523				0.375	400		No	0		
1298	PTN	3	MSS / 072	5613-M-3072, SH 2	2	Pressure Indicators (PI) (PX) 3/4" pipe, 3/8" tubing MSR inlet pressure (x4)	PI-3-1510	0.375						523				0.375	400		No	0		
1301	PTN	3	MSS / 072	5613-M-3072, SH 2	2	3/4" vent one per MSR inlet	3-10-149	0.75				HT		523				0.750	400		No	HT		
1301	PTN	3	MSS / 072	5613-M-3072, SH 2	2	3/4" vent one per MSR inlet	3-10-170	0.75						523				0.750	400		No	0		
1301	PTN	3	MSS / 072	5613-M-3072, SH 2	2	3/4" vent one per MSR inlet	3-10-1134	0.75						523				0.750	400		No	0		
1301	PTN	3	MSS / 072	5613-M-3072, SH 2	2	3/4" vent one per MSR inlet	3-10-1133	0.75						523				0.750	400		No	0		
1303	PTN	3	MSS / 072	5613-M-3072, SH 2	3	3/4" Drain one per timing loop	3-20-283	0.75				HT		523				0.750	400		No	HT		
1303	PTN	3	MSS / 072	5613-M-3072, SH 2	3	3/4" Drain one per timing loop	3-20-284	0.75						523				0.750	400		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1303	PTN	3	MSS / 072	5613-M-3072, SH 2	3	3/4" Drain one per timing loop	3-20-285	0.75						523				0.750	400		No	0		
1303	PTN	3	MSS / 072	5613-M-3072, SH 2	3	3/4" Drain one per timing loop	3-20-286	0.75						523				0.750	400		No	0		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FI-3-6646A	0.375	28	H	N	HT		523		H		0.375	400	4.5	No	HT	HT	N
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FI-3-6646B	0.375	32	H	N	HT		523		H		0.375	400	4.5	No	HT	HT	N
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FE-3-6646A	0.5				HT		523				0.500	400		No	HT		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FX-3-1430	0.375						523				0.375	400		No	0		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FE-3-6646B	0.5						523				0.500	400		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FX-3-1431	0.375						523				0.375	400		No	0		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FE-3-6646C	0.5						523				0.500	400		No	0		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FI-3-6646C	0.375						523				0.375	400		No	0		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FX-3-1432	0.375						523				0.375	400		No	0		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FE-3-6646D	0.5						523				0.500	400		No	0		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FI-3-6646D	0.375						523				0.375	400		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1305	PTN	3	MSS / 072	5613-M-3072, SH 2	5	Flow Element (FE), Flow Indication (FI), Temporary flow instrument (FX) 1/2", 3/8" tubing 2 locations: 1) 4" supply crosstie MSR A/B 2) 4" supply crosstie MSR C/D	FX-3-1433	0.375						523				0.375	400		No	0		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-1405	Not provided				HT	Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	HT		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-1406	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-6	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-7	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-8	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-9	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-10	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-11	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-12	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1308	PTN	3	MSS / 072	5613-M-3072, SH 2	5	misc drains upstream of steam traps	ST-3-13	Not provided					Dsteam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	0		
1310	PTN	3	MSS / 072	5613-M-3072, SH 2	6	3/4" Drain (upstream of CV-3-2827)	3-10-021	0.75				HT		523				0.750	400		No	HT		
1314	PTN	3	MSS / 072	5613-M-3072, SH 2	MSR A, B, C, and D	Temperature Element (TE), temperature measurement is used as input into temperature control valve on "timing loop" (MSR steam inlet)	N/A	N/A				HT		523					400		No	HT		
1272	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-3-464	0.5	25	H	N	HT	Tag Melted	523		H		0.500	400	8.5	No	HT	HT	N
1272	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-3-466	0.75	25	H	N	HT	No Tag	523		H		0.750	400	14	No	HT	HT	N
1272	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-3-468 3-10-308	0.375	25	H	N	HT	added , 0.375 OD assumed	523		H		0.375	400	4.5	No	HT	HT	N
1272	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-3-474	0.375	50	H	N	HT	added , 0.375 OD assumed	523		H		0.375	400	4.5	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1272	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-3-475	0.375	50	H	N	HT	added , 0.375 OD assumed	523		H		0.375	400	4.5	No	HT	HT	N
1272	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-3-476	0.375	50	H	N	HT	added , 0.375 OD assumed	523		H		0.375	400	4.5	No	HT	HT	N
1272	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-3-1608-1 and 1608-X	0.375	50	H	N	HT	added , 0.375 OD assumed	523		H		0.375	400	4.5	No	HT	HT	N
1272	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x1, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS) Downstream of MSIV and check valve (MS header Pressure)	PT-3-1602 and PI-3-3402	0.375	25	H	N	HT	added , 0.375 OD assumed	523		H		0.375	400	4.5	No	HT	HT	N
1271	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-3-1607-1	0.5	50	H	N	HT		523		H		0.500	400	8.5	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1271	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-3-1607X	0.5	50	H	N	HT		523		H		0.500	400	8.5	No	HT	HT	N
1271	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-3-1606-1	0.5	50	H	N	HT		523		H		0.500	400	8.5	No	HT	HT	N
1271	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x2, each steam line) 3/4", 1" piping to instrument Local pressure gauge (one per steam line) PT reading is input to Digital Data Processing System (DDPS), and Steam Gen Steam Dump to Atmos (SDTA). Control of atmospheric dump.	PT-3-1606X	0.5	50	H	N	HT		523		H		0.500	400	8.5	No	HT	HT	N
1270	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-3- 494 Valve 3-10-302 Steam Generation 3C	0.375	50	H	N	HT	0.375 OD asumed	523		H		0.375	400	4.5	No	HT	HT	N
1270	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-3-495	0.5	50	H	N	HT		523		H		0.500	400	8.5	No	HT	HT	N
1270	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-3-496	0.5	50	H	N	HT		523		H		0.500	400	8.5	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1270	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-3-484 Valve 3-10-202 Steam Generation 3B	0.375	50	H	N	HT	0.375 OD assumed	523		H		0.375	400	4.5	No	HT	HT	N
1270	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-3-485 Valve 3-10-203 Steam Generation 3B	0.375	50	H	N	HT	0.375 OD assumed	523		H		0.375	400	4.5	No	HT	HT	N
1270	PTN	3	MSS / 072	5613-M-3072, SH 1	1	Pressure Transmitter (PT) (x3, each steam line) 3/4" piping to instrument Press. Input to Steam Break Protection, Safety Assessment System (SAS), and Safety Parameter Display System (SPDS)	PT-3-486	0.75	50	H	N	HT		523		H		0.750	400	14	No	HT	HT	N
1275	PTN	3	MSS / 072	5613-M-3072, SH 1	1	capped pipe (x2, each MS line)	3-26"-2-B	1				HT		523				1.000	400		No	HT		
1279	PTN	3	MSS / 072	5613-M-3072, SH 1	4	1/2" and 1 1/2" piping MSIV leakoff drain and steam trap (x1 per MSIV)	ST-3-3	0.5				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523				0.500	400		No	N/A		
1279	PTN	3	MSS / 072	5613-M-3072, SH 1	4	1/2" and 1 1/2" piping MSIV leakoff drain and steam trap (x1 per MSIV)	ST-3-2	0.5				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523				0.500	400		No	N/A		
1281	PTN	3	MSS / 072	5613-M-3072, SH 1	4	1/2" steam trap (x1 per line)	ST-3-3	0.5				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523				0.500	400		No	N/A		
1281	PTN	3	MSS / 072	5613-M-3072, SH 1	4	1/2" steam trap (x1 per line)	ST-3-2	0.5				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523				0.500	400		No	N/A		
1282	PTN	3	MSS / 072	5613-M-3072, SH 1	4	Drain from 1/2" line (x1 per MSIV drain) 2 closed root valves.	ST-3-3	Not provided				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	N/A		
1282	PTN	3	MSS / 072	5613-M-3072, SH 1	4	Drain from 1/2" line (x1 per MSIV drain) 2 closed root valves.	ST-3-2	Not provided				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1280	PTN	3	MSS / 072	5613-M-3072, SH 1	4	Steam trap bypass	ST-3-3	Not provided				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	N/A		
1280	PTN	3	MSS / 072	5613-M-3072, SH 1	4	Steam trap bypass	ST-3-2	Not provided				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	523	Tube OD of 0.5 assumed			0.500	400		No	N/A		
1284	PTN	3	MSS / 072	5613-M-3072, SH 1	6	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	PI-3-1415	Not provided				HT		523	Tube OD of 0.5 assumed			0.500	400		No	HT		
1284	PTN	3	MSS / 072	5613-M-3072, SH 1	6	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	PI-3-1414	Not provided						523	Tube OD of 0.5 assumed			0.500	400		No	0		
1284	PTN	3	MSS / 072	5613-M-3072, SH 1	6	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	PI-3-3402	Not provided						523	Tube OD of 0.5 assumed			0.500	400		No	0		
1284	PTN	3	MSS / 072	5613-M-3072, SH 1	6	Pressure Indicators (PI) (x3) Pressure transmitter (PT) (x1)	PT-3-1502	Not provided						523	Tube OD of 0.5 assumed			0.500	400		No	0		
1290	PTN	3	MSS / 072	5613-M-3072, SH 1	8	Drains from steam traps and active line closed root valves.	ST-3-4	Not provided				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	600	Tube OD of 0.5 assumed			0.500	400		No	N/A		
1290	PTN	3	MSS / 072	5613-M-3072, SH 1	8	Drains from steam traps and active line closed root valves.	ST-3-4	Not provided				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	600	Tube OD of 0.5 assumed			0.500	400		No	N/A		
1290	PTN	3	MSS / 072	5613-M-3072, SH 1	8	Drains from steam traps and active line closed root valves.	ST-3-5	Not provided				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	600	Tube OD of 0.5 assumed			0.500	400		No	N/A		
1290	PTN	3	MSS / 072	5613-M-3072, SH 1	8	Drains from steam traps and active line closed root valves.	ST-3-5	Not provided				N/A	Steam traps and bypass are designed to drain condensate to condenser. Line will therefore have continuous flow. Bypass is horizontal. Draine is less than 4" long and will not freeze with process temperature at 212	600	Tube OD of 0.5 assumed			0.500	400		No	N/A		
1294	PTN	3	MSS / 072	5613-M-3072, SH 1	11	3/4" piping; 3/8" tubing Main steam to Secondary sample coolers (x3)	3-10-107	0.375				HT		523				0.375	400		No	HT		
1294	PTN	3	MSS / 072	5613-M-3072, SH 1	11	3/4" piping; 3/8" tubing Main steam to Secondary sample coolers (x3)	3-10-207	0.375				HT		523				0.375	400		No	HT		
1294	PTN	3	MSS / 072	5613-M-3072, SH 1	11	3/4" piping; 3/8" tubing Main steam to Secondary sample coolers (x3)	3-10-307	0.375				HT		523				0.375	400		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1293	PTN	3	MSS / 072	5613-M-3072, SH 1	11	Temporary Instrument Port Pressure (PX) (1 per MS line) Closed root valve; 3/8" tubing Main steam to Secondary sample coolers (x3)	PX-3-1605	0.375				HT		523				0.375	400		No	HT		
1293	PTN	3	MSS / 072	5613-M-3072, SH 1	11	Temporary Instrument Port Pressure (PX) (1 per MS line) Closed root valve; 3/8" tubing Main steam to Secondary sample coolers (x3)	PX-3-1604	0.375				HT		523				0.375	400		No	HT		
1459	PTN	3	SSS / 032	5613-M-3032, SH 5	1	SC-3-1430, -1431	SC-3-1430, -1431	N/A	N/A	N/A	N/A	N/A		40	FP system in standby, therefore reflects ambient	N/A			40		No	N/A		
1453	PTN	3	SSS / 032	5613-M-3032, SH 3	1	LS-3-6745, -6746, -6747, -6748, PS-3-6745, -6746, -6747, -6748,						HT		109	Condensate pump suction class F				100		No	HT		
1454	PTN	3	SSS / 032	5613-M-3032, SH 3	1	PI-3-6751, -6752, -6753, -6754, PI-3-6745, -6746, -6747, -6748, LG-3433, -3434, -3435, -3436						HT		109	Condensate pump suction class F				100		No	HT		
1455	PTN	3	SSS / 032	5613-M-3032, SH 3	1	Seal Buffer Tank (4 times)						HT		109	Condensate pump suction class F				100		No	HT		
1457	PTN	3	SSS / 032	5613-M-3032, SH 3	1	PCV-3-615, -616, -617, -618, only up to valve. Downstream condensate is vacuum dragged to condenser						HT		109	Condensate pump suction class F				100		No	HT		
1458	PTN	3	SSS / 032	5613-M-3032, SH 3	1	Small Bore Vents and Drains						HT		109	Condensate pump suction class F				100		No	HT		
1452	PTN	3	SSS / 032	5613-M-3032, SH 2	1	Small Bore Drains to Sample Sink						HT		523					400		No	HT		
1262	PTN	3	ICW / 019	5613-M-3019, SH 2	1	dPI-3-1402, -1403, FI-1407, -1408, -1409, PI-3-1519, -1520						HT		96					90		No	HT		
1267	PTN	3	ICW / 019	5613-M-3019, SH 2	1	Small Bore Vents & Drains						HT		96					90		No	HT		
1255	PTN	3	ICW / 019	5613-M-3019, SH 1	1	Non-Safety Related Piping 3-2"-13-L	3-2"-13-L	2				HT		96				2.000	90		No	HT		
1248	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PS-3-1619, -1620, PI-3-1619, -1620, PT-3-1619, -1620	PI-3-1619	0.375				HT		96				0.375	90		No	HT		
1248	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PS-3-1619, -1620, PI-3-1619, -1620, PT-3-1619, -1620	PI-3-1620	0.375						96				0.375	90		No	0		
1248	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PS-3-1619, -1620, PI-3-1619, -1620, PT-3-1619, -1620	PT-3-1619	0.375						96				0.375	90		No	0		
1248	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PS-3-1619, -1620, PI-3-1619, -1620, PT-3-1619, -1620	PT-3-1620	0.375						96				0.375	90		No	0		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	PI-3-1450	0.5				HT		96				0.500	90		No	HT		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	PI-3-1451	0.5						96				0.500	90		No	0		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	PI-3-1452	0.5						96				0.500	90		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	PI-3-1488	0.375						96				0.375	90		No	0		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	PI-3-1489	0.375						96				0.375	90		No	0		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	PI-3-6901	1						96				1.000	90		No	0		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	PI-3-6902	1						96				1.000	90		No	0		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	DPI-3-1400	0.5						96				0.500	90		No	0		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	DPI-3-1401	0.5						96				0.500	90		No	0		
1249	PTN	3	ICW / 019	5613-M-3019, SH 1	1	PI(X)-3-1450, -1451, -1452, PI-3-1488, -1489, -6901, -6902, dPI-3-1400, -1401, FE(FI)-3-1430	FE (FI)-3-1430	0.5						96				0.500	90		No	0		
1256	PTN	3	ICW / 019	5613-M-3019, SH 1	1	RV-3-128A, -128B	RV-3-128A					HT		96					90		No	HT		
1256	PTN	3	ICW / 019	5613-M-3019, SH 1	1	RV-3-128A, -128B	RV-3-128B					HT		96					90		No	HT		
1260	PTN	3	ICW / 019	5613-M-3019, SH 1	1	Small Bore Vents & Drains	3-50-117A 3-50-117C	1				HT		96				1.000	90		No	HT		
1260	PTN	3	ICW / 019	5613-M-3019, SH 1	1	Small Bore Vents & Drains	3-50-117B 3-50-117D	1						96				1.000	90		No	0		
1260	PTN	3	ICW / 019	5613-M-3019, SH 1	1	Small Bore Vents & Drains	3-50-118	2						96				2.000	90		No	0		
1254	PTN	3	ICW / 019	5613-M-3019, SH 1	1	Non-Safety Related Piping 3-8"-13-L, 3-4"-13-L	3-4"-13-L					M		96					90		No	M		
1254	PTN	3	ICW / 019	5613-M-3019, SH 1	1	Non-Safety Related Piping 3-8"-13-L, 3-4"-13-L	3-8"-13-L					M		96					90		No	M		
1065	PTN	3	CS / 018	5613-M-3018, Sh. 1	1	manual vent						HT		100					100		No	HT		
1064	PTN	3	CS / 018	5613-M-3018, Sh. 1	1	8" & 10" AFW pumps supply						HT		100					100		No	HT		
1067	PTN	3	CS / 018	5613-M-3018, Sh. 1	2	chemical addition tank						HT		100					100		No	HT		
1068	PTN	3	CS / 018	5613-M-3018, Sh. 1	2	Condensate Transfer pump vent						HT		100					100		No	HT		
1066	PTN	3	CS / 018	5613-M-3018, Sh. 1	2	4" & 10" condensate transfer pump suction						HT		100					100		No	HT		
1069	PTN	3	CS / 018	5613-M-3018, Sh. 1	3	Condensate Transfer pump discharge pressure PI						HT		100					100		No	HT		
1070	PTN	3	CS / 018	5613-M-3018, Sh. 1	3	6" condensate transfer pump discharge piping						HT		100					100		No	HT		
1071	PTN	3	CS / 018	5613-M-3018, Sh. 1	3	6" crosstie with Unit 4 condensate transfer						HT		100					100		No	HT		
1073	PTN	3	CS / 018	5613-M-3018, Sh. 1	5	10" condensate reject to DWST						HT		100					100		No	HT		
1074	PTN	3	CS / 018	5613-M-3018, Sh. 1	6	3" condensate recovery return						HT		100					100		No	HT		
1075	PTN	3	CS / 018	5613-M-3018, Sh. 1	7	6" condensate return						HT		100					100		No	HT		
1077	PTN	3	CS / 018	5613-M-3018, Sh. 1	8	Manual drains						HT		100					100		No	HT		
1076	PTN	3	CS / 018	5613-M-3018, Sh. 1	8	2" surge tank supply and EDG cooling water makeup						HT		100					100		No	HT		
1078	PTN	3	CS / 018	5613-M-3018, Sh. 1	9	1/2"condensate system supply						HT		100					100		No	HT		
1079	PTN	3	CS / 018	5613-M-3018, Sh. 1	10	2" alternate surge tank supply and EDG cooling water makeup from Unit 4						HT		100					100		No	HT		
1080	PTN	3	CS / 018	5613-M-3018, Sh. 1	11	4" & 6" supply to chemical feed and wet layup						HT		100					100		No	HT		
1081	PTN	3	CS / 018	5613-M-3018, Sh. 1	12	flow indicator						HT		100					100		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1082	PTN	3	CS / 018	5613-M-3018, Sh. 1	12	6" primary water makeup supply to CST						HT		100					100		No	HT		
1083	PTN	3	CS / 018	5613-M-3018, Sh. 1	13	4" flow indicator and control valve bypass line						HT		100					100		No	HT		
1084	PTN	3	CS / 018	5613-M-3018, Sh. 1	14	2 1/2" AFW Pump recirc line						HT		100					100		No	HT		
1087	PTN	3	CS / 018	5613-M-3018, Sh. 1	16	1/2" Flex connection						HT		100					100		No	HT		
1086	PTN	3	CS / 018	5613-M-3018, Sh. 1	16	4" CST drain						HT		100					100		No	HT		
1088	PTN	3	CS / 018	5613-M-3018, Sh. 1	17	CST level switch for CST makeup CV	LS-3-1502 LS-4-1541	1	14	TV	N	HT	Includes all connected tubing/piping	100		TV		1.000	100	1.5	No	HT	repair/patch if damaged; no protection required	N
1088	PTN	3	CS / 018	5613-M-3018, Sh. 1	17	CST level switch for CST makeup CV	LS-3-1503	1	10	TV	N	HT		100		TV		1.000	100	1.5	No	HT	repair/patch if damaged; no protection required	N
1090	PTN	3	CS / 018	5613-M-3018, Sh. 1	17	manual drain lines						HT		100					100		No	HT		
1089	PTN	3	CS / 018	5613-M-3018, Sh. 1	17	1" level switch piping						HT		100					100		No	HT		
NEW	PTN	3	CS / 018	5613-M-3018, Sh. 1	18	CST level transmitter / indication	LT-3-6384B	0.375	5	H,D	N	HT		50		BV	BV conservative due to downward portion	0.375	50	Not Analyzed	No	HT	HT	N
1091	PTN	3	CS / 018	5613-M-3018, Sh. 1	18	CST level transmitter / indication	LT-3-6384A	0.375	5	H,D	N	HT		50		BV	BV conservative due to downward portion	0.375	50	Not Analyzed	No	HT	HT	N
1093	PTN	3	CS / 018	5613-M-3018, Sh. 1	18	manual vents, drains and test connections						HT		100					100		No	HT		
1092	PTN	3	CS / 018	5613-M-3018, Sh. 1	18	3/8", 1", & 3" level transmitter piping						HT		100					100		No	HT		
1094	PTN	3	CS / 018	5613-M-3018, Sh. 1	19	6" condensate supply to feedwater system						HT		100					100		No	HT		
971	PTN	3	CNDSR / 014	5613-M-3014, SH 3	1	Pressure Switch (PS) with control room annunciation. Local Pressure indication (PI) 1/2" tubing and open root valve.	PS-3-1622 PI-3-1569	0.5				HT		600	Class E was used from Condensate section.			0.500	400		No	HT		
972	PTN	3	CNDSR / 014	5613-M-3014, SH 3	1	Local Pressure indication (PI) 1/2" tubing and open root valve.	PI-3-1568	0.5				HT		600				0.500	400		No	HT		
976	PTN	3	CNDSR / 014	5613-M-3014, SH 3	2	1" Drain (Piping & valve)	3-30-039	1				HT		600				1.000	400		No	HT		
978	PTN	3	CNDSR / 014	5613-M-3014, SH 3	3	Local Pressure indication (PI) 1/2" tubing and open root valve; branch from 8" lines into SJAEs	PI-3-1434	0.5				HT		400				0.500	400		No	HT		
978	PTN	3	CNDSR / 014	5613-M-3014, SH 3	3	Local Pressure indication (PI) 1/2" tubing and open root valve; branch from 8" lines into SJAEs	PI-3-1407	0.5				HT		400				0.500	400		No	HT		
980	PTN	3	CNDSR / 014	5613-M-3014, SH 3	3	8" Vent/Vacuum breaker	3-30-001	8				I		400				Not Analyzed	400		No	I	Verify already Insulated	Y
977	PTN	3	CNDSR / 014	5613-M-3014, SH 3	3	Local Pressure indication (PI) 1/4" tubing and open root valve; branch from 8" vacuum breaker line	PI-3-1447	0.25				HT		400				Not Analyzed	400		No	HT		
985	PTN	3	CNDSR / 014	5613-M-3014, SH 3	7	Local level gauge indicates liquid level in condenser drain line.	LG (not numbered)	0.5				HT		90				0.500	90		No	HT		
985	PTN	3	CNDSR / 014	5613-M-3014, SH 3	7	Local level gauge indicates liquid level in condenser drain line.	LG (not numbered)	0.5				HT		90				0.500	90		No	HT		
987	PTN	3	CNDSR / 014	5613-M-3014, SH 3	8	Local level gauge and 1/2" tubing indicates liquid level in condenser drain line.	LG-3-3411	0.5				HT		350				0.500	350		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
989	PTN	3	CNDSR / 014	5613-M-3014, SH 3	8	1/2" capped pipe (closed root valve) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	3-30-080	0.5				HT		350				0.500	350		No	HT		
990	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	Radiation detector (RD) with control room alarm/annunciation	RD-3-15					HT		200					200		No	HT		
992	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	Local flow indicator (FI)	FI-3-1416	0.375				HT		200				0.375	200		No	HT		
991	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	Local gauges and 3/8" tubing press differential (dPI) Flow indication (FI) Flow element (FE)	FE-3-3400	0.5				HT		200				0.500	200		No	HT		
991	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	Local gauges and 3/8" tubing press differential (dPI) Flow indication (FI) Flow element (FE)	DPI-3-1406	0.375				HT		200				0.375	200		No	HT		
994	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 6), 1" drain (x2) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	3-30-223	0.375				HT		200				0.375	200		No	HT		
994	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 6), 1" drain (x2) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	3-30-220	0.375				HT		200				0.375	200		No	HT		
994	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 6), 1" drain (x2) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	3-30-178	0.375				HT		200				0.375	200		No	HT		
994	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 6), 1" drain (x2) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	3-30-015	0.5				HT		200				0.500	200		No	HT		
994	PTN	3	CNDSR / 014	5613-M-3014, SH 3	9	1/2" drain/vent, 1" isolated conn. for flex hose and chem testing (note 6), 1" drain (x2) 1/2" line (isolated) from Condensate Sys Loop Seal Fill	None	1				HT		200				1.000	200		No	HT		
960	PTN	3	CNDSR / 014	5613-M-3014, SH 2	3	10" header, and 2" piping and control valves (air operated)	3-20-051	2				I		200				2.000	200		No	I		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
960	PTN	3	CNDSR / 014	5613-M-3014, SH 2	3	10" header, and 2" piping and control valves (air operated)	3-20-053	2						200				2.000	200		No	0		
960	PTN	3	CNDSR / 014	5613-M-3014, SH 2	3	10" header, and 2" piping and control valves (air operated)	CV-3-1519	10						200				Not Analyzed	200		No	0		
964	PTN	3	CNDSR / 014	5613-M-3014, SH 2	5	3/4" and 1/2" instrument line piping	3-20-817	0.5				HT		200				0.500	200		No	HT		
963	PTN	3	CNDSR / 014	5613-M-3014, SH 2	5	3 Pressure Indicating Transmitter (PIT) PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-3-1612A	0.5				HT		200				0.500	200		No	HT		
963	PTN	3	CNDSR / 014	5613-M-3014, SH 2	5	3 Pressure Indicating Transmitter (PIT) PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-3-1612B	0.5						200				0.500	200		No	0		
963	PTN	3	CNDSR / 014	5613-M-3014, SH 2	5	3 Pressure Indicating Transmitter (PIT) PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-3-1612C	0.5						200				0.500	200		No	0		
966	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Condenser 3A	Level Controler (LC) Condenser level control with signal input to condenser water makeup spray valves (suction from DWST)	LC-3-1519	Not provided				HT		200	Tube OD of 0.5 assumed			0.500	200		No	HT		
968	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Condenser 3A	Local level guage (x3)	LG-3-3401	0.75				HT		200				0.750	200		No	HT		
968	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Condenser 3A	Local level guage (x3)	LG-3-3401	0.75						200				0.750	200		No	0		
968	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Condenser 3A	Local level guage (x3)	LG-3-3401	0.75						200				0.750	200		No	0		
967	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Condenser 3A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1623	0.75				HT		200				0.750	200		No	HT		
967	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Condenser 3A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1624	0.75						200				0.750	200		No	0		
967	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Condenser 3A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1625	0.75						200				0.750	200		No	0		
967	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Condenser 3A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1626	0.75						200				0.750	200		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
967	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1627	0.75						200				0.750	200		No	0		
967	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1628	0.75						200				0.750	200		No	0		
969	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Vent (screened open flange) with Motor Op Valve MOV-3-VAB	MOV-3-VAB	Not provided				HT		200	Tube OD of 0.5 assumed			0.500	200		No	HT		
970	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Capped piping 1 1/2" pipe (leak detect) (x8)	3E7A	1.5				HT		200				1.500	200		No	HT		
970	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Capped piping 1 1/2" pipe (leak detect) (x8)	3E7A	1.5						200				1.500	200		No	0		
970	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Capped piping 1 1/2" pipe (leak detect) (x8)	3E7A	1.5						200				1.500	200		No	0		
970	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Capped piping 1 1/2" pipe (leak detect) (x8)	3E7A	1.5						200				1.500	200		No	0		
970	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Capped piping 1 1/2" pipe (leak detect) (x8)	3E7A	1.5						200				1.500	200		No	0		
970	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Capped piping 1 1/2" pipe (leak detect) (x8)	3E7A	1.5						200				1.500	200		No	0		
970	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Capped piping 1 1/2" pipe (leak detect) (x8)	3E7A	1.5						200				1.500	200		No	0		
970	PTN	3	CNDSR / 014	5613-M-3014, SH 2	North Cond enser 3A	Capped piping 1 1/2" pipe (leak detect) (x8)	3E7A	1.5						200				1.500	200		No	0		
948	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	Isolated lines and drains upstream of 3-30-999 (line 3-1 1/2"-2-CM common header)	30-1024	0.5				HT		200	Class E was used from Condensate section.			0.500	200		No	HT		
948	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	Isolated lines and drains upstream of 3-30-999 (line 3-1 1/2"-2-CM common header)	30-1046	0.5						200	Class E was used from Condensate section.			0.500	200		No	0		
948	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	Isolated lines and drains upstream of 3-30-999 (line 3-1 1/2"-2-CM common header)	30-1038	0.5						200	Class E was used from Condensate section.			0.500	200		No	0		
948	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	Isolated lines and drains upstream of 3-30-999 (line 3-1 1/2"-2-CM common header)	30-1020	1						200	Class E was used from Condensate section.			1.000	200		No	0		
948	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	Isolated lines and drains upstream of 3-30-999 (line 3-1 1/2"-2-CM common header)	30-1037	1						200	Class E was used from Condensate section.			1.000	200		No	0		
948	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	Isolated lines and drains upstream of 3-30-999 (line 3-1 1/2"-2-CM common header)	30-1030	1.5						200	Class E was used from Condensate section.			1.500	200		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
949	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	4 capped pipe ends & 3 pipe studs with closed valves (3-30-991, 3-30-992, and 3-30-993)	3-30-991	Not provided				HT		200	Class E was used from Condensate section. Tube OD of 0.5 assumed			0.500	200		No	HT		
949	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	4 capped pipe ends & 3 pipe studs with closed valves (3-30-991, 3-30-992, and 3-30-993)	3-30-992	Not provided						200	Class E was used from Condensate section. Tube OD of 0.5 assumed			0.500	200		No	0		
949	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	4 capped pipe ends & 3 pipe studs with closed valves (3-30-991, 3-30-992, and 3-30-993)	3-30-993	Not provided						200	Class E was used from Condensate section. Tube OD of 0.5 assumed			0.500	200		No	0		
949	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	4 capped pipe ends & 3 pipe studs with closed valves (3-30-991, 3-30-992, and 3-30-993)	Downstream of 3-30-991	Not provided						200	Class E was used from Condensate section. Tube OD of 0.5 assumed			0.500	200		No	0		
949	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	4 capped pipe ends & 3 pipe studs with closed valves (3-30-991, 3-30-992, and 3-30-993)	Downstream of 3-30-992	Not provided						200	Class E was used from Condensate section. Tube OD of 0.5 assumed			0.500	200		No	0		
949	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	4 capped pipe ends & 3 pipe studs with closed valves (3-30-991, 3-30-992, and 3-30-993)	Downstream of 3-30-993	Not provided						200	Class E was used from Condensate section. Tube OD of 0.5 assumed			0.500	200		No	0		
949	PTN	3	CNDSR / 014	5613-M-3014, SH 1	4	4 capped pipe ends & 3 pipe studs with closed valves (3-30-991, 3-30-992, and 3-30-993)	Downstream of 3-30-994	Not provided						200	Class E was used from Condensate section. Tube OD of 0.5 assumed			0.500	200		No	0		
951	PTN	3	CNDSR / 014	5613-M-3014, SH 1	5	3/4" and 1/2" instrument line piping	3-20-600	0.5				HT		200				0.500	200		No	HT		
950	PTN	3	CNDSR / 014	5613-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PS-3-1613A	0.5				HT		200				0.500	200		No	HT		
950	PTN	3	CNDSR / 014	5613-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PS-3-1613B	0.5						200				0.500	200		No	0		
950	PTN	3	CNDSR / 014	5613-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-3-2612A	0.5						200				0.500	200		No	0		
950	PTN	3	CNDSR / 014	5613-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-3-2612B	0.5						200				0.500	200		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
950	PTN	3	CNDSR / 014	5613-M-3014, SH 1	5	2 Pressure Switches (PS); 3 Pressure Indicating Transmitter (PIT) PS input to Steam Dump system. PITs have CR alarm/annunciation and input to Turbine Control Sys, Turbine trip, etc.	PIT-3-2612C	0.5						200				0.500	200		No	0		
953	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Level Transmitter (LT) Condenser level with control room annunciation (high/low)	LT-3-1541	Not provided				HT		200	Tube OD of 0.5 assumed			0.500	200		No	HT		
955	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Local level guage (x2)	LG-3-3400	0.75				HT		200				0.750	200		No	HT		
955	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Local level guage (x2)	LG-3-3400	0.75						200				0.750	200		No	0		
954	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1629	0.75				HT		200				0.750	200		No	HT		
954	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1630	0.75						200				0.750	200		No	0		
954	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1631	0.75						200				0.750	200		No	0		
954	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1632	0.75						200				0.750	200		No	0		
954	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1633	0.75						200				0.750	200		No	0		
954	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Temporary pressure instrument (PX) (x6); Temporary temperature instrument (TX) (x1) 3/4" tubing/pipe	PX-3-1634	0.75						200				0.750	200		No	0		
956	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Vent (screened open flange) with Motor Op Valve MOV-3-VAB1	MOV-3-VAB1	Not provided				HT		200	Tube OD of 0.5 assumed			0.500	200		No	HT		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1.5				HT		200				1.500	200		No	HT		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1.5						200				1.500	200		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1.5						200				1.500	200		No	0		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1.5						200				1.500	200		No	0		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1.5						200				1.500	200		No	0		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1.5						200				1.500	200		No	0		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1.5						200				1.500	200		No	0		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1.5						200				1.500	200		No	0		
957	PTN	3	CNDSR / 014	5613-M-3014, SH 1	South Condenser 3B	Capped piping 1 1/2" pipe (leak detect) (x8) 1" pipe (x1)	3E7B	1						200				1.000	200		No	0		
1143	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	PS-3-2001	0.25						95				Not Analyzed	90		No	0		
1143	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	PS-3-2006	0.25						95				Not Analyzed	90		No	0		
1143	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	PS-3-2012	0.25						95				Not Analyzed	90		No	0		
1143	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	PS-3-2019	0.25						95				Not Analyzed	90		No	0		
1142	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PS-3-2018	Not in TB		Not in			N/A	Not in TB	95					90		No	N/A		
1143	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	PC-3-1700	0.5				HT		95				0.500	90		No	HT		
1143	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	PS-3-2044	0.5						95				0.500	90		No	0		
1143	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	PS-3-2045	0.5						95				0.500	90		No	0		
1143	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PC-3-1700, PS-3-2001, -2006, -2012, -2019, -2044, -2045, -2061	PS-3-2061	0.5						95				0.500	90		No	0		
1145	PTN	3	CWS / 010	5613-M-3010, SH 3	1	FI-3-1414, -1452, -1454, -1403	FI-3-1414	0.75				HT		95				0.750	90		No	HT		
1145	PTN	3	CWS / 010	5613-M-3010, SH 3	1	FI-3-1414, -1452, -1454, -1403	FI-3-1452	0.75						95				0.750	90		No	0		
1145	PTN	3	CWS / 010	5613-M-3010, SH 3	1	FI-3-1414, -1452, -1454, -1403	FI-3-1454	0.75						95				0.750	90		No	0		
1145	PTN	3	CWS / 010	5613-M-3010, SH 3	1	FI-3-1414, -1452, -1454, -1403	FI-3-1403	0.75						95				0.750	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1697	0.5				HT		95				0.500	90		No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1696	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1522	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-3661	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1495	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1523	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1524	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1525	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1526	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1527	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1528	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1529	0.5						95				0.500	90		No	0		
1144	PTN	3	CWS / 010	5613-M-3010, SH 3	1	PI-3-1697, -1696, -1522, -3661, -1495, -1523, -1524, -1525, -1526, -1527, -1528, -1529, 1530, PX-3-3403	PI-3-1530	0.5						95				0.500	90		No	0		
1137	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PS-3-2040, -2041, -2042, 2043	PS-3-2040	0.5	See PI-3-1536			N/A	See PI-3-1536	50				0.500	50		No	N/A	air service; no protection required	N
1137	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PS-3-2040, -2041, -2042, 2043	PS-3-2041	0.5	See PI-3-1537			N/A	See PI-3-1537	50				0.500	50		No	N/A	air service; no protection required	N
1137	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PS-3-2040, -2041, -2042, 2043	PS-3-2042	0.5	See PI-3-1538			N/A	See PI-3-1538	50				0.500	50		No	N/A	air service; no protection required	N
1137	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PS-3-2040, -2041, -2042, 2043	PS-3-2043	0.5	See PI-3-1539			N/A	See PI-3-1539	50				0.500	50		No	N/A	air service; no protection required	N
1136	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PS-3-2036, -2037, -2038, -2039	PS-3-2036	0.5				HT	alarm only	50				0.500	50		No	HT		
1136	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PS-3-2036, -2037, -2038, -2039	PS-3-2037	0.5					alarm only	50				0.500	50		No	0		
1136	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PS-3-2036, -2037, -2038, -2039	PS-3-2038	0.5					alarm only	50				0.500	50		No	0		
1136	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PS-3-2036, -2037, -2038, -2039	PS-3-2039	0.5					alarm only	50				0.500	50		No	0		
1138	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PI-3-1536, -1537, -1538, -1539, -1590,	PI-3-1538	0.5	8	TV	N	HT	INCLUDES PS-3-2042	50		TV		0.500	50	0	No	HT	air service; no protection required	N
1138	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PI-3-1536, -1537, -1538, -1539, -1590,	PI-3-1537	0.5	9	TV	N	HT	INCLUDES PS-3-2041	50		TV		0.500	50	0	No	HT	air service; no protection required	N
1138	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PI-3-1536, -1537, -1538, -1539, -1590,	PI-3-1539	0.5	10	TV	N	HT	INCLUDES PS-3-2043	50		TV		0.500	50	0	No	HT	air service; no protection required	N
1138	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PI-3-1536, -1537, -1538, -1539, -1590,	PI-3-1536	0.5	11	TV	N	HT	INCLUDES PS-3-2040	50		TV		0.500	50	0	No	HT	air service; no protection required	N
1138	PTN	3	CWS / 010	5613-M-3010, SH 2	1	PI-3-1536, -1537, -1538, -1539, -1590,	PI-3-1591	0.5						50				0.500	50		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PI-3-1006	0.5				HT		50				0.500	50		No	HT		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PI-3-1007	0.5						50				0.500	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PI-3-1008	0.5						50				0.500	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PI-3-1009	0.5						50				0.500	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PI-3-1459	0.5						50				0.500	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PI-3-1462	0.5						50				0.500	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1504	0.75						50				0.750	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1505	0.75						50				0.750	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1506	0.75						50				0.750	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1507	0.75						50				0.750	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1635	0.75						50				0.750	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1636	0.75						50				0.750	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1637	0.75						50				0.750	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1638	0.75						50				0.750	50		No	0		
1126	PTN	3	CWS / 010	5613-M-3010, SH 1	1	PI-3-1006, -1007, -1008, -1009, -1459, -1462 PX-3-1504, -1505, -1506, -1507, -1635, -1636, -1637, -1638, -1639, -1640, -1641, -1642	PX-3-1639	0.75						50				0.750	50		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1133	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Pitot Tube Connections	3-50-022	2				HT		50				2.000	50		No	HT		
1133	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Pitot Tube Connections	3-50-021	2						50				2.000	50		No	0		
1133	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Pitot Tube Connections	3-50-011	2						50				2.000	50		No	0		
1133	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Pitot Tube Connections	3-50-012	2						50				2.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-250	1				HT		50				1.000	50		No	HT		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-251	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-252	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-253	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-254	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-255	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-256	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-257	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-258	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-259	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-260	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-261	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-262	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-263	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-264	1						50				1.000	50		No	0		
1132	PTN	3	CWS / 010	5613-M-3010, SH 1	1	Small Bore Vents & Drains	3-50-265	1						50				1.000	50		No	0		
1135	PTN	3	CWS / 010	5613-M-3010, SH 1	2	SRHS-3-001 Connection	SRHS-3-001	1.5				HT		50				1.500	50		No	HT		
1523	PTN	3	TPCW / 008	5613-M-3008, SH 4	1	FE(FI)-3-1411, PI-3-1479	FE(FI)-3-1411	1	16	H,D	N	HT	local no control functions	110		BV	BV conservative due to downward portion	1.000	110	0	No	HT	repair/patch if needed	N
1523	PTN	3	TPCW / 008	5613-M-3008, SH 4	1	FE(FI)-3-1411, PI-3-1479	PI-3-1479	0.5						110				0.500	110		No	0		
1526	PTN	3	TPCW / 008	5613-M-3008, SH 4	1	Small Bore Drains	3-60-327	1				HT		110				1.000	110		No	HT		
1526	PTN	3	TPCW / 008	5613-M-3008, SH 4	1	Small Bore Drains	3-60-328	3						110				3.000	110		No	0		
1527	PTN	3	TPCW / 008	5613-M-3008, SH 4	2	PX-3-1467, -1469, PI-3-1570, -1571	PX-3-1467	0.5				HT		110				0.500	110		No	HT		
1527	PTN	3	TPCW / 008	5613-M-3008, SH 4	2	PX-3-1467, -1469, PI-3-1570, -1571	PX-3-1469	0.5						110				0.500	110		No	0		
1527	PTN	3	TPCW / 008	5613-M-3008, SH 4	2	PX-3-1467, -1469, PI-3-1570, -1571	PI-3-1570	0.5						110				0.500	110		No	0		
1527	PTN	3	TPCW / 008	5613-M-3008, SH 4	2	PX-3-1467, -1469, PI-3-1570, -1571	PI-3-1571	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	FE(FI)-3-1455	0.5	8	H,D	N	HT	local no control functions	110		BV	BV conservative due to downward portion	0.500	110	0	No	HT	repair/patch if needed; no protection required	N
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PX-3-1477	0.5				HT		110				0.500	110		No	HT		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PX-3-1482	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PX-3-1515	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PX-3-1516	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PX-3-1518	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PX-3-1517	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PI-3-1503	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PI-3-1504	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PI-3-1505	0.5						110				0.500	110		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PI-3-1506	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PI-3-1554	0.5						110				0.500	110		No	0		
1532	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	PX-3-1477, -1482, -1515, -1516, -1517, -1518 PI-3-1503, -1504, -1505, -1506, -1554, -1579, FE(FI)-3-1455,	PI-3-1579	0.5						110				0.500	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-223	0.375				HT		110				0.375	110		No	HT		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-224	0.375						110				0.375	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-218	0.375						110				0.375	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-219	0.375						110				0.375	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-285	0.75						110				0.750	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-337	4						110				4.000	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-294	0.5						110				0.500	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-295	0.5						110				0.500	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-296	0.5						110				0.500	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-297	0.5						110				0.500	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-298	0.5						110				0.500	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-299	0.5						110				0.500	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-300	0.5						110				0.500	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-255	1						110				1.000	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-245	1						110				1.000	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-286	0.75						110				0.750	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-255	1						110				1.000	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-250	1						110				1.000	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-243	1						110				1.000	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-236	1						110				1.000	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-222	1						110				1.000	110		No	0		
1538	PTN	3	TPCW / 008	5613-M-3008, SH 4	3	Small Bore Vents & Drains	3-60-226	1						110				1.000	110		No	0		
1540	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	PX-3-1478	0.5				HT		110				0.500	110		No	HT		
1540	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	PX-3-1479	0.5						110				0.500	110		No	0		
1540	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	PX-3-1480	0.5						110				0.500	110		No	0		
1540	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	PX-3-1481	0.5						110				0.500	110		No	0		
1540	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	PI-3-1481	0.5						110				0.500	110		No	0		
1540	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	PI-3-1482	0.5						110				0.500	110		No	0		
1540	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	PI-3-1483	0.5						110				0.500	110		No	0		
1540	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	PX-3-1478. -1479, -1480, -1481, PI-3-1481, -1482, -1483, -1484	PI-3-1484	0.5						110				0.500	110		No	0		
1544	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	Small Bore Vents	3-60-186	0.5				HT		110				0.500	110		No	HT		
1544	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	Small Bore Vents	3-60-193	0.5						110				0.500	110		No	0		
1544	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	Small Bore Vents	3-60-189	2						110				2.000	110		No	0		
1544	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	Small Bore Vents	3-60-195	2						110				2.000	110		No	0		
1544	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	Small Bore Vents	3-60-203	2						110				2.000	110		No	0		
1544	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	Small Bore Vents	3-60-207	0.5						110				0.500	110		No	0		
1544	PTN	3	TPCW / 008	5613-M-3008, SH 4	4	Small Bore Vents	3-60-210	2						110				2.000	110		No	0		
1511	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	FE(FI-3-861, -862, PI-3-861, 862, 863, 864	FE(FI-3-862)	0.5	4	H,D	N	HT	local no control functions	110		BV	BV conservative due to downward portion	0.500	110	0	No	HT	repair/patch if damaged; can isolate; no protection required	N
1511	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	FE(FI-3-861, -862, PI-3-861, 862, 863, 864	FE(FI-3-861)	0.5	4	H,D	N	HT	local no control functions	110		BV	BV conservative due to downward portion	0.500	110	0	No	HT	repair/patch if damaged; can isolate; no protection required	N
1511	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	FE(FI-3-861, -862, PI-3-861, 862, 863, 864	PI-3-861	0.5						110				0.500	110		No	0		
1511	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	FE(FI-3-861, -862, PI-3-861, 862, 863, 864	PI-3-862	0.5						110				0.500	110		No	0		
1511	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	FE(FI-3-861, -862, PI-3-861, 862, 863, 864	PI-3-863	0.5						110				0.500	110		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1511	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	FE(FI-3-861, -862, PI-3-861, 862, 863, 864	PI-3-864	0.5						110				0.500	110		No	0		
1513	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	Small Bore Vents & Drains	3-60-865	1				HT		110				1.000	110		No	HT		
1513	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	Small Bore Vents & Drains	3-60-862	1						110				1.000	110		No	0		
1513	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	Small Bore Vents & Drains	3-60-868	1						110				1.000	110		No	0		
1513	PTN	3	TPCW / 008	5613-M-3008, SH 3	2	Small Bore Vents & Drains	3-60-867	1						110				1.000	110		No	0		
1515	PTN	3	TPCW / 008	5613-M-3008, SH 3	3	PI-3-2016	PI-3-2016	0.75				HT		110				0.750	110		No	HT		
1520	PTN	3	TPCW / 008	5613-M-3008, SH 3	4	PI-3-5023	PI-3-5023	0.75				HT		110				0.750	110		No	HT		
1522	PTN	3	TPCW / 008	5613-M-3008, SH 3	4	Small Bore Vents & Drains	3-60-712	4				HT		110				4.000	110		No	HT		
1522	PTN	3	TPCW / 008	5613-M-3008, SH 3	4	Small Bore Vents & Drains	3-60-569	Not Provided						110	Tube OD of 0.5 assumed			0.500	110		No	0		
1522	PTN	3	TPCW / 008	5613-M-3008, SH 3	4	Small Bore Vents & Drains	3-60-670	0.75						110				0.750	110		No	0		
1486	PTN	3	TPCW / 008	5613-M-3008, SH 2	1	FE(FI)-3-1410	FE(FI)-3-1410	1	8	H,D	N	HT	local no control functions	110		BV	BV conservative due to downward portion	1.000	110	0	No	HT	repair/patch if needed	N
1491	PTN	3	TPCW / 008	5613-M-3008, SH 2	1	Small Bore Drains	3-60-104	1				HT		110				1.000	110		No	HT		
1493	PTN	3	TPCW / 008	5613-M-3008, SH 2	2	PI-3-1475, -1476, -1477, -1478	PI-3-1475	0.5				HT		110				0.500	110		No	HT		
1493	PTN	3	TPCW / 008	5613-M-3008, SH 2	2	PI-3-1475, -1476, -1477, -1478	PI-3-1476	0.5						110				0.500	110		No	0		
1493	PTN	3	TPCW / 008	5613-M-3008, SH 2	2	PI-3-1475, -1476, -1477, -1478	PI-3-1477	0.5						110				0.500	110		No	0		
1493	PTN	3	TPCW / 008	5613-M-3008, SH 2	2	PI-3-1475, -1476, -1477, -1478	PI-3-1478	0.5						110				0.500	110		No	0		
1500	PTN	3	TPCW / 008	5613-M-3008, SH 2	4	PI-3-1471, -1472, -1473, -1474,	PI-3-1471	0.5				HT		110				0.500	110		No	HT		
1500	PTN	3	TPCW / 008	5613-M-3008, SH 2	4	PI-3-1471, -1472, -1473, -1474,	PI-3-1472	0.5						110				0.500	110		No	0		
1500	PTN	3	TPCW / 008	5613-M-3008, SH 2	4	PI-3-1471, -1472, -1473, -1474,	PI-3-1473	0.5						110				0.500	110		No	0		
1500	PTN	3	TPCW / 008	5613-M-3008, SH 2	4	PI-3-1471, -1472, -1473, -1474,	PI-3-1474	0.5						110				0.500	110		No	0		
1504	PTN	3	TPCW / 008	5613-M-3008, SH 2	4	Small Bore Vents & Drains	3-60-741A	0.75				HT		110				0.750	110		No	HT		
1504	PTN	3	TPCW / 008	5613-M-3008, SH 2	4	Small Bore Vents & Drains	3-60-742A	0.75						110				0.750	110		No	0		
1504	PTN	3	TPCW / 008	5613-M-3008, SH 2	4	Small Bore Vents & Drains	3-60-742B	0.75						110				0.750	110		No	0		
1504	PTN	3	TPCW / 008	5613-M-3008, SH 2	4	Small Bore Vents & Drains	3-60-741B	0.75						110				0.750	110		No	0		
1466	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	PS-3-1621, TS-3-4102, -4103, -4104, -4105	PT-3-1621	0.5	50	H,D	N	HT		110		BV	BV conservative due to downward portion	0.500	110	0	No	HT	isolate at root valve if damaged; no protection required	N
1467	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	FE (FT)-3-6900	FE (FT)-3-6900	Not Provided				HT		110	Tube OD of 0.5 assumed			0.500	110		No	HT		
1468	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	PI-3-1468, -1469, -1470, -6900	PI-3-1468	0.5				HT		110				0.500	110		No	HT		
1468	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	PI-3-1468, -1469, -1470, -6900	PI-3-1469	0.5				HT		110				0.500	110		No	HT		
1468	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	PI-3-1468, -1469, -1470, -6900	PI-3-1470	0.5				HT		110				0.500	110		No	HT		
1468	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	PI-3-1468, -1469, -1470, -6900	PI-3-6900	0.5				HT		110				0.500	110		No	HT		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-110	1				HT		110				1.000	110		No	HT		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-074	0.5						110				0.500	110		No	0		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-033	1						110				1.000	110		No	0		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-038	0.5						110				0.500	110		No	0		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-072	0.5						110				0.500	110		No	0		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-073	0.5						110				0.500	110		No	0		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-042A	1						110				1.000	110		No	0		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-042B	1						110				1.000	110		No	0		
1473	PTN	3	TPCW / 008	5613-M-3008, SH 1	1	Small Bore Vents, Drains & Test Connections	3-60-176	1						110				1.000	110		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-800	0.75				HT		100				0.750	100		No	HT		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-894	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-892	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-898	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-896	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-893	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-891	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-895	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-897	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-899	0.75						100				0.750	100		No	0		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-901	0.75						100				0.750	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-902	1						100				1.000	100		No	0		
1475	PTN	3	TPCW / 008	5613-M-3008, SH 1	2	Small Bore Vents & Drains	3-60-903	0.75						100				0.750	100		No	0		
1480	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	LS-3-1527, -1528	LS-3-1527	1	4	H,D	N	HT		110		BV	BV conservative due to downward portion	1.000	110	0	No	HT	fill as needed; repair if damaged; no protection required	N
1480	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	LS-3-1527, -1528	LS-3-1528	1	4	H,D	N	HT		110		BV	BV conservative due to downward portion	1.000	110	0	No	HT	fill as needed; repair if damaged; no protection required	N
1481	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	LC-3-1530	LC-3-1530	0.75	6	H,D	N	HT		110		BV	BV conservative due to downward portion	0.750	110	0	No	HT	fill as needed; repair if damaged; no protection required	N
1482	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	FM-3-0540, LG-3-1422, -1423, -1424	FM-3-0540	2				HT		110				2.000	110		No	HT		
1482	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	FM-3-0540, LG-3-1422, -1423, -1424	LG-3-1422	0.75						110				0.750	110		No	0		
1482	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	FM-3-0540, LG-3-1422, -1423, -1424	LG-3-1423	0.75						110				0.750	110		No	0		
1482	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	FM-3-0540, LG-3-1422, -1423, -1424	LG-3-1424	0.75						110				0.750	110		No	0		
1485	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	Small Bore Vents & Drains	3-60-020A	0.5				HT		110				0.500	110		No	HT		
1485	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	Small Bore Vents & Drains	3-60-019	0.5						110				0.500	110		No	0		
1485	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	Small Bore Vents & Drains	3-60-020B	0.5						110				0.500	110		No	0		
1485	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	Small Bore Vents & Drains	3-60-018	0.5						110				0.500	110		No	0		
1485	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	Small Bore Vents & Drains	3-60-679	0.5						110				0.500	110		No	0		
1485	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	Small Bore Vents & Drains	3-60-680	0.5						110				0.500	110		No	0		
1485	PTN	3	TPCW / 008	5613-M-3008, SH 1	4	Small Bore Vents & Drains	3-60-017	0.5						110				0.500	110		No	0		
96	PTN	0	076	5610-M-3076	1	Tank level sight glasses; Chemical feed pump discharge pressure gages	Tank level sight glasses; Chemical feed pump discharge pressure gages	N/A	N/A	N/A	N/A	N/A	only a concern if PAA is used. PAA tank is in warm area.			N/A					No	N/A		
97	PTN	0	076	5610-M-3076	1	Chemical feed tanks Chemical addition tanks	Chemical feed tanks Chemical addition tanks	N/A	N/A	N/A	N/A	N/A	Storage Tanks for ETA , DMA, and Hydrazine located adjacent to old Polisher Bldg exposed on all sides. ETA data from SUEZ STEAMATE PWS1440. None of the chemical are affected until beow zero degrees F. PAA is an aquious solution and can freeze. PAA is stored within Turb bldg east of the HD pump area in Chemical pump area. Chemical feed tanks are located east of the HD pumps and eclosed on other three sides and ceiling. Local temeprature will remain above freezing.			N/A					No	N/A		
99	PTN	0	076	5610-M-3076	1	Chemical addition pump discharge relief valves	Chemical addition pump discharge relief valves	N/A	N/A	N/A	N/A	N/A	PAA not used in relief lines.			N/A					No	N/A		
100	PTN	0	076	5610-M-3076	1	Various vents, drains, flexible hose connections	Various vents, drains, flexible hose connections	N/A	N/A	N/A	N/A	N/A	Tanks are located adjacent to old Polisher Bldg exposed on all sides. 1/2" tubing runs from tanks in trench under west access road to TB west edge near U3 HD pumps. ETA/PAA are continuous feed process and flow will prevent freezing. PAA lines are all within the chemical pump feed area which will prevent freezing due to local equipment piping heat. Contiuous flow will also prevent freezing.			N/A					No	N/A		
98	PTN	0	076	5610-M-3076	1	1" NPS to 3/8" tubing	1" NPS to 3/8" tubing	N/A	N/A	N/A	N/A	N/A	Tanks are located adjacent to old Polisher Bldg exposed on all sides. 1/2" tubing runs from tanks in trench under west access road to TB west edge near U3 HD pumps. ETA/PAA are continuous feed process and flow will prevent freezing. PAA lines are all within the chemical pump feed area which will prevent freezing due to local equipment piping heat. Contiuous flow will also prevent freezing.			N/A					No	N/A		
118	PTN	0	AFWS / 075	5610-M-3075, SH 2	1	3/4" Vents	4-20-382	0.750	1.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.750	40	0	No	HT	Heat Trace	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
117	PTN	0	AFWS / 075	5610-M-3075, SH 2	1	8" Inlet Pipe	3-8"-3-T	8.000	380.0	H,U	N	M	length estimated by GA drawing, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	M		
119	PTN	0	AFWS / 075	5610-M-3075, SH 2	2	PIT	PIT-3675, 76, 77 length per loop	0.375	10.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT	HT	N
121	PTN	0	AFWS / 075	5610-M-3075, SH 2	2	1/2" Connections	20-345, 346, 347 length per loop	0.500	2.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT	Heat Trace	N
122	PTN	0	AFWS / 075	5610-M-3075, SH 2	2	Flange Connection	On pump Suction, 3 places, length per pump	4.000	4.0	H,U	N	I		40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	4.000	40	0	No	I		
120	PTN	0	AFWS / 075	5610-M-3075, SH 2	2	6" Inlet Pipe	6"-3-T	6.000	380.0	H,U	N	M	length estimated by GA drawing, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	M		
123	PTN	0	AFWS / 075	5610-M-3075, SH 2	3	AFW Pump PIT	PIT-6735A,B,C length per loop	0.375	10.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT	HT	N
124	PTN	0	AFWS / 075	5610-M-3075, SH 2	3	4" Pipe	4"-3-T length per pump	4.000	8.0	H,U	N	I	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	4.000	40	0	No	I		
125	PTN	0	AFWS / 075	5610-M-3075, SH 2	4	2.5" Pipe	2 1/2"-1-A Pump Discharge, length per pump	2.500	8.0	H,U	N	I	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	2.000	40	0	No	I		
126	PTN	0	AFWS / 075	5610-M-3075, SH 2	5	PIT	PIT-1429, 30, 31 length per loop	0.375	10.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT	HT	N
129	PTN	0	AFWS / 075	5610-M-3075, SH 2	5	1/2" Connection	20-311, 313, 315 Length per Valve	0.500	1.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT	Heat Trace	N
128	PTN	0	AFWS / 075	5610-M-3075, SH 2	5	1" Connection off reducer	20-179, 279, 379 Length per Valve	1.000	1.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	1.000	40	0	No	HT	HT	N
130	PTN	0	AFWS / 075	5610-M-3075, SH 2	5	4" BDB/FLEX Connection	AFPD-004, 005 length per valve	4.000	4.0	H,U	N	I	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	4.000	40	0	No	I		
127	PTN	0	AFWS / 075	5610-M-3075, SH 2	5	6" Pipe	6"-1-A	6.000	380.0	H,U	N	M	length estimated by GA drawing, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	M		
134	PTN	0	AFWS / 075	5610-M-3075, SH 2	6	3/4" Connection	Vents / Drains / Misc. Connections	0.750	1.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.750	40	0	No	HT	Heat Trace	N
132	PTN	0	AFWS / 075	5610-M-3075, SH 2	6	3/4", 1", 1.5" Pipe	All Oil Piping-1-SX	0.750	10.0	H,U	N	M	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.750	40	0	No	M	HT	N
133	PTN	0	AFWS / 075	5610-M-3075, SH 2	6	150 PSIG	RF-6401A,B,C	1.000	1.0	H,U	N	N/A	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	1.000	40	0	No	N/A	No HT required	N
135	PTN	0	AFWS / 075	5610-M-3075, SH 2	6	1" Connection	AFWU-026, 027, 028	1.000	1.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	1.000	40	0	No	HT	HT	N
131	PTN	0	AFWS / 075	5610-M-3075, SH 2	6	Lube Oil Cooler	L/O Cooler Water side	8.000	5.0	H,U	N	M	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	M		
141	PTN	0	AFWS / 075	5610-M-3075, SH 2	7	FE-3-1418 taps	3-20-450, 451	0.500	1.0	BV	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT	Heat Trace	N
137	PTN	0	AFWS / 075	5610-M-3075, SH 2	7	2" Flange Connection	Down Stream valve 3-20-456 and 4-20-458	2.000	2.0	H,U	N	I	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	2.000	40	0	No	I	Heat Trace	N
136	PTN	0	AFWS / 075	5610-M-3075, SH 2	7	2" Pipe	2"-1-C	2.000	10.0	H,U	N	I	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	2.000	40	0	No	I	insulate only	N
138	PTN	0	AFWS / 075	5610-M-3075, SH 2	8	1" Pipe	pipe to valve AFWU-023, 24, 25	1.000	N/A	H,U	N	N/A	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	1.000	40		No	N/A	not connected; no protection required	N
139	PTN	0	AFWS / 075	5610-M-3075, SH 2	9	AFW Pump/Turbine Lube Oil Cooler Loop (Includes the lube oil reservoir, relief valve, local instruments, main oil pump, and connections).	N/A	N/A	N/A	N/A	N/A	N/A		40	SBFW pumps are in standby, therefore, temperature reflects ambient	N/A	N/A		40	N/A	No	N/A		
140	PTN	0	AFWS / 075	5610-M-3075, SH 2	10	1" Pipe	1"-1-C	1.000	20.0	H,U	N	HT	Assumed length, requires Iso verification	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H	Upward bend not credited for conservatism	1.000	40	0	No	HT	HT	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
162	PTN	0	FWS / 074	5610-M-3074, SH 2	1	1/2" Pipe for PC	not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB	50		N/A			50		No	N/A		
163	PTN	0	FWS / 074	5610-M-3074, SH 2	1	PI	not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB	50		N/A			50		No	N/A		
165	PTN	0	FWS / 074	5610-M-3074, SH 2	1	3/4" Vents	not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB	50		N/A			50		No	N/A		
166	PTN	0	FWS / 074	5610-M-3074, SH 2	1	1" Drains	not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB	50		N/A			50		No	N/A		
167	PTN	0	FWS / 074	5610-M-3074, SH 2	1	6" Connection	not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB	50		N/A			50		No	N/A		
168	PTN	0	FWS / 074	5610-M-3074, SH 2	2	Tank level instrumentation	LSHH-6210	0.375	4.0	H	N	HT		90		H		0.375	90	0.4	No	HT	HT	N
168	PTN	0	FWS / 074	5610-M-3074, SH 2	2	Tank level instrumentation	LT-6211	0.375	4.0	H	N	HT		90		H		0.375	90	0.4	No	HT	HT	N
168	PTN	0	FWS / 074	5610-M-3074, SH 2	2	Tank level instrumentation	LSL-6210	0.375	4.0	H	N	HT		90		H		0.375	90	0.4	No	HT	HT	N
168	PTN	0	FWS / 074	5610-M-3074, SH 2	2	Tank level instrumentation	LSLI-6210	0.375	4.0	H	N	HT		90		H		0.375	90	0.4	No	HT	HT	N
168	PTN	0	FWS / 074	5610-M-3074, SH 2	2	Tank level instrumentation	LI-6210	0.375	4.0	H	N	HT		90		H		0.375	90	0.4	No	HT	HT	N
170	PTN	0	FWS / 074	5610-M-3074, SH 2	4	2" piping to Vent tank	2"-9-SL	0.750	55.0	TV,H	N	HT	This is overflow line and does not contain stagnant water	Ambient		H		0.750	400	14	No	HT	repair if damaged ; no protection required	N
170	PTN	0	FWS / 074	5610-M-3074, SH 2	4	1" piping to Vent tank	1"-9-SL BETWEEN DWDS-168 AND TANK	1.000	50.0	TV,H	N	HT		50	#N/A	H		1.000	50	0	No	HT	repair if damaged	N
170	PTN	0	FWS / 074	5610-M-3074, SH 2	4	10" piping to Vent tank	10" Vent Tank vent line	10.000	10.0	H,U	N	I	FWH3A	50		H	Upward bend not credited for conservatism	Not Analyzed	50	#N/A	No	I		
174	PTN	0	FWS / 074	5610-M-3074, SH 2	8	3" Drain Line	DWDS-019	3.000	3.0	H	N	I		50		H		3.000	50	1	No	I		
175	PTN	0	FWS / 074	5610-M-3074, SH 2	9	1/4" to 1.5" pipe	DWDS-015	1.500	1.0	H	N	I		50		H		1.500	50	0	No	I		
177	PTN	0	FWS / 074	5610-M-3074, SH 2	10	Connections	DWDS-016	10.000	11.0	H	N	I		50		H		Not	50	#N/A	No	I		
179	PTN	0	FWS / 074	5610-M-3074, SH 2	12	6"-10" pipe	DWDS-020	10.000	7.0	H	N	I		50		H		Not	50	#N/A	No	I		
181	PTN	0	FWS / 074	5610-M-3074, SH 2	13	3/4" Vents	DWDS-4-115	0.750	1.0	TV	N	HT		50		TV		0.750	50	0	No	HT	repair if damaged	N
181	PTN	0	FWS / 074	5610-M-3074, SH 2	13	3/4" Vents	DWDS-3-114	0.750	1.0	TV	N	HT		50		TV		0.750	50	0	No	HT	repair if damaged	N
181	PTN	0	FWS / 074	5610-M-3074, SH 2	13	3/4" Vents	DWDS-3-115	0.750	1.0	TV	N	HT		50		TV		0.750	50	0	No	HT	repair if damaged	N
182	PTN	0	FWS / 074	5610-M-3074, SH 2	13	1" Drains	DWDS-4-112	0.750	2.0	BV	N	HT		50		BV		0.750	50	0	No	HT	repair if damaged	N
182	PTN	0	FWS / 074	5610-M-3074, SH 2	13	1" Drains	DWDS-3-109	0.750	2.0	BV	N	HT		50		BV		0.750	50	0	No	HT	repair if damaged	N
182	PTN	0	FWS / 074	5610-M-3074, SH 2	13	1" Drains	DWDS-3-110	0.750	2.0	BV	N	HT		50		BV		0.750	50	0	No	HT	repair if damaged	N
182	PTN	0	FWS / 074	5610-M-3074, SH 2	13	1" Drains	DWDS-3-111	0.750	2.0	BV	N	HT		50		BV		0.750	50	0	No	HT	repair if damaged	N
182	PTN	0	FWS / 074	5610-M-3074, SH 2	13	1" Drains	DWDS-4-113	0.750	1.0	VD	N	HT	Drain missing or buried, assumed length based on similar	50		VD		0.750	50	#N/A	No	HT	repair if damaged	N
183	PTN	0	FWS / 074	5610-M-3074, SH 2	13	8" Pipe TO SWLU Pump valve SWLU-3-059 (CLOSED)	SWLU-3-059	8.000	110.0	H,U	N	I	See 5613-M-3082 SH1. 50% of pipe run located in west condenser pit fully exposed. No insulation with constant 10 mph wind achieves 50% freeze in 37 hrs. Most likely would freeze 100% in 96 hrs	50		H	Upward bend not credited for conservatism	Not Analyzed	50	#N/A	No	I		
183	PTN	0	FWS / 074	5610-M-3074, SH 2	13	8" Pipe TO SWLU Pump valve SWLU-4-059 (CLOSED)	SWLU-4-059	8.000	110.0	H,U	N	I	See 5614-M-3082 SH1. 50% of pipe run located in west condenser pit fully exposed. No insulation with constant 10 mph wind achieves 50% freeze in 37 hrs. Most likely would freeze 100% in 96 hrs	50		H	Upward bend not credited for conservatism	Not Analyzed	50	#N/A	No	I		
183	PTN	0	FWS / 074	5610-M-3074, SH 2	14	10" Pipe to Cond XFR pump at CST	REDUCER PRIOR TO 4-20-402	10.000	351.0	H,U	N	M	See 5613-M-3018 SH1. Entire pipe run is on east side of Condenser and runs under/beside FW lines. The end near CST is exposed to wind as well as breezeway portions. Estimate 75% of run would not need insulation due to location equipment heat. Alternatively, perform transfer from DWST to CST every 12 hrs to replenish CST due to AFW water usage	50		H	Upward bend not credited for conservatism	Not Analyzed	50	#N/A	No	M		
183	PTN	0	FWS / 074	5610-M-3074, SH 2	14	10" Pipe to Tee located above Cond pump piit going to Cond XFR pump	REDUCER PRIOR TO 3-20-402	10.000	160.0	H,U	N	M	See 5613-M-3018 SH1. Entire pipe run is on east side of Condenser and runs under/beside FW lines. The end near CST is exposed to wind as well as breezeway portions. Estimate 75% of run would not need insulation due to location equipment heat. Alternatively, perform transfer from DWST to CST every 12 hrs to replenish CST due to AFW water usage	50		H	Upward bend not credited for conservatism	Not Analyzed	50	#N/A	No	M		
154	PTN	0	FWS / 074	5610-M-3074, SH 1	1	PI's & 3/4" Vents	DWDS-176	0.750	1.0	TV	N	HT	Protect DWST and CST	50		TV		0.750	50	0	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
154	PTN	0	5610-M-3074, SH 1	5610-M-3074, SH 1	1	PI's & 3/4" Vents	DWDS-175	0.750	1.5	TV	N	HT	Protect DWST and CST	40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
154	PTN	0	5610-M-3074, SH 1	5610-M-3074, SH 1	1	PI's & 3/4" Vents	PI-6697A	0.750	1.5	TV	N	HT	Protect DWST and CST, Protect DWST and CST	40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
154	PTN	0	5610-M-3074, SH 1	5610-M-3074, SH 1	1	PI's & 3/4" Vents	PI-6511A	0.750	1.0	H	N	HT	Protect DWST and CST, SIZE ESTIMATED IN FIELD	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.750	40	0	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
154	PTN	0	5610-M-3074, SH 1	5610-M-3074, SH 1	1	PI's & 3/4" Vents	PI-6697B	0.750	2.0	TV	N	HT		40	SBFW pumps are in standby, therefore, temperature reflects ambient	TV		0.750	40	0	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
154	PTN	0	5610-M-3074, SH 1	5610-M-3074, SH 1	1	PI's & 3/4" Vents	PI-6511B	0.750	1.0	H	N	HT	Protect DWST and CST, SIZE ESTIMATED IN FIELD	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.750	40	0	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
154	PTN	0	5610-M-3074, SH 1	5610-M-3074, SH 1	1	PI's & 3/4" Vents	DWDS-143	0.750	0.5	H	N	HT	Protect DWST and CST	40	SBFW pumps are in standby, therefore, temperature reflects ambient	H		0.750	40	0	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
153	PTN	0	FWS / 074	5610-M-3074, SH 1	1	3" RV-6726	RV-6726	3.000	1.0	TV	N	I	Protect DWST and CST	50		TV		3.000	50	1	Yes	No Protection Required		
155	PTN	0	FWS / 074	5610-M-3074, SH 1	2	Local Flow Indicator	FI-6657A	0.500	9.0	H	N	HT	Protect DWST and CST	450		H		0.500	400	8.5	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
155	PTN	0	FWS / 074	5610-M-3074, SH 1	2	Local Flow Indicator	FI-6657B	0.500	9.0	H	N	HT	Protect DWST and CST	450		H		0.500	400	8.5	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
158	PTN	0	FWS / 074	5610-M-3074, SH 1	4	FI's	FI-6656A	0.500	9.0	H	N	HT	Protect DWST and CST	436		H		0.500	400	8.5	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
158	PTN	0	FWS / 074	5610-M-3074, SH 1	4	FI's	FI-6656B	0.500	9.0	H	N	HT	Protect DWST and CST	436		H		0.500	400	8.5	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
160	PTN	0	FWS / 074	5610-M-3074, SH 1	4	3/4" Vents	DWDS-148	0.750	1.0	BV	N	HT	Protect DWST and CST	436		BV		0.750	400	0.5	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
160	PTN	0	FWS / 074	5610-M-3074, SH 1	4	3/4" Vents	DWDS-150	0.750	1.0	BV	N	HT	Protect DWST and CST, COULDN'T FIND. DATA ESTIMATED FROM OTHER SYSTEM DRAINS AND VENTS.	436		BV		0.750	400	0.5	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
161	PTN	0	FWS / 074	5610-M-3074, SH 1	4	1" Drains	DWDS-3-154	1.000	1.0	BV	N	HT	Protect DWST and CST	436		BV		1.000	400	0.5	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
161	PTN	0	FWS / 074	5610-M-3074, SH 1	4	1" Drains	DWDS-151	1.000	1.0	BV	N	HT	Protect DWST and CST	436		BV		1.000	400	0.5	No	HT	repair/patch if broken; no heat trace required. Procedure already calls out to run system during event	N
159	PTN	0	FWS / 074	5610-M-3074, SH 1	4	6", 8" Pipe	6"PIPE	6.000	250.0	H-I	Y	I	Protect DWST and CST, System only required for pressure boundary of DWST and FW header. Let freeze up to 75%. Could exclude portion off piping above DWST elevation	436		H-I		Not Analyzed	400	#N/A	No	AI		
159	PTN	0	FWS / 074	5610-M-3074, SH 1	4	6", 8" Pipe	8" PIPE	8.000	914.0	H	N	I	Protect DWST and CST, System only required for pressure boundary of DWST and FW header. Let freeze up to 75%	436		H		Not Analyzed	400	#N/A	No	I		
160	PTN	0	FWS / 074	5610-M-3074, SH 1	4	3/4" Vents	DWDS-4-150	0.750	1.0	TV	N	HT	Protect DWST and CST	436		TV		0.750	400	19	Yes	No Protection Required		
161	PTN	0	FWS / 074	5610-M-3074, SH 1	4	1" Drains	DWDS-3-149	1.000	0.5	H	N	HT	Protect DWST and CST	436		H		1.000	400	18	Yes	No Protection Required		
161	PTN	0	FWS / 074	5610-M-3074, SH 1	4	1" Drains	DWDS-153	1.000	0.5	BV	N	HT	Protect DWST and CST	436		BV		1.000	400	0.5	Yes	No Protection Required		
161	PTN	0	FWS / 074	5610-M-3074, SH 1	4	1" Drains	DWDS-4-154	1.000	0.5	BV	N	HT	Protect DWST and CST	436		BV		1.000	400	0.5	Yes	No Protection Required		
161	PTN	0	FWS / 074	5610-M-3074, SH 1	4	1" Drains	DWDS-4-149	1.000	0.5	H	N	HT	Protect DWST and CST	436		H		1.000	400	18	Yes	No Protection Required		
161	PTN	0	FWS / 074	5610-M-3074, SH 1	4	1" Drains	DWDS-152	1.000	1.0	TV	N	HT		436		TV		1.000	400	20	Yes	No Protection Required		
192	PTN	0	ICW / 019	5610-M-3019, SH 1	1	8", 10" & 12" Main Piping	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB			N/A					No	N/A		
197	PTN	0	ICW / 019	5610-M-3019, SH 1	2	12" Pipe & Isolation Valve	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB			N/A					No	N/A		
198	PTN	0	ICW / 019	5610-M-3019, SH 1	3	Pipe & Isolation Valve	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB			N/A					No	N/A		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A & 4B Sprinkler Supply Piping	PI-136-2	0.375	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A & 4B Sprinkler Supply Piping	PI-136-1	0.375	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A Deluge Pressure Indicator	PI-138-1	0.375	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A Deluge Pressure Indicator	PI-138-2	0.375	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A Deluge Pressure Indicator	PI-138-3	0.375	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Deluge Pressure Indicator	PI-133-1	0.375	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Deluge Pressure Indicator	PI-133-2	0.375	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Deluge Pressure Indicator	PI-133-3	0.375	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Deluge Pressure Indicator	4-10-1514B	0.375	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		0.375	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A Deluge Control	SV-4-2827A, 4F48A,	0.5	4	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A Deluge Control	PS-4-6705A, PS-4-6706A	0.5	2	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Deluge Control	SV-4-2827B, 4F48B	0.5	4	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Deluge Control	PS-4-6705B, PS-4-6706B	0.5	2	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A AND 4B Sprinkler Control	PS-4-6707	0.5	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism		40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A & 4B Supply Piping	4-10-1107	2.5	1	HD	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HD		2.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A Piping	4" 4-10-1112	4	6	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		4.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Piping	4" 4-10-1113	4	6	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		4.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A Piping	4" 4-10-1108	4	3	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		4.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Piping	4" 4-10-1109	4	3	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		4.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A Piping	4" 4-10-1110	4	1	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		4.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4B Piping	4" 4-10-1111	4	1	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		4.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	1	EDG 4A & 4B DELUGE Supply Piping	6" 4-10-1106	6	4	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	2	EDG 4A & 4B Sprinkler Supply Piping	PI-136-1	0.375	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	2	EDG 4A & 4B Sprinkler Supply Piping	PI-136-2	0.375	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	2	EDG 4A & 4B Sprinkler Supply Piping	4-10-1522	0.75	2	HD	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HD			40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	2	EDG 4A & 4B Sprinkler Supply Piping	4-10-1525	2.000	1.5	HD	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HD		2.000	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 8	2	EDG 4A & 4B HS -04-09 Piping	2.5" 4-10-1172, 1171	2.5	35	HV	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HV		2.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	2	EDG 4A & 4B Sprinkler Supply Piping	2.5" 4-10-1120	2.5	2	HD	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HD		2.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	2	EDG 4A & 4B Sprinkler Supply Piping	2" 4-10-1122	4	2	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		4.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 8	2	EDG 4A & 4B Sprinkler Supply Piping	6" BS-4-1420	6	6	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		Not Analyzed	40	#N/A	No	I		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	U3 A EDG Deluge Pressure Indicator	PI-3-73F-1, PI-3-73-1,2,3	0.25	2.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		Not Analyzed	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	U3 A EDG Deluge Pressure Switch	PS-3-73F-1	0.25	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		Not Analyzed	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	U3 B EDG Deluge Pressure Indicator	PI-3-72F-1, PI-3-72-1,2,3	0.25	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		Not Analyzed	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	Breezway deluge Piping to filter F47 and PS	PS-79AF-1	0.5	3	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	Breezway deluge Piping to filter F47, remote actuation soledoid, and PS 79AF-1	SV-79AS-1	0.5	8	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	Breezway deluge Piping to filter F47, remote actuation soledoid, and PS 79AF-1	SV-73S-1	0.5	8	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	U3A deluge Piping to filter 3F46A and PS 72F-1	PS-72F-1	0.5	3	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	U3B EDG deluge Piping to filter 3F27B and PS 79AF-1	SV-72S-1	0.5	8	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	Breezway Deluge Piping to PI-79F-1 and 79F-2	PI-79F-1 PI-79F-2	0.5	5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	U3 B EDG Deluge	10-845	2.5	13	HV	N	I	labeled 844 on dwg.Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HV		2.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	Pipe from valve 10-849 to Breezeway deluge valve 10-850	10-850	2.5	1	H,U	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	2.000	40	0	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	U3 A EDG Deluge	10-846	2.5	2	HV	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HV		2.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	U3 B EDG Deluge	10-843	2.5	2	HV	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HV		2.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	Pipe to U3 EDG deluge	3X2.5"	2.5	3	HV	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	2.000	40	0	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 7	1	Pipe to U3 EDG deluge	10-680	3	33	HV	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HV		3.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 5	1	Pipe 4"-11-F from J-line Header to Aux bldg wall	10-1321	4	90	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	4.000	40	0	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 5	1	Pipe to HS-03-01	10-616	6	15	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 5	1	Pipe to 10-HY-26	10-798	6	5	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 5	1	East West Header crosstie to valve 10-610	10-610 10"-11-F	10	120	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 4	1	Pipe from 4" supply line tee to Breezway deluge valve 10-849	10-679	3	15	HV	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	3.000	40	0	No	I		
150	PTN	0	FP / 016	5610-M-3016, SH 2	6	6" Pipe to FP Loop, backup	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB			N/A					No	N/A		
151	PTN	0	FP / 016	5610-M-3016, SH 2	7	Loop piping, including FI	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB			N/A					No	N/A		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Pressure Indicator	PI-4-7037	0.375	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		0.375	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Pressure Indicator	PI-4-7046	0.5	1.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		0.500	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Pressure Indicator	PI-4-7045	0.5	1.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		0.500	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Aux XFMR Deluge Pressure Switch	PS-4-6710	0.5	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		0.500	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Main XFMR Deluge Pressure Switch	PS-4-6709	0.5	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		0.500	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	S/U XFMR Deluge Pressure Switch	PS-4-7607	0.5	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		0.500	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Pressure Indicator	PI-4-7036	0.5	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		0.500	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Drain	SV-4-6699	1	1	HD	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HD		1.000	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Drain	4-10-1612	2.000	1	HD	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HD		2.000	40	#N/A	No	HT		

2054	PTN	4	089	5614-M-3089, SH 2	1	Pressure Control Instrument (PC x2) plus 1/2" tubing	PC-4-3709	0.500	N/A	N/A	N/A	N/A		523		N/A		0.500	400		No	N/A		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Pressure Indicator	PI-4-103-1	2.000	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		2.000	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Pressure Indicator	PI-4-101-1	2.000	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H,U		2.000	40	#N/A	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	Drain	4-10-1619	2.5	1	HD	N	I	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	HD		2.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	U4 S/U XFMR Deluge Supply	4-10-1611	4	6	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		4.000	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	U4 S/U XFMR Deluge Supply	BS-4-1424	6	8	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	U4 Aux XFMR Deluge Supply	4-10-634	6	1	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	U4 Main XFMR Deluge Supply	4-10-1575	6	1	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 11	1	U4 Aux and Main XFMR Deluge Supply	4-10-616	8	10	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	HV		Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Main XFMR Deluge Pressure Indicator	PI-3-7047	0.375	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Main XFMR Deluge Pressure Indicator	PI-3-101-1	0.375	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	S/U XFMR Deluge Pressure Indicator	PI-3-7036	0.375	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	S/U XFMR Deluge Pressure Indicator	PI-3-7037	0.375	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.375	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Aux XFMR Deluge Pressure Switch	PS-3-6710	0.5	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Main XFMR Deluge Pressure Switch	PS-3-6709	0.5	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Remote Actuation Solinoid to Aux XFMR deluge	SV-3-48	0.5	1.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Remote Actuation Solinoid to Main XFMR deluge	SV-3-47	0.5	1.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	S/U XFMR Deluge Pressure Switch	PS-3-7607	0.5	1	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Aux XFMR deluge Pressure Indicator	PI-3-7048	0.5	1.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	0.500	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Remote Actuation Solinoid to S/U XFMR deluge	SV-3-6699	1	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	1.000	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Aux XFMR deluge Pressure Indicator	PI-3-103-1	2.000	0.5	H,U	N	HT	Includes all connect tubing/piping. No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	2.000	40	0	No	HT		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Piping to S/U XFMR Deluge	3-10-1611	4	1	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	4.000	40	0	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Piping to Aux XFMR Deluge	3-10-1581	6	3	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	I		
	PTN	0	FP / 016	5610-M-3016, SH 10	1	Piping to S/U XFMR Deluge	BS-3-1424	6	2	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	Piping to Main XFMR Deluge	3-10-1575	6	1	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	I		
New	PTN	0	FP / 016	5610-M-3016, SH 10	1	FP header piping to Main and Aux deluge	3-10-620	8	5	HV	N	I	No flow	40	FP system in standby, therefore reflects ambient	H	Upward bend not credited for conservatism	Not Analyzed	40	#N/A	No	I		
144	PTN	0	FP / 016	5610-M-3016, SH 1	-	LT, PI, LC, LT, LS	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB			N/A					No	N/A		
148	PTN	0	FP / 016	5610-M-3016, SH 1	-	3" Drain	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB			N/A					No	N/A		
149	PTN	0	FP / 016	5610-M-3016, SH 1	-	Flanged Connection	Not in TB	N/A	N/A	N/A	N/A	N/A	Not in TB			N/A					No	N/A		

Extreme Temperature Reassessment

PSL

March 2021

Executive Summary

In February 2021, a low temperature event resulted in a widespread loss of electricity production over region operated by the Electric Reliability Council of Texas, Inc. (ERCOT). This was due to poor extreme weather preparation by utilities. NEE reviewed the PSL design for potential temperature related challenges to availability due to equipment and license issues. The original design in the UFSAR identified sustained local temperature periods between 29 (27 for U2) and 101 °F. The original intake temperature evaluation is 40 to 95 °F. This evaluation covers a 7-day sustained temperature at 4 °F (extreme low) and 121 °F (extreme high). These extreme values are based on the West Palm Beach, Fl location record high, 101 °F, +20 °F, and low, 24 °F, -20 °F, provided by the corporate meteorologist.

Immediate actions are recommended for the current winter:

- Continue to implement Cold Weather procedure
- Evaluate exterior lines to determine lowest operating temperature.
    - Insulate/provide temp heating to SPV lines that would not be operational below 4F
- Evaluate need to 'tent" MS/AFW area and allow heat losses from Feedwater/Main Steam piping to maintain area temp if extreme temperature conditions are predicted.

Upcoming summer readiness actions

- Continue with current upcoming summer readiness actions
- Ensure sufficient tenting is available to provide additional shading
- Ensure sufficient air horns are available to provide increased air flow to identified components
- Have WO's planned for installation of tenting and air horns at locations requested by Operations/Engineering
- Evaluate the possibility of connecting Chilled Water to replace one train of CFC's for cooling containment

Longer term corrective actions

- Continue walkdowns to identify extreme temperature sensitive equipment
- Seismically Qualify the RWT recirc line to allow recirc during extreme cold weather
- Perform additional evaluations/mitigating actions for temp sensitive equipment
- Install heat blankets around susceptible equipment to remove space heaters
- Convene a multi-discipline team to evaluate extreme temp conditions and mitigating actions. This team should consist of, at a minimum, Operations, Engineering, Maintenance (MM, EM, & I&C), Chemistry, Licensing, and Environmental.

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1. Temperature Vulnerable Locations

Review history of outdoor weather and determine several extreme weather events. Evaluate impact on of temperature transient and estimate area temperatures for various plant locations:

Table 1
Plant Location Maximum and Minimum Assumed Temperatures

Location	Basis	High	Low
Outdoors	This report evaluates sustained temperatures 20 °F more and less than those expected in the plant's design. The original design in the UFSAR identified sustained local temperature periods between 29 °F and 101 °F (27 °F and 101 °F).	121°F	4 °F
Emergency Diesel Generators	The system maintains the rooms at 104°F based on 93°F ambient air temperature during normal conditions. During periods of diesel generator standby the engine preheat system maintains temperature above 85°F and the cooling water system between 125°F and 155°F. Max/Min EDG room temp recorded 95°F/53°F Max/Min EDG oil temp recorded 123°F/82.5°F	Room 115°F Oil 143°F	Room 33°F Oil 62.5°F
Reactor Auxiliary Building	Ventilation rate is sized to limit the temperature to the design ambient maximum temperature of 104°F in the equipment areas (excluding ECCS areas during accident conditions) assuming an outside air temperature of 93°F. Minimum temperature of 55°F to ensure boric acid in primary systems remains in solution. Max recorded RAB temp 92°F Min recorded RAB temp 57°F	112°F	37°F
Battery Rooms/Electrical Equipment Rooms	Battery Rooms are designed to have temperature maintained less than 104°F with an outside air temperature of 93°F. Analysis has demonstrated that temporary (and infrequent) temperature excursions up to 120°F will neither affect the operability of safety related	124F	30F

	equipment in these rooms nor reduce their service life Max air temperature is 104F per the DBD Minimum air temperature is 50°F per the DBD and Cold Weather Procedure		
Containment	The limitation on containment air temperature of 120°F ensures that the peak containment vessel temperature does not exceed the containment vessel design temperature of 264°F. Highest peak containment temperature for the last 10 years is 112°F which did not coincide with the highest ambient temperature recorded. Lowest temperature seen was 83°F (while operating). Containment temperature is more driven by Atlantic Ocean intake temperature. 112°F and 83°F will be used conservatively to coincide with peak ambient temperature.	132°F	63°F
Refueling Water Tank	TS max temperature of 100°F and minimum 55°F Max recorded temp 94°F Min recorded temp 61°F	114°F	41°F
Intake Cooling Water	DBD Limits of 95°F and minimum 40°F	115F	28°F (Freezing temp for salt water)

2. Exposed Instrumentation

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect +20F	Effect – 10F	Effect – 20F	Comments
Instrument Lines outdoors	High 101F Low 27F	Ambient losses	High 101F Low 27F	Negligible impact	Negligible impact	Possible freeze concern	Possible freeze concern	Due to PSL's unique design, there are various systems and instrument lines exposed to outdoor ambient conditions. Due to this nature, more evaluations need to be performed to determine the effect on the plant.
Current degraded equipment	High 101F Low 27F	Ambient	High 101F Low 27F	Negligible impact	Negligible impact	Addressed in Cold Weather procedure	Addressed in Cold Weather procedure	Current degraded or known temperature effected equipment is addressed in the Cold Weather procedure.
Ovation Turbine Control System	Ambient temp High 99F Low 38F	Ambient via exhaust fans	Most ovation components designed for 0C (32F) to 50C (122F)	Negligible – within design criteria	Negligible – within design criteria	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	
Instrument Air Control Cabinet	Ambient temp High 99F Low 38F	Ambient via exhaust fans	Most ovation components designed for 0C (32F) to 50C (122F)	Negligible – within design criteria	Negligible – within design criteria	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	If cold air temp are sustained for 7 days then vendor input is required to support operation and determine potential risk

Scope
Walked down exterior of buildings
Reviewed MET tower instrument basis temperatures

3. Air handling / Heating

Site PSL System/ Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
Containment TS limit	High 112°F Low 83°F	Ambient & Containment Fan Coolers via Component Cooling Water & Intake Cooling Water	120°F is the TS Operability limit	Containment declared Inoperable – 8 hrs to restore or Mode 3 w/in 6hrs and Mode 4 w/in following 6 hrs	Containment declared Inoperable – 8 hrs to restore or Mode 3 w/in 6hrs and Mode 4 w/in following 6 hrs	No operability limit. May require opening vacuum breakers depending on containment pressure	No operability limit. May require opening vacuum breakers depending on containment pressure	
Control Room cooling	High 101F Low 27F	93 F Max, No low limit	120 F Max per UFSAR, No TS Limit	See comments	See comments	Negligible	Negligible	High ambient will cause higher operating temperatures but should not impact ability to sustain CR temperature below limit. The limit is based on a loss of all cooling.
Fan motor design limit	High 101F Low 27F	Motors have 40 C temperature rise	Various based on design and manufacturer.	Possible effect on insulation lifetime. Shorter motor life.	Possible effect on insulation lifetime. Shorter motor life.	Negligible since most industrial motors are rated to -20C	Negligible since most industrial motors are rated to -20C	Further evaluation will be required for each motor based on design and manufacturer
Reactor Auxiliary Building	High 101F Low 27F	93 F Max, No low limit	104 F Max per UFSAR at 93 F ambient with up to 120 F for short durations, No TS Limit	See comments	See comments	Negligible	Negligible	High ambient will challenge ability to meet 104 F limit and could exceed 120 F max. because RAB ventilation utilizes 100% outside air for cooling.
Essential Switchgear Area Temperature	High 101F Low 27F	93 F Max, No low limit	104 F Max per UFSAR at 93 F ambient with up to 120 F for short durations, No TS Limit	See comments	See comments	Negligible	Negligible	High ambient will challenge ability to meet 104 F limit and could exceed 120 F max. because EER ventilation utilizes 100% outside air for cooling.
Battery Room Temperature	High 101F Low 27F	93 F Max, No low limit	104 F Max per UFSAR at 93 F ambient with up to 120 F for short durations, No TS Limit	See comments	See comments	Negligible	Negligible	High ambient will challenge ability to meet 104 F limit and could exceed 120 F max. because EER ventilation utilizes 100% outside air for cooling.

Site PSL System/ Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
Cable Spreading Room	High 101F Low 27F	93 F Max, No low limit	104 F Max per UFSAR at 93 F ambient with up to 120 F for short durations, No TS Limit	See comments	See comments	Negligible	Negligible	High ambient will challenge ability to meet 104 F limit and could exceed 120 F max. because EER ventilation utilizes 100% outside air for cooling.
Current degraded equipment	None	N/A	N/A	N/A	N/A	N/A	N/A	

Scope

Reviewed winter / summer readiness lists

Reviewed design basis temperature for fan motors

Reviewed / walked down louver and damper material conditions

4. BOP / Support Systems

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
Condenser Performance / Back pressure	N/A	Circ Water System	N/A	N/A	N/A	N/A	N/A	Since condenser backpressure is driven by turbine load and intake temp, extreme ambient temperatures will have an unperceived effect with a relatively constant intake temperature.
Condenser Vacuum Sensing Lines	Ambient temp High 101F Low 27F	N/A	N/A	Negligible	Negligible	Possible freeze concern but will require further evaluation	Possible freeze concern but will require further evaluation	Lines partially filled with Condensate. Freeze concern may impact feedback loop to ovation system.
Instrument air/ dewpoint	High 101F Low 27F	TCW	TCW High 100F TCW Low 80F	N/A	N/A	N/A	N/A	Dewpoint is independent of ambient temperature. Air compressors cooled by TCW
Instrument air/ compressors	High 101F Low 27F	TCW	TCW High 100F TCW Low 80F	Possible high temp alarms/trips – more evaluation required	Possible high temp alarms/trips – more evaluation required	Possible TCW freezing in STBY compressor – no flow	Possible TCW freezing in STBY compressor – no flow	Temp air movers can be installed for high temps and temporary heaters/tenting for low temps
Reheat & Stop Valve DEH Lines	Ambient temp High 101F Low 27F	Lines are exposed. Reservoir temp controlled by TCW	Per MSDS – Recommended storage temp range 40-149F	Negligible – within design temp range	Negligible – within design temp range	Increased DEH pump work and possible sluggish valve movement	Increased DEH pump work and possible sluggish valve movement	Requires additional evaluation
1st & 2nd Stage Pressure Sensing Lines	Ambient temp High 101F Low 27F	Ambient via natural losses	Will require further evaluation	Negligible due to relatively high operating temperature	Negligible due to relatively high operating temperature	Possible freeze concern but will require further evaluation	Possible freeze concern but will require further evaluation	
Main Feed Water Pump Yokogawas	Ambient temp High 99F Low 38F	Ambient	Design criteria of 0C (32F) to 50C (122F)	Negligible – within design criteria	Negligible – within design criteria	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	
BOP motor performance at elevated temperature	High 101F Low 27F	Ambient losses	Various based on motor design	Possible effect on insulation lifetime. Shorter motor life.	Possible effect on insulation lifetime. Shorter motor life.	Negligible since most industrial motors are rated to -20C	Negligible since most industrial motors are rated to -20C	Further evaluation will be required for each motor based on design and manufacturer

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
Condensate pump bearings	High 150F Low 110F	Cooled by TCW	Maintained 110-150F per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range.
CW pump bearings	High in excess of 185F Low – not a concern with motor constantly running	Ambient losses. >210F is limit per Control Room ARP	Motor winding and insulation degradation	Possible high temp alarm	Possible temp rise above 210F resulting in effected CW Pump being S/D and Turbine Load reduced	N/A	N/A	Current practice when approaching high temp alarm (185F) is to establish tenting for shade and an air horn for increased air flow.
FW pump bearings / LO coolers	High 112F Low 85F	Cooled by TCW	Maintained 85-112F per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range.
HD pump bearings	High 110F Low 85F	Cooled by TCW	Maintained 85-110F per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range.
Generator Hydrogen coolers	High 125F Low 90F	Cooled by TCW	Maintained 90-125F per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range. For extreme temperature conditions, Increased TCW temperatures will increase generator cold gas temperatures requiring a load reduction if cold gas temperatures reach 50°C. Trip at 56°C

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
Generator Seal Oil Coolers	High 150F Low 100F	Cooled by TCW	Maintained 100-150F per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range.
EHC coolers	High 130F Low 110F	Cooled by TCW	Maintained 110-130F per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range.
ISO phase bus cooling	High 90C Low 45C	Cooled by TCW	Maintained 45-90C per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range. Downpower if conductor > 105°C. Ambient > 40°C will reduce cooling efficiency and increase conductor temperature.
Turbine lube oil cooling	High 120F Low 110F	Cooled by TCW	Maintained 110-120F per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range.
Exciter cooling	High 115F Low 90F	Cooled by TCW	Maintained 90-115F per plant design	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Negligible effect from ambient temp	Temperature maintained by TCW system which is negligibly effected by ambient temperature. The driving factor is intake temp which is considered within its normal operating range.
Voltage Regulator		Voltage Regulator switchgear is rated for 40°C (104°F). Switchgear is installed in an air conditioner room with redundant AC to maintain VR	104C	Voltage regulator housing temp alarm is at 37.7°C (100°F). Downpower if VR housing temp > 104°C. Ambient > 40°C will	Downpower if VR housing > 104°C. Ambient > 40°C will reduce cooling efficiency of air conditioner.	Negligible effect from ambient temp	Negligible effect from ambient temp	

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
		housing temp at 20°C (68°F).		reduce cooling efficiency of air conditioner.				
Potable water lines freezing	High 101F Low 27F	Ambient losses	Maintaining water temp above freezing	N/A	N/A	Possible freeze concern	Possible freeze concern	Per Cold Weather procedure, drains are throttled to allow water to flow to prevent stagnant water from freezing.

Scope
Walked down system; reviewed design bases…

5. Electrical Systems

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
SF6 MV Components	High 101F Low 27F	Ambient	Operating range of -13F to 104F	Breaker operation not guaranteed. Further evaluation is required.	Breaker operation not guaranteed. Further evaluation is required.	Negligible – within operating range	Negligible – within operating range	Increased temporary ventilation can be supplied to maintain room temp below 104F
MV Switchgear Ratings	High 101F Low 27F	Ambient	Per vendor tech manual, operating range -22F to 104F	Breaker operation not guaranteed. Further evaluation is required.	Breaker operation not guaranteed. Further evaluation is required.	Negligible – within operating range	Negligible – within operating range	Increased temporary ventilation can be supplied to maintain room temp below 104F
Transformer cooling	High 101F Low 27F	Ambient	Various based on Xfmr design	If AOP limits are reached, possible load reduction/plant trip	If AOP limits are reached, possible load reduction/plant trip	Negligible	Negligible	Load reduction/isolation may be required to stay within design criteria.
Dissolved gas monitoring equipment	High 101F Low 27F	Ambient	Per vendor tech manual, operating range -58F to 131F	Negligible – within design criteria	Negligible – within design criteria	Negligible – within design criteria	Negligible – within design criteria	
Station Batteries	High 101F Low 27F	Ambient/EER Ventiltion	Max 104F (DBD) Min 50F (DBD)	See comments	See comments	Negligible	Negligible	Operating with the battery temperature above 77F will result in improved discharge rate but reduced battery life.

Scope

Walked down system; reviewed design bases…

6. NSSS systems

Site **PSL** **System / Component**	**Historical High / Low** **(Deg F)**	**Heat Sink and / or Ambient Limit** **(Deg F /** **Max and Min**	**Operability or Functional Limit based on additional analysis/calculation** **(Deg F / Describe)**	**Effect + 10F**	**Effect of + 20F**	**Effect – 10F**	**Effect – 20F**	**Comments**
RWT temperature	High 94F Low 61F	Ambient	High 100F (TS) Low 55F (TS)	Declare RWT Inoperable – 1 hr to restore or 6 hrs to Mode 3 & 30 hrs to Mode 5	Declare RWT Inoperable – 1 hr to restore or 6 hrs to Mode 3 & 30 hrs to Mode 5	Declare RWT Inoperable – 1 hr to restore or 6 hrs to Mode 3 & 30 hrs to Mode 5 Per Cold Weather Procedure, when RWT <60F, either: 1) Place RWT on recirc (this makes the RWT Inoperable due to non-seismic lines) or Have Chemistry sample to determine temperature every 2 hours	Declare RWT Inoperable – 1 hr to restore or 6 hrs to Mode 3 & 30 hrs to Mode 5 Per Cold Weather Procedure, when RWT <60F, either: 1) Place RWT on recirc (this makes the RWT Inoperable due to non-seismic lines) or Have Chemistry sample to determine temperature every 2 hours	
Ocean temperature intake limit	High 101F Low 27F	High 95F Low 40F	High 95F Low 40F	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	

Scope

Walked down system; reviewed design bases…

7. Diesel Generator

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
EDG fuel oil coagulation / viscosity	High 101F Low 27F	High 101F Low 27F	HIGH: No operability HIGH DESIGN: 104 °F LOW: No operability LOW DESIGN: none. ULSD Cloud point: ~14°F	111°F: fuel will function. May challenge consumption rate.	121°F: fuel will function. May challenge consumption rate / viscosity.	17 °F: above cloud point. No impact.	07°F: below cloud point. Filter clog & gelling starts. EDG function will be challenged.	Used industry data for cloud point.
EDG lube oil coagulation / viscosity	High 101F Low 27F	High 101F Low 27F	HIGH: No operability, 104°F design prior to de-rate LOW: 85deg F	111°F: lube oil cooled by Cooling water. No functional impact.	121°F: lube oil cooled by Cooling water. No functional impact	17 °F: engine running, no impact. Standby must keep warm.	07°F: engine running, no impact. Standby must keep warm.	Room heating and air flow isolation will be required to maintain lube oil above min required in standby.
EDG instrument cabinet ratings	High 101F Low 27F	High 101F Low 27F	HIGH: No operability, 104°F design	111°F: reduced life on elect components.	121°F: reduced life on elect components. Relays may fail.	17 °F: no impact.	07°F: Pneumatic relays may be impacted. Red rubber diaphragms.	Based upon experience.
EDG cooling water	High 101F Low 27F	High 101F Low 27F	HIGH: No operability, 190°F design	111°F: No impact on cooling water.	121°F: air flow thru radiator may be challenged for heat capacity.	17 °F: engine running, no impact. Standby must keep warm	07°F: engine running, no impact. Standby must keep warm	Room heating and air flow isolation will be required to maintain lube oil above min required in standby.
EDG Intake Air	High 101F Low 27F	High 101F Low 27F	HIGH: No operability, 104°F design prior to de-rate.	111°F: will de-rate engine output.	121°F: further de-rate of engine output.	17 °F: engine running, no impact. Higher boost pressures.	07°F: engine running, no impact. Higher boost pressures. May not have load control that is adequate for this corresponding fuel position.	May required boost limitations / load limits at very cold temperatures.

Scope

Walked down system; reviewed design bases…

8. Biological / Chemistry

Summary

Biological Intake (Seaweed, mussels, warm weather fish…): Subsequent to intake blockage events that occurred after Unit 1 startup in 1976 and Unit 2 in 1983, St. Lucie Plant has employed a multi-layered monitoring program, operational strategies, and component design enhancements to mitigate the effects of intake blockages with regard to historical intrusions. The two prominent types of marine life intrusion into St. Lucie's intake structures are sea plants and jellyfish. The combination of elevated nutrient levels in the water column, water clarity, and ideal ocean temperatures contributed to the several new algae events experienced at St. Lucie.

St. Lucie has experienced negligible to severe sea grass and jellyfish marine life at the intake structure in the 35 years of operation. There is currently no guaranteed forecasting method to determine sea grass or jellyfish intrusion events. The best method in preparing for these events is based on site operational experience of certain months of the year when these are most likely to occur. Additionally, daily monitoring is performed gathering debris tow samples and evaluating surrounding area reports for algal and jellyfish blooms.

Daily measurements/samplings recorded at the intake canal by biologists for predictive purposes and modeling. This information is continually incorporated into procedures 1[2]-NOP-21.15, *Intake Intrusion Monitoring and mitigation,* to provide proactive preparation and response to potential intake fouling issues.

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
Biological intake (seaweed, mussels, warm weather fish)	101 F 27 F	95F 40F	95F 40F	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	Outside design criteria and will require further evaluation	See "Summary" above
Water Treatment Plant	High 99F Low 38F	Ambient	High 105F Low 32F	Recycle loop will cause a S/D resulting in the inability to make water	Recycle loop will cause a S/D resulting in the inability to make water	N/A Water would freeze if stagnant. Maintain 200gpm outflow to prevent.	N/A Water would freeze if stagnant. Maintain 200gpm outflow to prevent.	Plan in place to combat extreme high and low temps
Chemistry sample lines	High 101F Low 27F	Ambient	High N/A Low 32F	Negligible	Negligible	Possible freeze concern.	Possible freeze concern	Freeze concern mitigated by constant sample flow – short term. Evaluate sample lines needed to be insulated – long term.
Chemistry – various chemicals	High 101F Low 27F	Ambient	Various – 3 Chemicals (Sulfuric Acid, PAA, & Chlorine Dioxide) have freezing points at 30-32F	Negligible	Negligible	Possible freeze concern	Possible freeze concern	Freeze concern mitigated by bring chemicals indoors or tenting and providing temporary heat source.

Scope

Walked down system; reviewed design bases…

9. Programs

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
Turbine vibrations	High 101F Low 27F	Multiple variables – Lube Oil, Turbine Cooling Water, Ambient Temp	#9 Bearing < 7 mils – Alert <14 mils - Trip	Negligible effect	Negligible effect	Negligible effect	Negligible effect	OE has shown that seasonal changes have minimal effect on turbine vibration.
Main Feedwater Isolation Valves	>60F	60F is the TS low value No upper value identified	>60F	Negligible effect	Negligible effect	Possible operability issue (72 hr S/D requirement)	Possible operability issue (72 hr S/D requirement)	MFIV declared Inoperable with temp <60F. Cold Weather procedure installs temporary heaters and tenting to maintain temperature >60F

Scope

Walked down system; reviewed design bases…

10. Material / fluids

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
Transformer oils	High 101F Low 27F	Xfmr fans and oil pumps dissipate heat to ambient	Top Oil Temp < 110C HotSpot Winding Temp < 120C	If AOP limits are reached, possible load reduction/plant trip	If AOP limits are reached, possible load reduction/plant trip	Negligible	Negligible	For High Temp: Top Oil nearing 110C or HotSpot >140C requires reduction in Xfmr loading. If 140C for HotSpot or 110C for Top Oil is reached, isolation of the Xfmr would be required.

Scope

Walked down system; reviewed design bases…

11. Licensing / Environmental

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
EOF Emergency Diesel	New Equip to site	High 158F Low -4F Low Battery 32F	High 104F Low -4 Low Battery 32F	Negligible Generator capacity reduced 10% for every 18F above 104F	Negligible Generator capacity reduced 10% for every 18F above 104F	Battery capacity for starting may be reduced below 32F	Battery capacity for starting may be reduced below 32F	Further evaluation/communication with Cummins is required to determine any detrimental effects below 32F. Interim option is to start EDG prior to extreme temps to mitigate this.
SSB/OSC Emergency Diesel	New Equip to site	High 158F Low -4F Low Battery 32F	High 104F Low -4 Low Battery 32F	Negligible Generator capacity reduced 10% for every 18F above 104F	Negligible Generator capacity reduced 10% for every 18F above 104F	Battery capacity for starting may be reduced below 32F	Battery capacity for starting may be reduced below 32F	Further evaluation/communication with Cummins is required to determine any detrimental effects below 32F. Interim option is to start EDG prior to extreme temps to mitigate this.
Independent Spent Fuel Storage Installation	High 99F Low 38F	Ambient	High 115F Low (-20F)	Negligible – within design criteria	Possible reduced heat transfer. Will require further evaluation	Negligible – within design criteria	Negligible – within design criteria	
EQ life impact	High 101F Low 27F	Various	TS, DBD, and UFSAR	See comments	See comments	See comments	See comments	Although the UFSAR states that the plant is designed for 27 to 101F ambient, the various components and structures may be rated to values outside this range. This will require extensive evaluations to assess the impact.
Design Basis requirements	High 101F Low 27F	Per UFSAR High 101F Low 27F	Per UFSAR High 101F Low 27F	See comments	See comments	See comments	See comments	Going above and below the UFSAR may place various components outside the DBD and render them Inoperable or Non-functional. Evaluations will need to be performed to confirm or rebuke this.
Discharge Canal Temp Criteria	High 101F Low 27F	• Discharge canal temperature is greater than 115F • Delta T between the intake and disch. temperature is greater than 30F	• Discharge canal temperature is greater than 115F • Delta T between the intake and disch. temperature is greater than 30F	See comments	See comments	See comments	See comments	Exceeding this state of FL permit requirement may result in a downpower to the units as governed by existing AOPs for CW.

Scope: Walked down system; reviewed design bases…

12. Operations

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
EDG's	123F/82.5F (Lube Oil) 93F/53F (Room)	Ambient 104F via radiator. Low Limit based on LO Temp	LO Temp < 85F renders EDG Inoperable.	Still below 104F limit.	Based on ventilation, may exceed 104F limit	<90F idle start to 450 rpm to raise temp <85F fast start not allowed	<65F EDG should be disabled from auto start until temp is raised above 65F.	
CTMT PIG Rad Monitors	High – N/A Low <50F	Sample CTMT air. At lower temperatures, condensation builds up in the lines resulting in erratic pump operation.	When pumps are stopped due to erratic operation, the CTMT Rad Monitors are declared inoperable. Increased RCS leakrate calc and possible S/D based on other equip availability.	Minimal	Minimal	Condensation buildup in the lines leading to erratic pump operation	Condensation buildup in the lines leading to erratic pump operation	
Containment Air Temperature	High 112°F Low 83°F	Ambient & Containment Fan Coolers via Component Cooling Water & Intake Cooling Water	120°F is the TS Operability limit	Containment declared Inoperable – 8 hrs to restore or Mode 3 w/in 6hrs and Mode 4 w/in following 6 hrs	Containment declared Inoperable – 8 hrs to restore or Mode 3 w/in 6hrs and Mode 4 w/in following 6 hrs	No operability limit. May require opening vacuum breakers depending on containment pressure	No operability limit. May require opening vacuum breakers depending on containment pressure	
Refueling Water Tank	High 94°F Low 61°F	Ambient	High 100F (TS) Low 55F (TS)	Declare RWT Inoperable – 1 hr to restore or 6 hrs to Mode 3 & 30 hrs to Mode 5	Declare RWT Inoperable – 1 hr to restore or 6 hrs to Mode 3 & 30 hrs to Mode 5	Declare RWT Inoperable – 1 hr to restore or 6 hrs to Mode 3 & 30 hrs to Mode 5 Per Cold Weather Procedure, when RWT <60F, either: 2) Place RWT on recirc (this makes the RWT Inoperable due to non-seismic lines) or	Declare RWT Inoperable – 1 hr to restore or 6 hrs to Mode 3 & 30 hrs to Mode 5 Per Cold Weather Procedure, when RWT <60F, either: 1) Place RWT on recirc (this makes the RWT Inoperable due to non-seismic lines) or	

Site PSL System / Component	Historical High / Low (Deg F)	Heat Sink and / or Ambient Limit (Deg F / Max and Min	Operability or Functional Limit based on additional analysis/calculation (Deg F / Describe)	Effect + 10F	Effect of + 20F	Effect – 10F	Effect – 20F	Comments
						3) Have Chemistry sample to determine temperature every 2 hours	2) Have Chemistry sample to determine temperature every 2 hours	

Scope

Walked down system; reviewed design bases…

13. PSL trip and down power review

Reactor trip logs were reviewed and no instances of plant trips occurring from either a high or low temperature condition could be found

14. Summary

+10F which is a temperature of 111F, limitations are:

- Refueling Water Tank exceeding the TS limit of 100F. This is a 1-hour shutdown action.
- Possibly exceeding Containment TS limit of 120F. As this temperature is more driven by intake temperature than ambient air, this is unlikely but possible.
- Sustained durations at 111F could have adverse effects on various electrical switchgear throughout the plant and additional evaluations would be required to determine effects.

+20F which is a temperature of 121F, limitations are:

- Refueling Water Tank exceeding the TS limit of 100F. This is a 1-hour shutdown action.
- Possibly exceeding Containment TS limit of 120F. As this temperature is more driven by intake temperature than ambient air, this is unlikely but possible.
- Sustained durations at 111F could have adverse effects on various electrical switchgear throughout the plant and additional evaluations would be required to determine effects.
- Discharge Canal Temperature >115F would require a down power to restore this value to less than 115F

-10F which is a temperature of 14F, limitations are:

- Refueling Water Tank exceeding the TS limit of 55F. This is a 1-hour shutdown action.
- Main Feed Isolation Valves ambient temperature going below 60F. This is a 72-hour shutdown action.

-20F which is a temperature of 4F, limitations are:

- Refueling Water Tank exceeding the TS limit of 55F. This is a 1-hour shutdown action.
- Main Feed Isolation Valves ambient temperature going below 60F. This is a 72-hour shutdown action.

Since PSL was designed with a low of 27F as the criteria, there are numerous areas that would require further evaluation, however, there are mitigating actions in place currently for areas that have been concerns in the past (EDG's, MFIV's, RWT). These actions have proven successful at the current low temperatures St. Lucie has experienced, but may not be adequate at -10F or -20F below these temps. EDG's not listed as a concern because during periods of cold weather, temperatures are monitored every 2 hours and prior to becoming Inoperable (if the mitigating strategy was unsuccessful), the EDG would be started to raise temperature.

Nuclear Extreme Weather Assessment

Bob Coffey

JW VP

March 9th, 2021

Nuclear Units Cold Weather Design Data

Location	Design Low Temperature	Record Low (Night)	2010 Florida Low	Analyzed At - 10 F	Analyzed At - 20 F
PTN - Miami	30 F	27 F	35 F	17 F	7 F
PSL – West Palm Beach (represents barrier Island temperatures)	27 F	24 F	24 F Daytona Beach	14 F	4 F
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Notes

- Ambient Temperatures (Record Lows From T. Drum – NEE Meteorologist)
- Seasonal readiness process is procedurally driven, executed preseason, ensures sites are ready for reliable generation
- Each site certifies readiness for seasonal weather to the CNO.

Nuclear Cold Weather Vulnerabilities

- **Turkey Point (17/7°F) and St. Lucie (14/4°F)**
  - Critical equipment to operation is outdoors, no installed heating or protection from elements.
  - Stagnate piping, instruments, valves, and tanks will experience freezing.
  - Unable to meet NRC requirements for temperature on some equipment.
- [redacted]
  - [redacted]
  - [redacted]
  - [redacted]
- [redacted]
  - [redacted]
  - [redacted]
  - [redacted]
  - [redacted]

Nuclear Cold Weather Mitigation Strategies

Cold Weather Reports

- Nuclear has developed detailed site-specific reports of the potential vulnerabilities.
- Full scope to address all issues is still being developed.

Potential Mitigation Strategies

- Equipment modifications, adding heating to rooms, tanks, instrument lines, diesel fuel oil, improving insulation, etc.
- Revise equipment temperature limits to accommodate lower temperatures, some will require NRC approval if the evaluations will support.
- Smaller scope analysis and modifications can be performed to improve margin

NEXTera ENERGY

Nuclear Cold Weather Actions

Cold Weather Future Actions

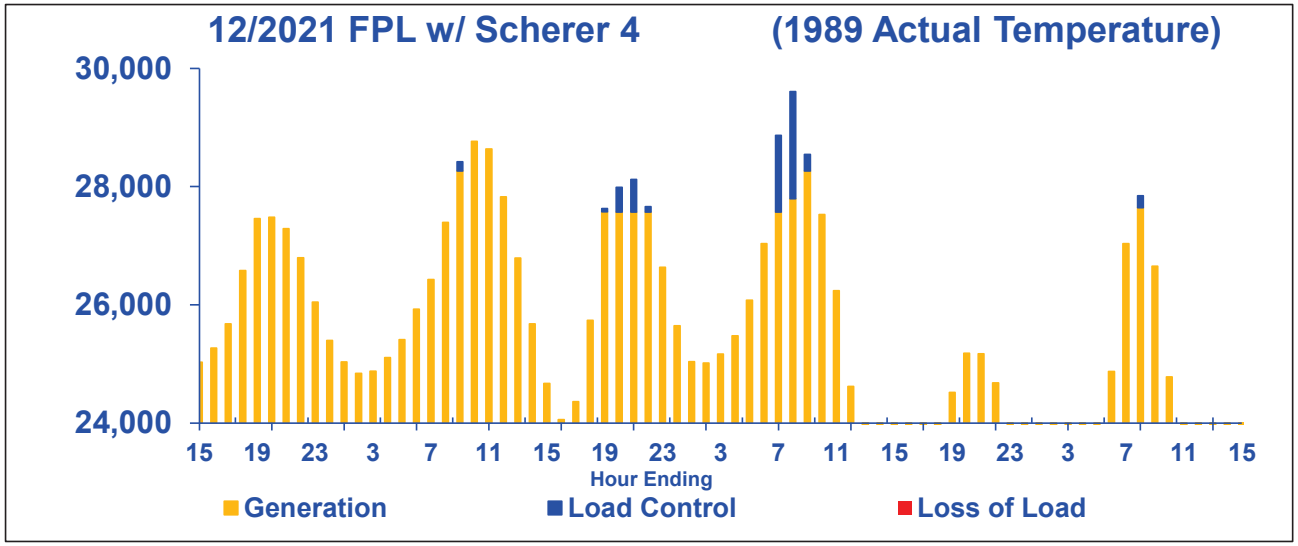
- Based on the studies performed, determine additional heating requirements for the impacted equipment rooms, tanks, instrument lines, and diesel fuel oil
- Develop level 1 cost estimates to install the additional heating and present to PRB for funding
- Based on funding, complete cold weather modifications
- Determine the required NRC approvals for cold weather operation
- Submit necessary LARs for cold weather operations

NEXTera ENERGY

Bar Graphs – Loss of Load

Using a forecast based on actual 1989 temperatures, December 2021 was examined assuming continuing operation of Scherer 4

December 2021 FPL Only w/ Scherer 4
(w/ "1989 Actual" Temperatures Winter Forecast)

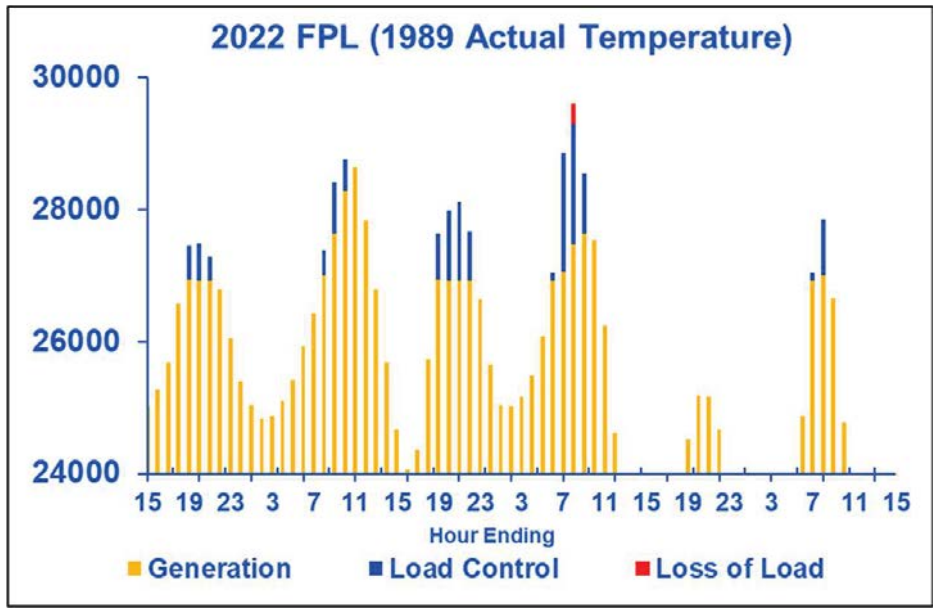


-includes 150 MW Oleander PPA, and 291 MW of peak winter upgrades

Assuming Scherer 4 is in-service, no loss of load is projected in December 2021

For 2022: FPL is projected to have some loss-of-load using the 1989 Actual Temperatures forecast

2022: FPL only w/ "1989 Actual" Temperatures Winter Forecast



The projected maximum loss of load is 320 MW

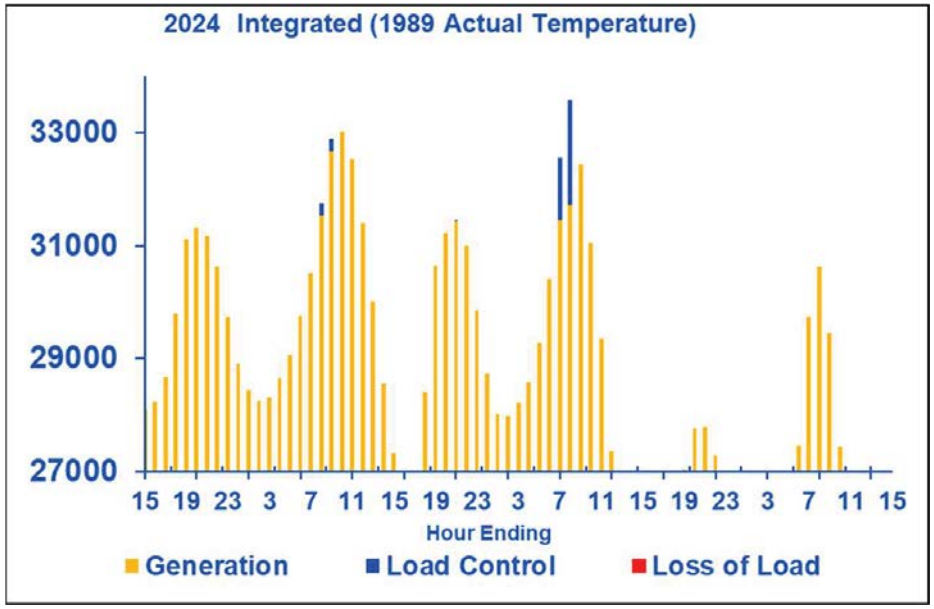
Scherer 4 is assumed to be retired

- In the graph above there is a projected loss-of-load of 320 MWh in 1 hour only
- The graph above represents ~106K customer outages lasting 30 minutes

There is only one (1) projected hour with loss of load (320 MWh)

For 2023 and 2024: There is no projected loss of load when using the "1989 Actual" Temperatures forecast in 2023 or 2024

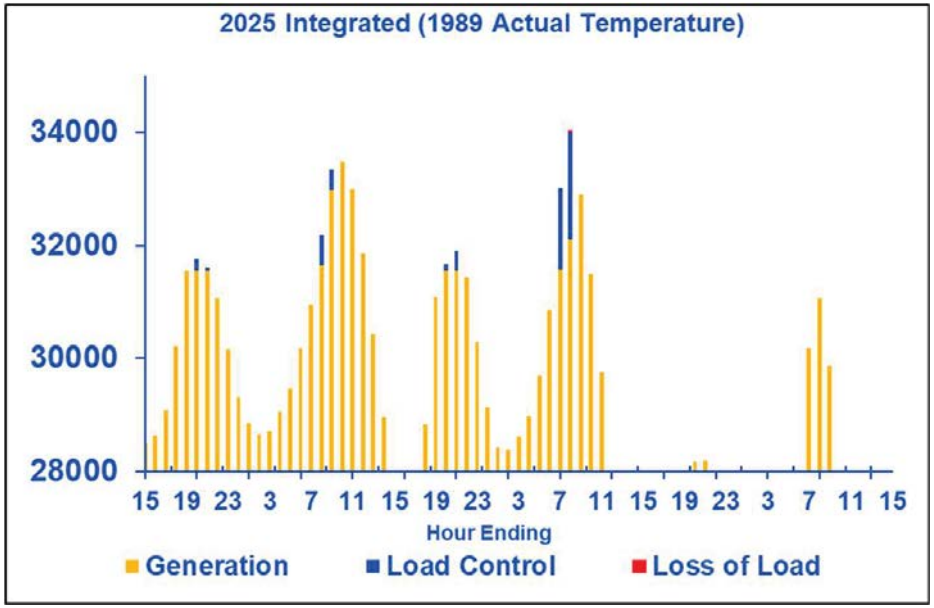
2024: Integrated system w/ "1989 Actual" Temperatures Winter Forecast*



* The projection for the Winter of 2023 is similar to that shown above for 2024

For 2025: Only minor loss of load is projected for 2025 when using the "1989 Actual" Temperatures forecast

2025: Integrated system w/ "1989 Actual" Temperatures Winter Forecast

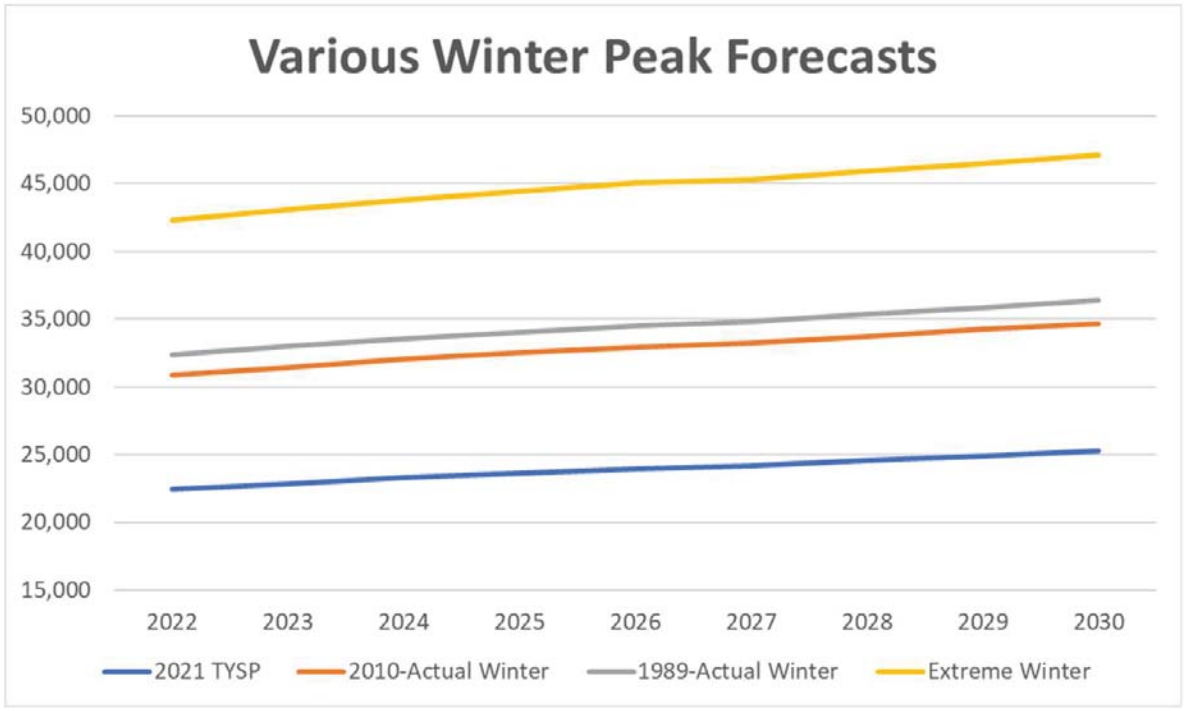


The projected maximum loss of load is 52 MW

- In the graph above there is a projected loss-of-load of 52 MWh in 1 hour only
- The graph above represents ~17K customer outages lasting 30 minutes

Three new high Winter load forecasts were examined

Three New Winter Forecasts vs 2021 TYSP Forecast



About 88% higher than 2021 TYSP

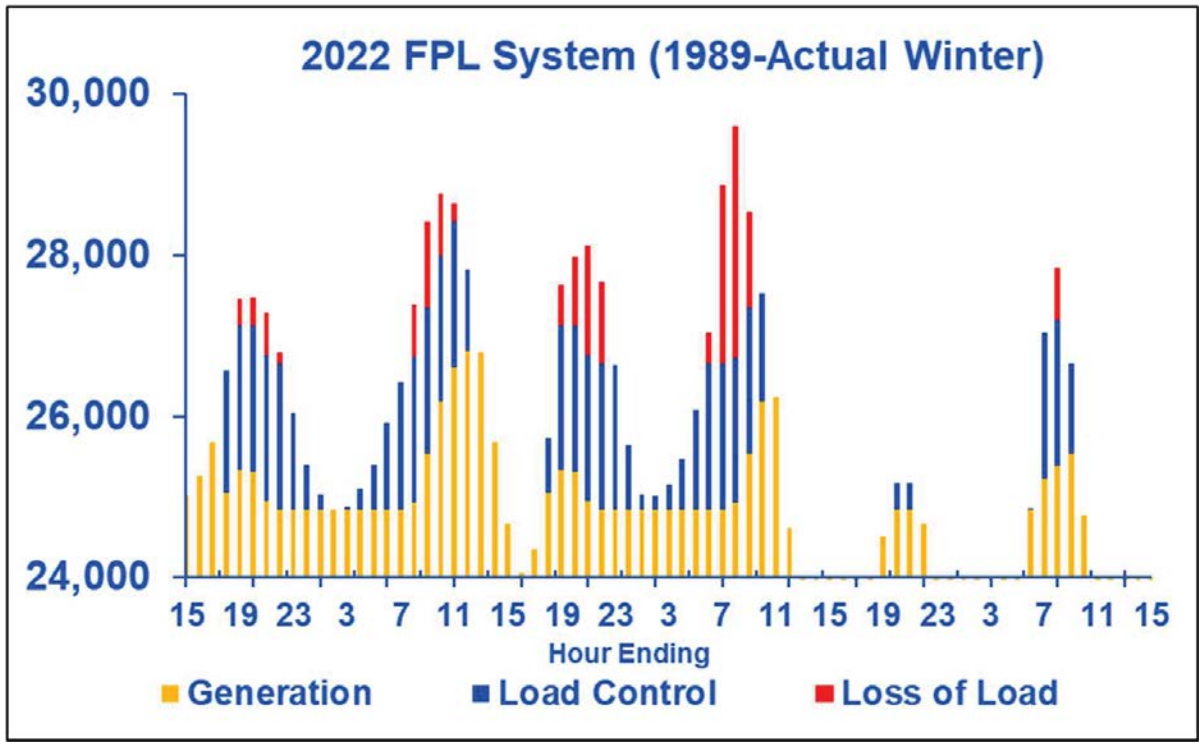
About 40-44% higher than 2021 TYSP

2021 TYSP P50 forecast

The 1989 actual temperature forecasted load is the focus for winter planning; the Extreme Winter forecasted load (~ 10 degrees colder than in 1989) was deemed too high to reasonably plan for (see Appendix)

Without near-term capacity increases, a 1989-like event was projected to be a problem for this coming Winter

Projected Loss of Load Based on 1989 Actual Forecast for the Year 2022 (FPL Only)

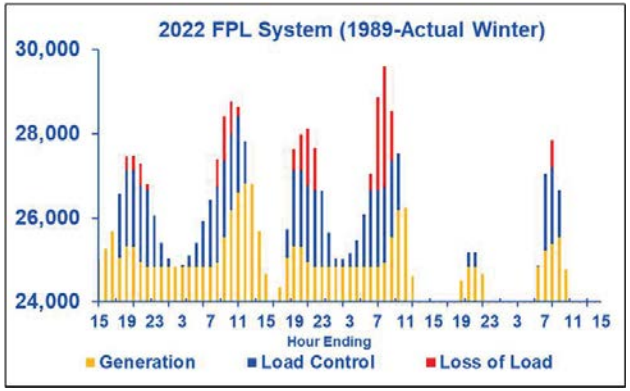


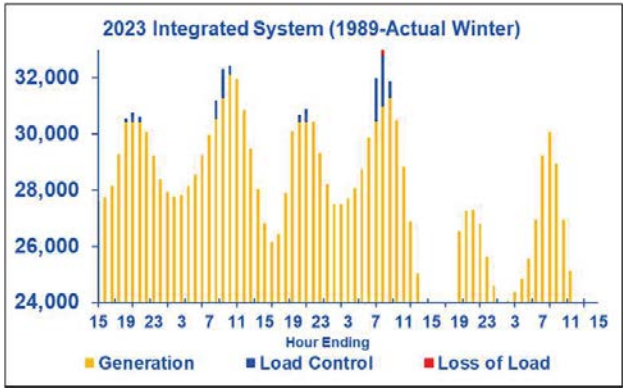
These preliminary analyses assumed the 2021 TYSP resource plan **w/ no additional resources and no generation forced outages**

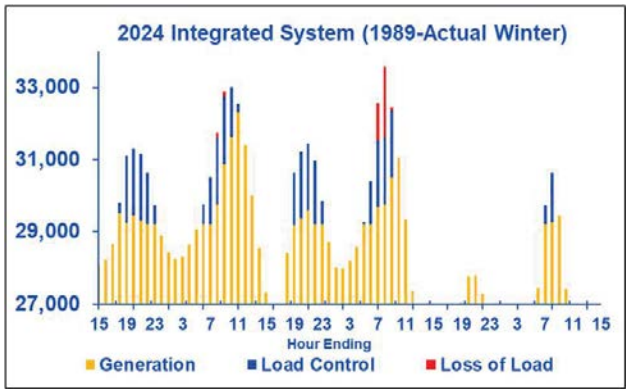
The loss of load projected for 2022 was ~2,400 MW at the worst hour and 15,000 MWh of unserved energy over the 3 days

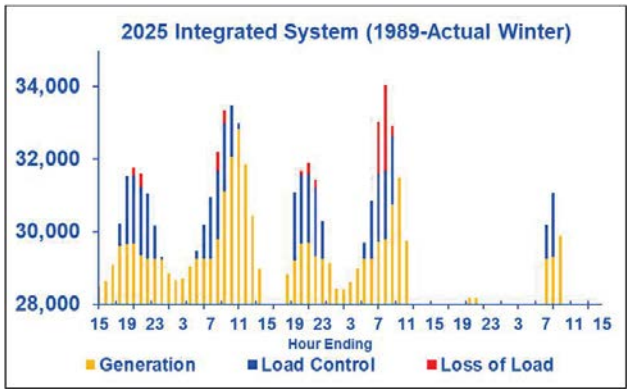
Expanding the view thru 2025 showed problems in each year without additional resources

Projected loss of load based on 1989 Actual Forecast 2022-2025 (without near-term capacity increases)





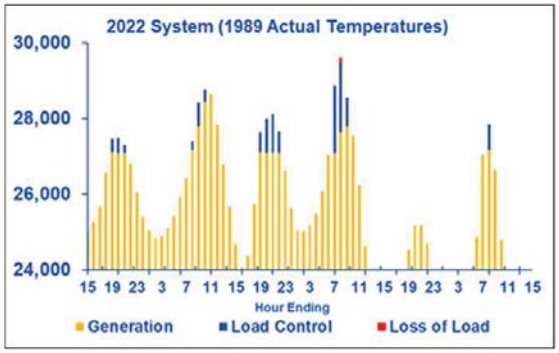


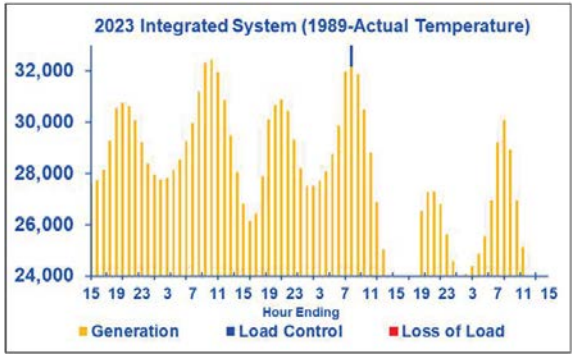


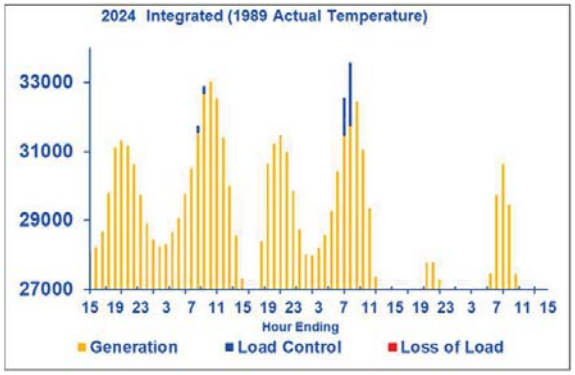
These analyses assumed the 2021 TYSP resource plan **w/ no additional resources and no generation forced outages**

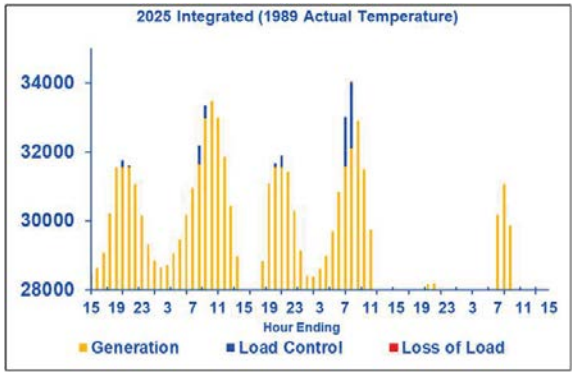
However, with the near-term capacity increases, the projected problems are almost eliminated

Projected loss of load based on 1989 Actual Forecast 2022-2025 (with near-term capacity increases)









These preliminary analyses assumed the 2021 TYSP resource plan **w/ the near-term capacity increases *(Manatee 1 & 2 plus Winter upgrades)*** **and no generation forced outages**

The previously projected inability to meet load is now addressed for 2023 & 2024 (w/ small amount of projected loss of load for one hour in 2022 and 2025)

Using another perspective – customer outages – also showed large problems without additional resources with a 1989-like load

Projected Customer Outages: 2022-2025

(assumes no additional resources & 3 levels of generation forced outages)

Number of Rotation Eligible Customers* = 3,500,000

	2022	2023	2024	2025
Assumed Generation Forced Outages (MW)	**0**	**0**	**0**	**0**
# of Customer Outages (30 minutes each)	3,005,400	33,600	676,400	1,259,000
# of Outages per Rotation Eligible Customer	0.86	0.01	0.19	0.36
Assumed Generation Forced Outages (MW)	**1,000**	**1,000**	**1,000**	**1,000**
# of Customer Outages (30 minutes each)	7,480,120	281,573	3,485,036	4,805,329
# of Outages per Rotation Eligible Customer	2.14	0.08	1.00	1.37
Assumed Generation Forced Outages (MW)	**2,000**	**2,000**	**2,000**	**2,000**
# of Customer Outages (30 minutes each)	14,447,062	1,187,254	7,645,237	9,350,204
# of Outages per Rotation Eligible Customer	4.13	0.34	2.18	2.67

The projected number of outages increases significantly if generation forced outages are assumed

The near-term capacity increases are also projected to significantly improve FPL's position from the "customer outage" perspective

Projected Customer Outages: 2022-2025

(assumes near-term capacity increases & 3 levels of generation forced outages)

Number of Rotation Eligible Customers* = 3,500,000

	2022	2023	2024	2025
Assumed Generation Forced Outages (MW)	**0**	**0**	**0**	**0**
# of Customer Outages (30 minutes each)	30,869	0	0	10,320
# of Outages per Rotation Eligible Customer	0.01	0.00	0.00	0.00
Assumed Generation Forced Outages (MW)	**1,000**	**1,000**	**1,000**	**1,000**
# of Customer Outages (30 minutes each)	328,745	0	123,577	210,320
# of Outages per Rotation Eligible Customer	0.09	0.00	0.04	0.06
Assumed Generation Forced Outages (MW)	**2,000**	**2,000**	**2,000**	**2,000**
# of Customer Outages (30 minutes each)	2,056,570	8,496	458,939	629,124
# of Outages per Rotation Eligible Customer	0.59	0.00	0.13	0.18

The near-term additions are projected to significantly reduce the number of customer outages (for example, from ~4.8 million to ~210,000 in 2025 assuming 1,000 MW of generation forced outages)

However, the trend from 2023 thru 2025 shows that additional resources will be needed as load continues to grow beyond 2025

The cold weather of February 2021 was record setting for Texas

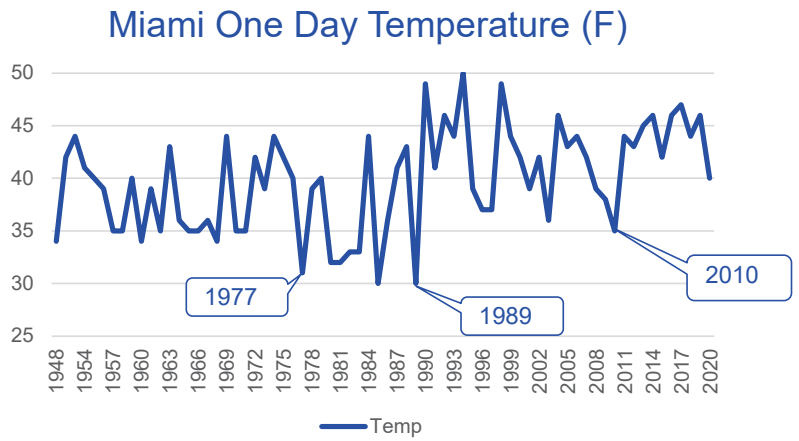
2021 Texas Record Cold

- **Record-setting, multiple day sub-freezing temperatures across Texas**
  - Similar event occurred in 2011 due to cold weather, but not as severe
    - Not as many units unavailable due to temperatures
- **Approximately 48.6% of generation (52,300 MW) was unavailable**
  - Majority of unit issues associated to fossil generation and fuel supply
  - "Winterization" of plants a central issue
- **Controlled outages were implemented to prevent statewide blackout**
  - Maximum at one time of approximately 20,000 MW (4 – 4.5 MM customers) load unserved with approx. 10,000 to 12,000 MW shed on average
  - Outages lasted for three days
- **Price of power and natural gas spiked during the three day period**
- **ERCOT communications with stakeholders also a central issue**
- **ERCOT region is not part of the "interconnected" system with limited import capabilities through DC ties**
  - Ability to import power (if interconnected) not likely since entities in the Midwest and Southeast were also experiencing low reserves
- **Lack of capacity market in ERCOT further impacts long term reserves**

Impacts from extreme cold fronts in Florida vary depending on location of cold weather and duration

Florida Cold Fronts

- **Cold fronts impacting Florida typically stall in the northern and central parts of the state**
  - These weather conditions feature lower temperatures and higher loads in these areas, and mild weather in the tri-county area, resulting in mild system wide loads (16,000 MW – 19,000 MW for FPL)
- **Another major factor with cold fronts impacting Florida is the duration of the colder temperatures**
  - By the second day of cold temperatures homes get cold, heaters are turned on and loads increase. Highest peak loads achieved on three and four day events
- **A good "bell weather" of peak winter loads (e.g., 1977, 1989, 2010) for FPL is the temperature in Miami and the duration of the cold temperatures**
  - In the past 45 years there have been three "significant" cold weather events which have "stretched" the system (1977, 1989 and 2010)



Impacts from extreme cold fronts in Florida vary depending on location of cold weather and duration (Cont'd)

Florida Cold Fronts

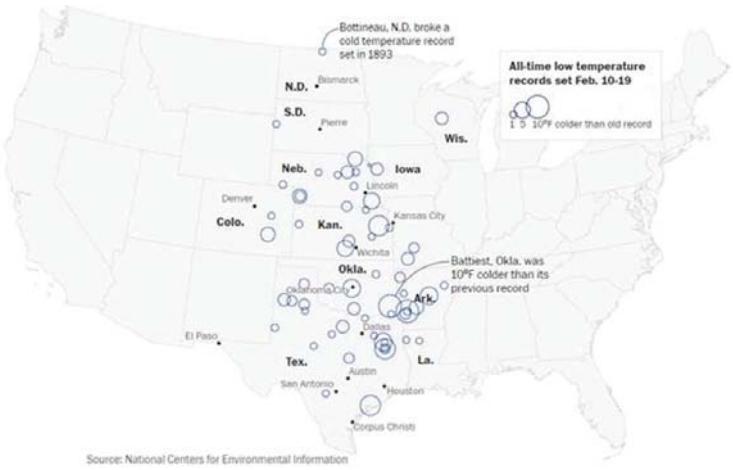
- **January, 2010 event characterized by a cold front the week before, temperatures staying cool for the next several days, and then a deep arctic front on January 9th**
  - Peak demand of 24,486 MW served, outages limited to minor equipment issues only
  - Skies overcast during arctic front
  - Temperatures throughout the state very cold. Miami was 35 degrees
  - Event affected all entities in Florida and in the SE US, limited purchases or imports
- **December, 1989 event was during the Christmas holiday**
  - Temperatures in Miami appear to be approximately 5 degrees colder than in 2010, also with overcast skies
  - This event involved shedding approximately 20% of FPL's customers through the morning and evening peaks of December 24th and 25th
  - Cold temperatures and unplanned generation outages contributed to shortfall
  - The Southeast US also experienced very high loads limiting Florida imports
- **January, 1977 - - "the day it snowed in Miami"**
  - Similar to 1989 event in terms of temperatures
  - Appears that some load was shed, very limited records

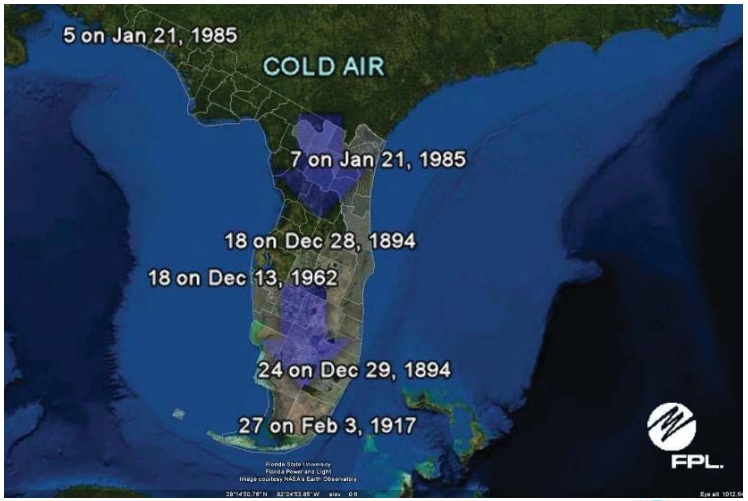
Significant cold fronts resulting in peak loads do occur in Florida from time-to-time

This past storm had many record cold temperatures shattered across the Central US

Florida Record Cold Temperatures can be shattered too

- **More narrow set of circumstances to drive cold air into the southern Florida peninsula than into Texas**
  - Air trajectory must be down the spine of the peninsula to drive record cold air into southern Florida (blue arrows in below right graphic)
- **Given the many records shattered in Texas (below left), it is plausible that these record cold temperatures in Florida (below right) and even more extreme temperatures could occur in the future**





The analysis of potential for extreme winter conditions identified opportunities in the longer term planning process

Executive Summary

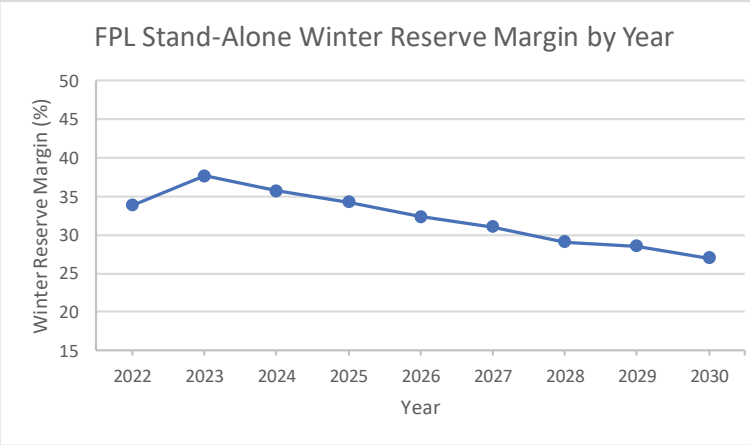
- **The FPL and Regional planning process use P50 loads for winter peak scenarios**
  - Extreme weather like 1989 / 2010 fall outside normal planning process
- **Projections for a January 2010-like event were performed for FPL, Gulf and combined system**
  - Combined dispatch mitigates shortfalls through 2023 (slide 13)
  - Capacity shortfalls exist and grow from 2024 through 2030 (timeframe of analysis) (slide 13)
  - Hourly analysis establishes extent of DSM use as well as shortfall (slides 15 & 16)
- **Incremental Winterization options to ensure reliability of current fleet (nuclear / fossil / solar) available in short term**
- **Assessment of Natural Gas / Fuel availability, and Capacity Emergency Plans performed and all are adequate**
- **Projected need for additional Winter peaking resources vs. risk analyses to be performed**

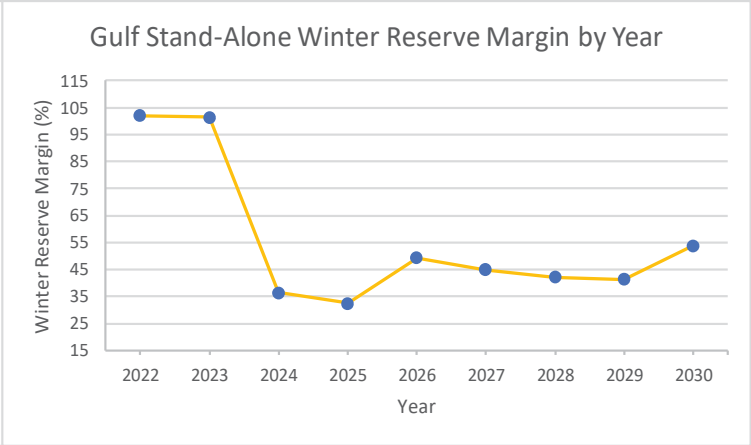
Risk analysis to be performed to identify and drive commercial options

Winter reserves for 2022 through 2030 using a P50 load forecast for FPL and Gulf are adequate

Reserve Margins

- **Winter reserves used for TYSP are based on a "P50" winter load**
  - Based on average winter temps in FPL service territory which are not extreme
  - P50 winter loads projections are 20,309 MW and 2,419 MW for 2022 and 23,031 MW and 2,552 MW for 2030, for FPL and Gulf, respectively
- **Graphs below show winter reserve margins based on P50 loads**
- **Operational planning provides for all resources being available for a winter peak event**
- **Since there is insufficient data for "one off" events like Jan, 2010, it is difficult to establish a probability for these extreme events**



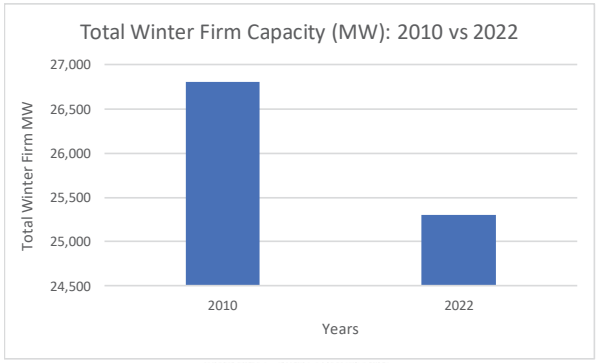


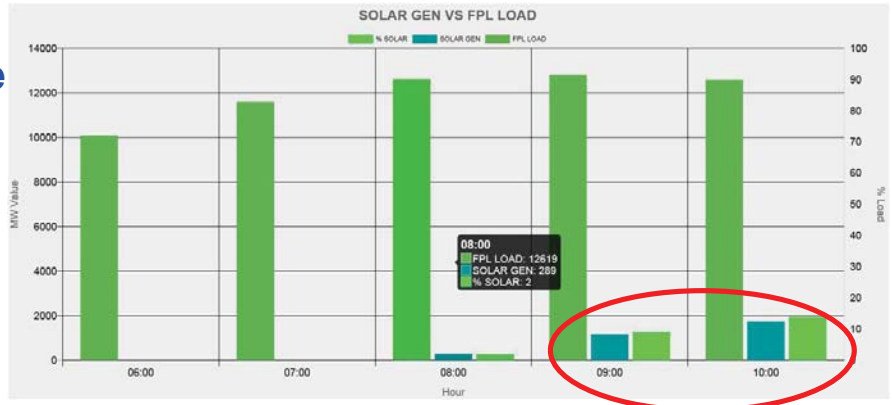
To get another perspective, a comparison was made of total Winter firm capacity (FPL units + purchases) for 2010 vs 2022

Total Winter Firm Capacity (MW): 2010 vs 2022

- **In 2010, the total Winter firm capacity (w/o outages) was 26,809 MW; the projection for 2022 is 25,298 MW (and FPL area generation is not projected to return to the 2010 level until 2029)**

- **During winter periods there is very limited output from the solar plants during the early morning or evening lighting peaks**
  - Jan 5, 2021 shown at right

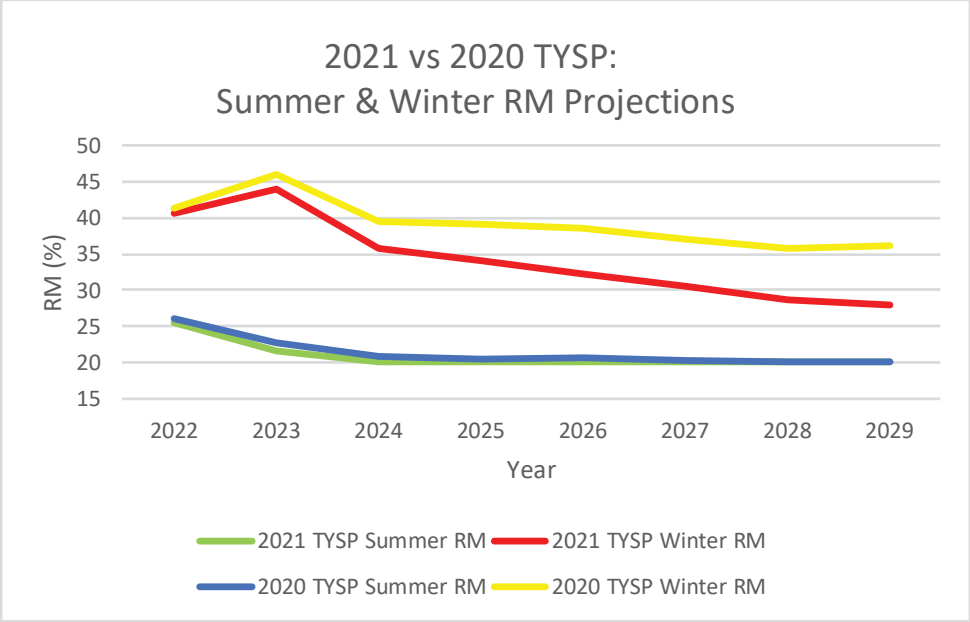




Since 2010, the FPL area total Winter firm capacity has decreased by ~ 1,500 MW or ~ 5.6% (total Summer MW have increased since 2010 by ~ 800 MW or 3.3%)

The 2021 TYSP will show Winter RM values (see red line below) steadily declining over this same time period

2021 vs 2020 TYSPs: Summer & Winter RMs (w/ P50 Load)



The lower Winter RM is due to 3 factors: (i) forecasted load is ~ 650 MW higher by 2029, (ii) CT upgrades have been revised and provide ~ 600 MW less Winter capacity, and (iii) ~ 400 MW of batteries were pushed back in the resource plan to allow more solar in 2026 thru 2030

Projections for a January 2010-like Winter load were developed in order to perform sensitivity analysis for extreme weather event

Approaches for Developing Jan 2010-Like Winter Peaks

- **Two approaches were used to project a January 2010 load for each year from 2022 thru 2030 for the FPL only area (see slide 43)**
- **Approach 1 ("Customer Growth")**
  - Starting point is the actual Jan 2010 load of 24,846 MW (including DSM)
  - Growth in customer load in the FPL only area since 2010 was then estimated
    - -- In 2010, the actual average no. of customers was ~ 4.52 million
    - -- For 2021, the forecasted avg. no. of customers is ~ 5.17 million
  - The Jan 2010 P50 load of 24,846 MW was scaled to reflect the approx. 14.5% growth in customers and develop a Jan 2010-like load for the year 2022
    - -- Applied annual growth rates to the current P50 load forecast through 2030
- **Approach 2 ("From Scratch" new load forecast)**
  - The January 2010 hourly weather was used as a starting point for each year
    - -- Typically, 2010 type winter peaks last 3 - 4 days with the last two days having the very high loads
  - Heating accounts for the vast majority of the winter peak load increasing proportionally to the number of customers with little efficiency gains since 2010

Both approaches yield load forecasts that are within 100 MWs of each other

FPL

Next, the FPL/Gulf integrated system was examined from the same peak hour only perspective using Approach # 2

Peak Hour Reserves for the Integrated System

FPL/Gulf Integrated System Winter Reserves - w/ Jan 2021-Like Load Forecast - w/ Approach # 2									
Year	Total Winter Firm Generation in Gulf Area (MW)	Outages: (Planned & Unplanned) (MW)	Adjusted Total Winter Firm Generation in Gulf Area (MW)	Load Forecasting's Jan 2010-Like Forecast (MW)	Conservation (MW)	Load After Conservation (MW)	Reserves (MW)	Load Control Available (MW) *	Reserves With LC (MW)
2022	29,629	0	29,629	30,909	29	30,880	(1,251)	1,816	564
2023	30,857	0	30,857	31,475	52	31,423	(567)	1,836	1,270
2024	29,603	0	29,603	32,047	77	31,970	(2,367)	1,862	(505)
2025	29,701	0	29,701	32,507	97	32,410	(2,709)	1,894	(816)
2026	29,613	0	29,613	32,961	97	32,864	(3,251)	1,929	(1,322)
2027	29,531	0	29,531	33,285	97	33,188	(3,657)	1,964	(1,693)
2028	29,491	0	29,491	33,758	97	33,661	(4,170)	1,999	(2,171)
2029	29,791	0	29,791	34,246	97	34,149	(4,358)	2,035	(2,323)
2030	30,299	0	30,299	34,739	97	34,642	(4,343)	2,071	(2,272)

- **Reserve capacity margin in Gulf during 2022 – 2023 period may be utilized to augment FPL area reserves in combined dispatch**

The peak hour projection for the integrated system is a bit better than for the FPL area only, but problems are projected

Using this information, an hourly look at reserves over a four day event was taken for the FPL/Gulf integrated system

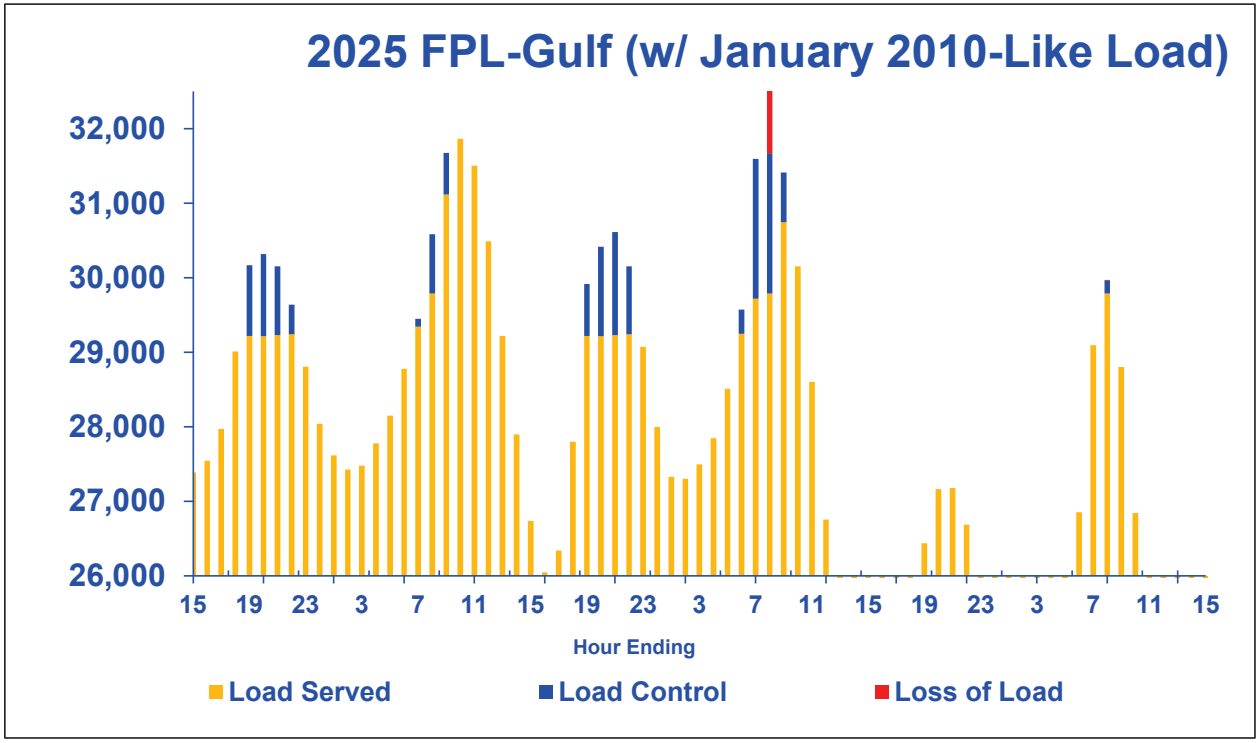
The Approach Taken When Examining Reserves

- **The analysis focused on two years: 2025 and 2030**
- **A starting point assumption was that there were no unplanned outages or de-rating of generation**
- **The approach was to start with the projected hourly load, then subtract all resources** (dispatched up to their maximum as needed) **except for Load Control (LC)**
- **If there was load remaining to be served in a particular hour, then LC was dispatched** (to meet that hour's load, minimize the total MWh of load not met during the 24 hours, and/or to minimize the no. of hours load was not met)

Results for the year 2025 and 2030 are presented on the next slides

Over a 4 day period in 2025, only one hour is still projected to lose firm load, but load control is dispatched daily

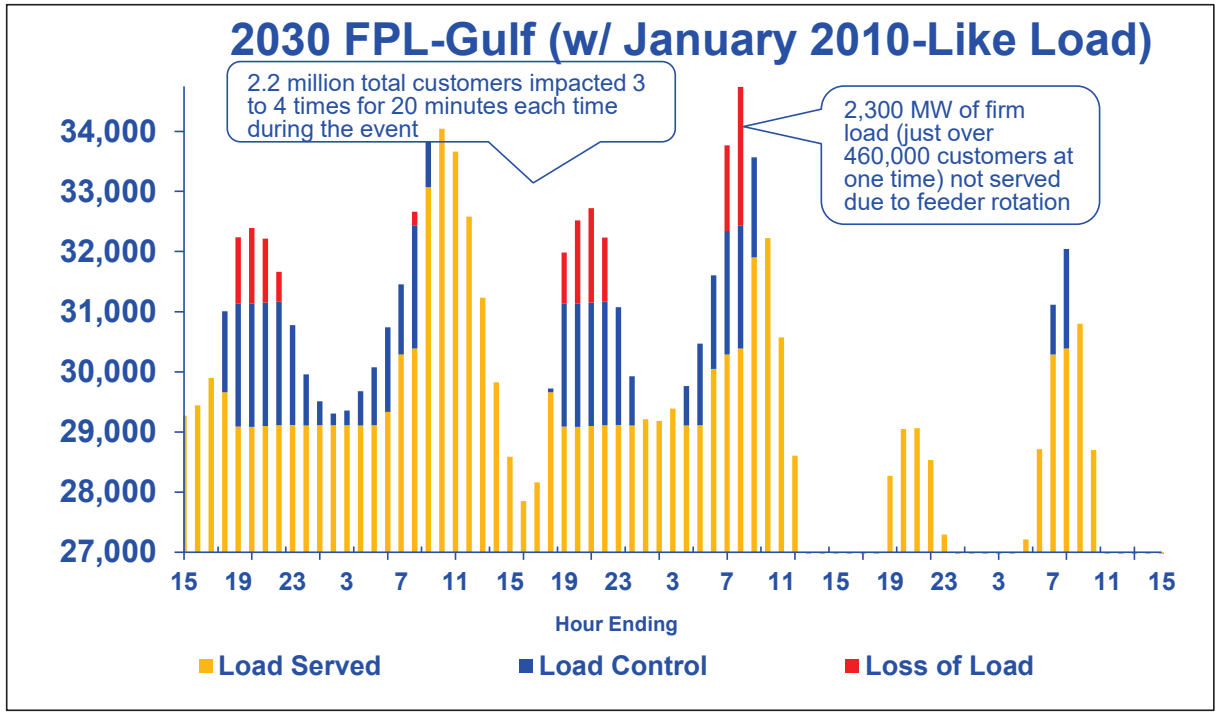
Hourly Reserve for the Integrated System: 2025



These results assume all generators are operational; in a scenario with 1,000 MW out, 7 additional hours are projected to lose load

By 2030, 11 hours are projected to lose firm load over the same 4 day period

Hourly Reserve for the Integrated System: 2030



- LC deployed for long stretches on an emergency basis, as allowed per tariff, but which could lead to many customers exiting the program

In 2030, the loss of 1,000 MW of generation would result in loss of load for 9 additional hours; and up to 6 hours consecutively

Based on the projections for FPL and Gulf several conclusions and recommendations are drawn for 2022 through 2030

Conclusions and Recommendations

- **For a January, 2010 event, Gulf area resources and non-coincidence of peak load between FPL and the Gulf area would need to be leveraged to serve the FPL load in 2022 and combined load in 2023**
  - From 2024 forward commercial options need to be developed
  - Conditions made worse due to lack of additional winter peak resources until 2029 (when batteries begin to be added)
- **A winter event with temperatures 10 degrees colder, in line with the 1977 and 1989 events, could theoretically add 10,000 to 12,000 MW of load shed pending analysis for saturation (constant heating demand)**
- **Recommended actions to be weighed for cost vs. risk mitigation**
  - Additional Generation Winterization
  - 2022/2023 transmission service requests
  - Accelerate battery projects
  - Determine PPA options for purchased power
  - Evaluate alternative resource plans in later years (batteries, PPAs, CTs, LC, etc.)

Next steps: (i) deploy options to serve FPL load in 2022 and 2023; and (ii) develop options for 2024 forward

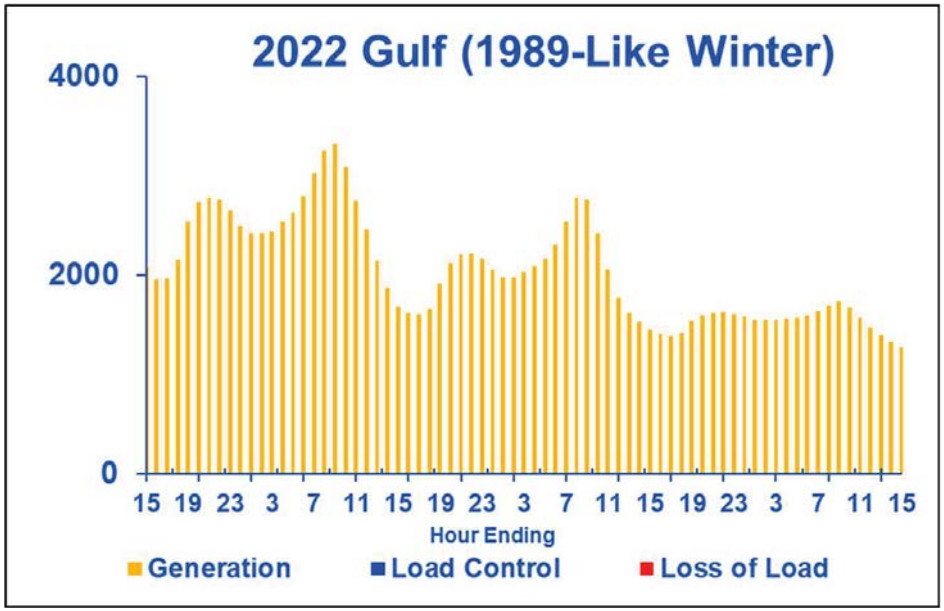
New analyses were performed assuming ~ 790 Winter-only MW of CT upgrades by 2025 and a 150 MW purchase from Oleander

Assumptions for the New Analyses

- **All resource additions in the 2021 TYSP resource plan were locked in, except for Manatee 1&2 remaining for Winter use in all years**
- **The current "1989-Like" Winter forecast is unchanged** (temperature for the system on the coldest hour is ~ 3.8 degrees lower than actual 1989 temperature of 30.8 degrees) **– a new "1989 Actual (Temp)" forecast is also analyzed**
- **Daniel 1 & 2 are assumed in-service for Jan 2022 thru Dec 2023**
- **For 2022 it was assumed that 3 million customers are eligible for rotation; this number grows to 5.5 million by 2025.**
- (new assumption) **New CT Winter upgrades are assumed on the following schedule (cumulative MW):**
  - 291 MW by Jan 2022 and 484 MW by Jan 2023
  - 711 MW by Jan 2024 and 790 MW by Jan 2025
- (new assumption) **A Winter-only 150 MW purchase from Oleander is assumed for 2022 to 2025.**

For 2022: Gulf is not projected to have a loss-of-load problem

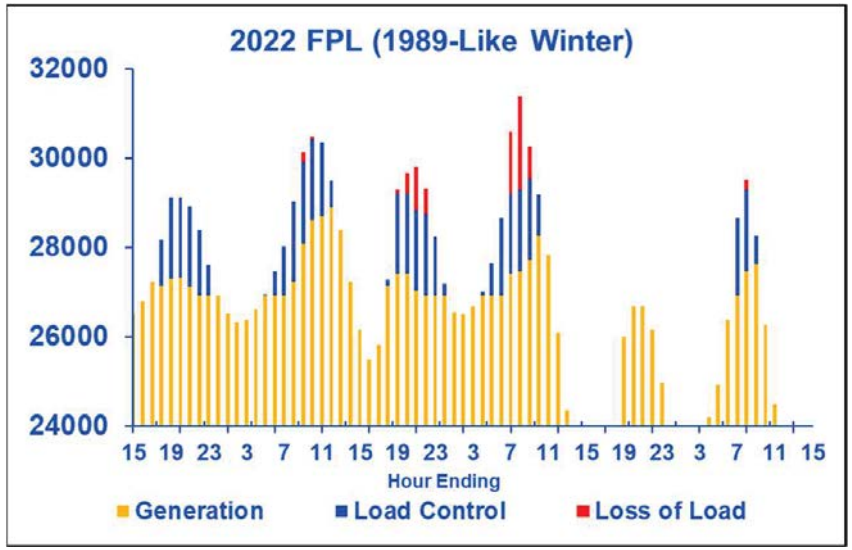
2022: Gulf only w/ "1989-Like" Winter Forecast



With the 4 new CTs, the stand-alone Gulf system is not projected to have any loss of load hours in 2022

For 2022: However, FPL is projected to have significant loss-of-load

2022: FPL only w/ "1989-Like" Winter Forecast



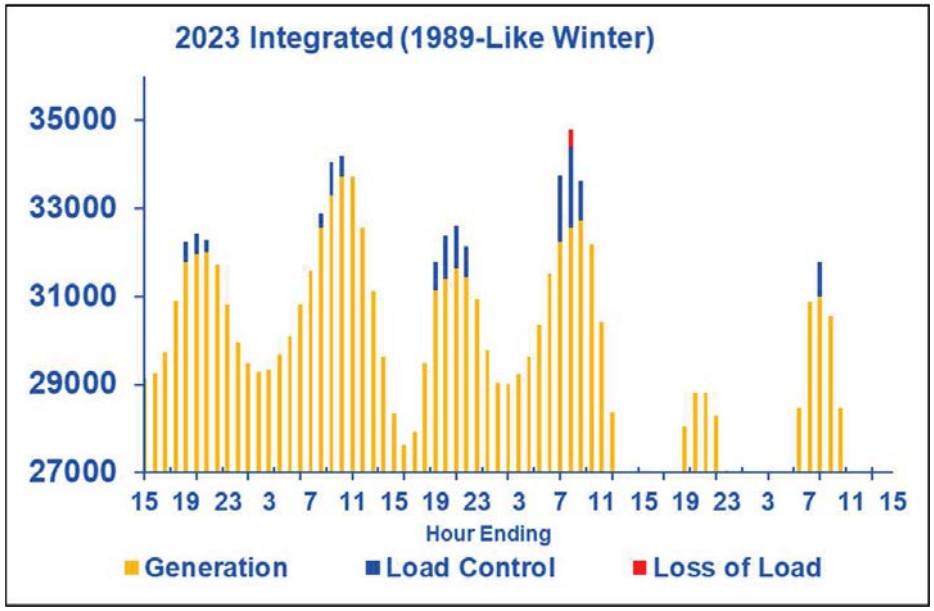
The projected maximum loss of load is 2,099 MW

- In the graph above FPL has a total loss of load of ~6,800 MWh and is projected to have some loss of load in 10 hours
- For every 1 MWh of loss of load, 330 (=165 per MW for ½ hour x 2) customers are projected to have an interruption lasting 30 minutes (~9,100 MWh loss of load = every eligible customer interrupted once for 30 minutes), among 3 million customers eligible for rotation

FPL's projections are: the average interruption time for rotation-eligible customers is 30 minutes and about 2.3 million of these customers would be interrupted

For 2023: Minor loss of load is projected for the integrated system (w/ Dania Beach CC, 484 MW of Winter upgrades, and integrated dispatch)

2023: Integrated system w/ "1989-Like" Winter Forecast



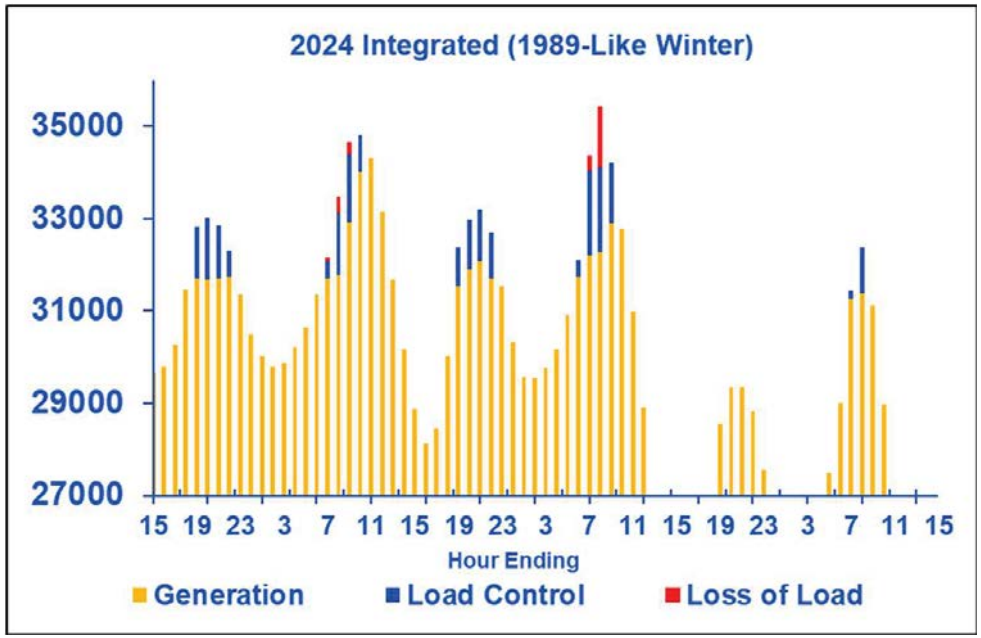
The projected maximum loss of load is 399 MW

-In the graph above FPL has a total loss of load of ~400 MWh and is projected to have loss of load in only one hour
- The graph above represents ~132K customer outages lasting 30 minutes

The analyses for 2023-on assumed, as part of integrated system operation, that generation in the Gulf area could be delivered to the FPL area during very high load Winter hours up to 850 MW

For 2024: Loss-of-load is again projected as Winter load increases more than CT upgrade MW

2024: Integrated system w/ "1989-Like" Winter Forecast



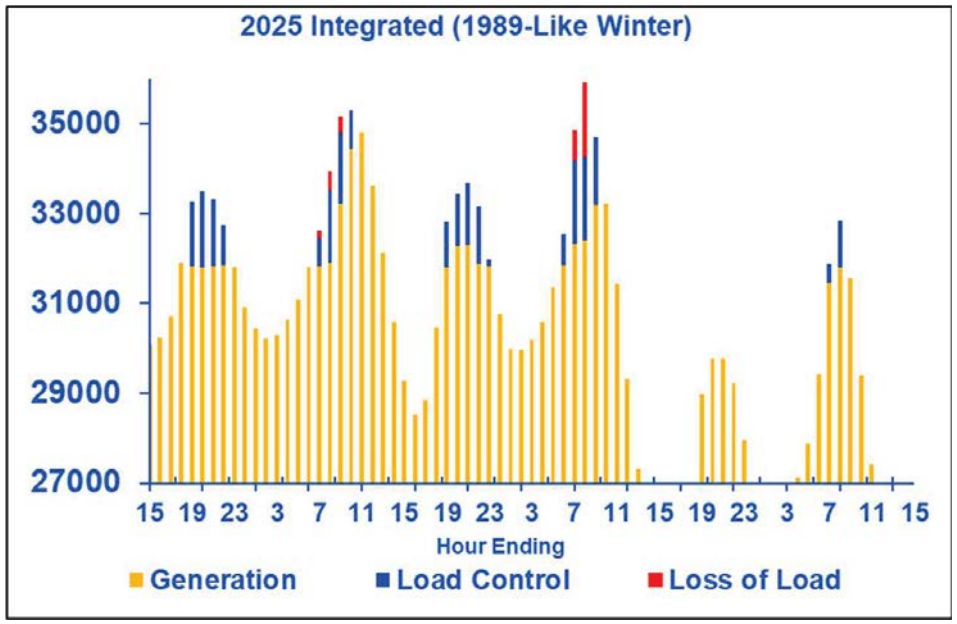
The projected maximum loss of load is 1,302 MW

- In the graph above there is loss-load of 2,314 MWH and 5 loss-of-load hours
- The graph above represents ~764K customer outages lasting 30 minutes.

The peak load increased 628 MW while CT upgrades increased by 227 MW

For 2025: There is a small increase is projected for loss-of-load when compared to 2024

For 2025: Integrated system w/ "1989-Like" Winter Forecast



The projected maximum loss of load is 1,650 MW

- In the graph above there is loss-load of 3,245 MWH and 5 loss-of-load hours
- The graph above represents ~1.1 million customer outages lasting 30 minutes

For 2025, the peak load is projected to increase by 505 MW while the CT upgrades increase by 79 MW

A new "1989 Actual" forecast was developed using the actual temperatures from 1989

Comparison of the Two 1989-Based Winter Forecasts

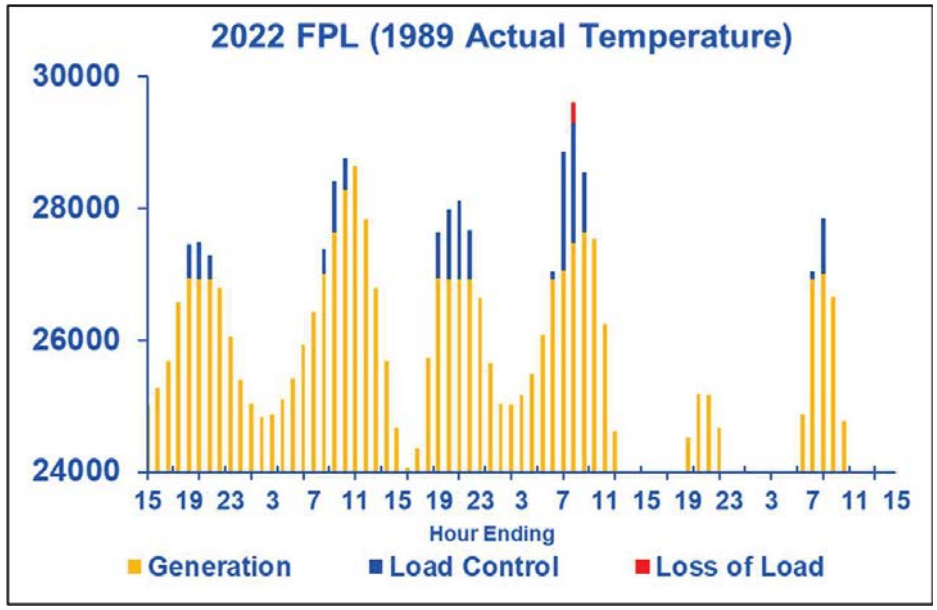
FPL Peak (MW)

Year	1989-Like Winter	1989 Actual Temperature	Diff
2022	31,386	29,607	1,779
2023	31,991	30,177	1,814
2024	32,600	30,754	1,846
2025	33,087	31,214	1,873

At time of peak, the 1989-Like Forecast assumes 27 degrees in Miami, while the 1989 Actual forecast assumes 30.8 degrees – the forecast difference is ~ 1,800 MW of load

For 2022: FPL is projected to have some loss-of-load using the 1989 Actual Temperatures forecast

2022: FPL only w/ "1989 Actual" Temperatures Winter Forecast



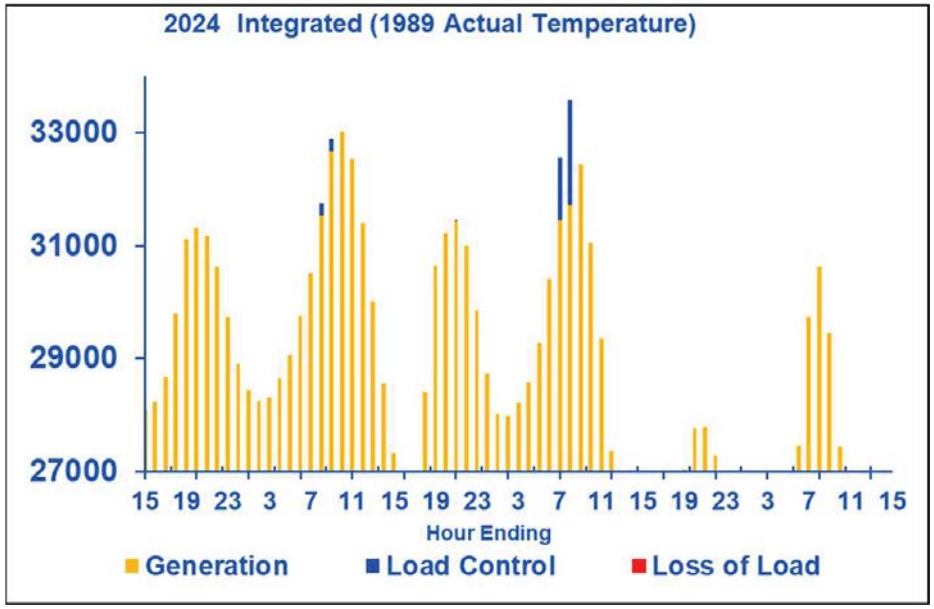
The projected maximum loss of load is 320 MW

- In the graph above there is loss-load of 320 MWH and 1 loss-of-load hour
- The graph above represents ~106K customer outages lasting 30 minutes

The highest loss of load is reduced by 1,779 MW if the 1989-Actual Temperatures forecast is used

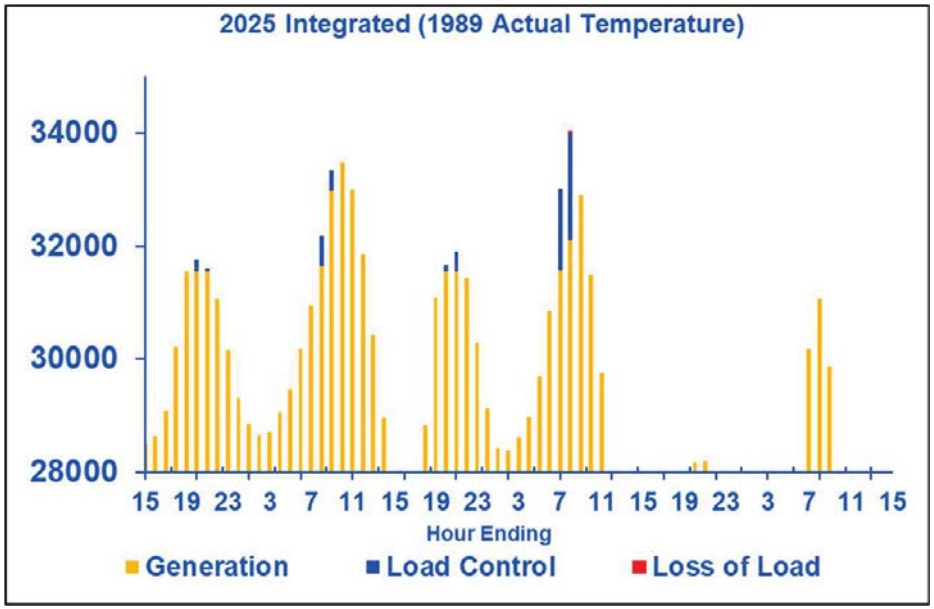
For 2024: There is no loss of load when using the1989 Actual Temperatures forecast in 2023 or 2024

2024: Integrated system w/ "1989 Actual" Temperatures Winter Forecast



For 2025: There is only minor loss of load when using the1989 Actual Temperatures forecast

2025: Integrated system w/ "1989 Actual" Temperatures Winter Forecast

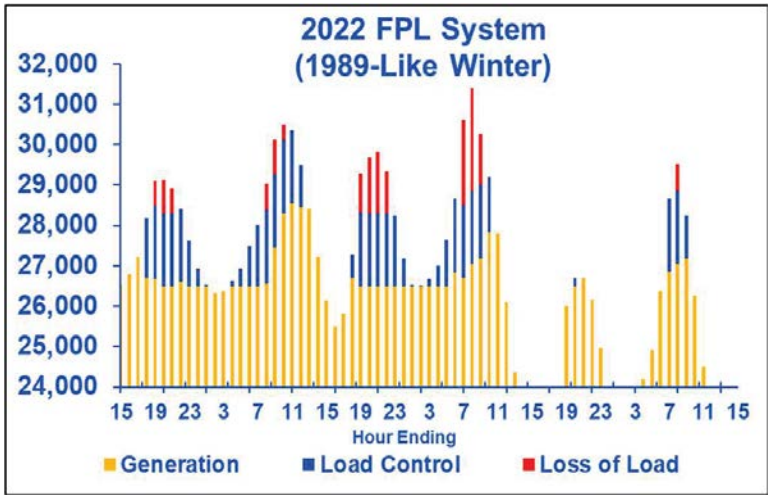


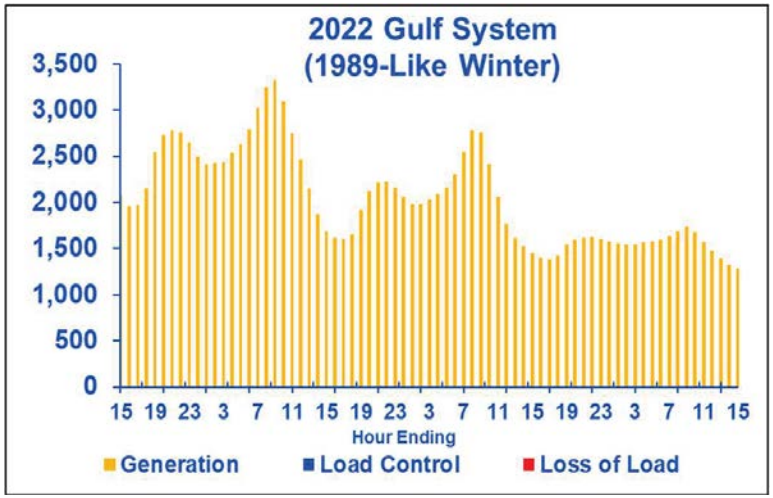
The projected maximum loss of load is 52 MW

- In the graph above there is loss-load of 52 MWH and 1 loss-of-load hour
- The graph above represents ~17K customer outages lasting 30 minutes

In 2022 w/ a 1989-like Winter load, FPL has significant problems, but Gulf has none

For 2022: FPL and Gulf with a 1989-Like Winter Load





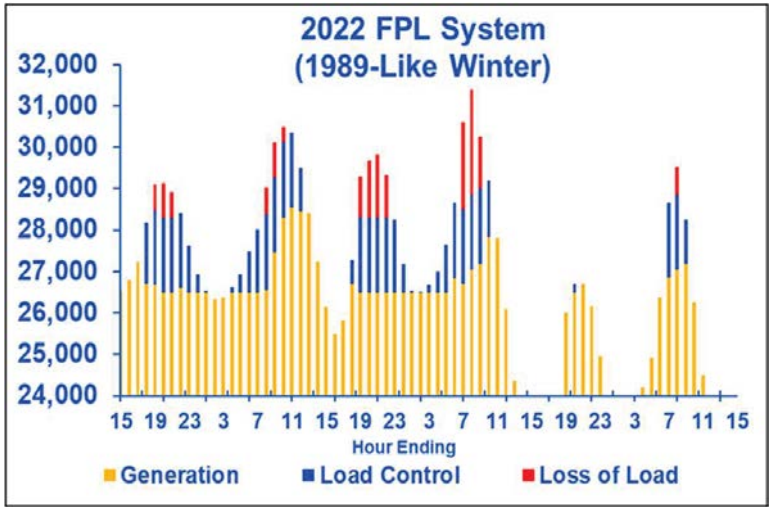
- In the graph above FPL has a total loss of load of ~15,400 MWh and is projected to have some loss of load in 14 hours
- For every 1 MWh of loss of load, 330 (=165 per MW for ½ hour x 2) customers are projected to have an interruption lasting 30 minutes (~9,100 MWh loss of load = every eligible customer interrupted once for 30 minutes), among 3 million customers eligible for rotation
- The above assumes the 2021 TYSP resource plan, except for Manatee 1&2 remaining for Winter use

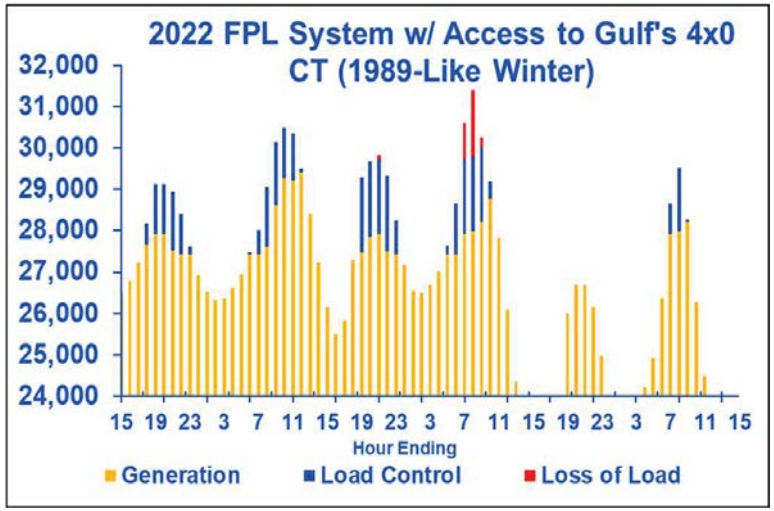
FPL's projections are: an average interruption time for rotation-eligible customers is 51 minutes and all 3 million of these customers are interrupted

If able to utilize the Crist 4x0 CTs to assist with the FPL load, the projected loss of load is greatly reduced

For 2022: FPL w/ Access to Gulf's 4x0 CTs

(graph from prior slide)





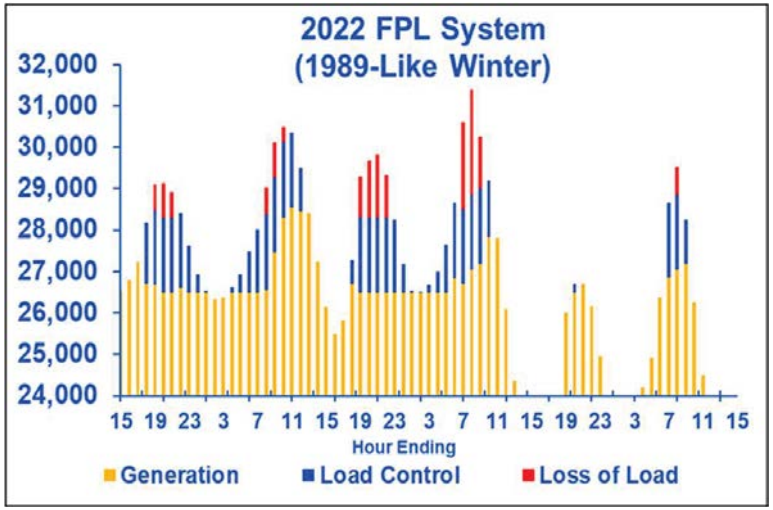
- The same assumptions on the previous slide apply to the graphs above except for the 4x0 CT
- Using a 1989-like forecast, Gulf has at least enough capacity in every hour to hold the Crist 4x0 CTs (949 MW) for use by FPL
- FPL's loss of load is reduced from ~15,400 MWh to ~2,800 MWh with 4 hours projected to have some loss of load

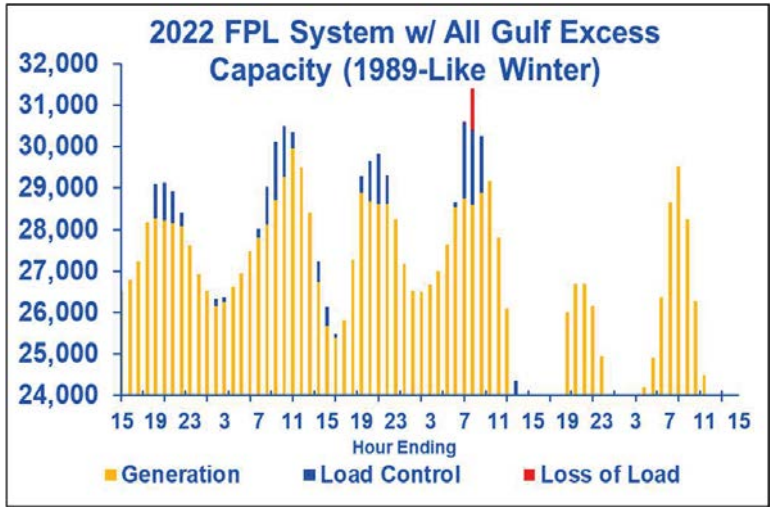
In this scenario, FPL's average interruption time for rotation-eligible customers is reduced to 30 minutes and less than 1 million customers are interrupted

Access to all of Gulf's excess capacity further decreases FPL's projected loss of load

For 2022: FPL w/ Access to All of Gulf's Excess Capacity

(graph from prior slides)



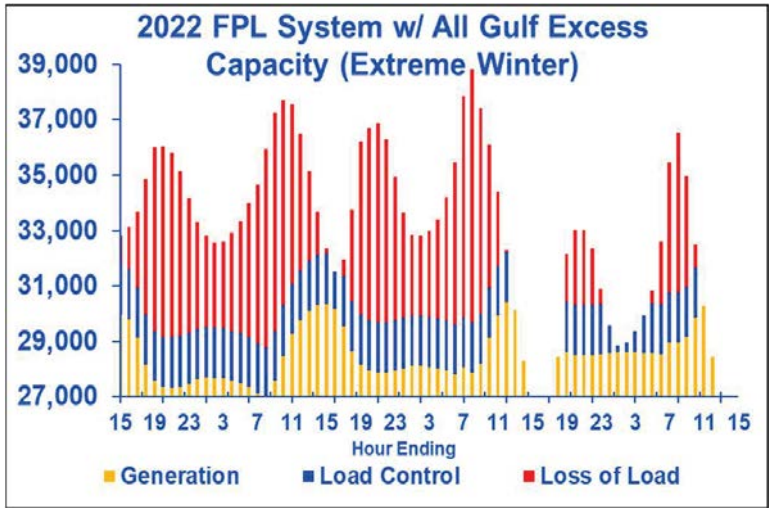


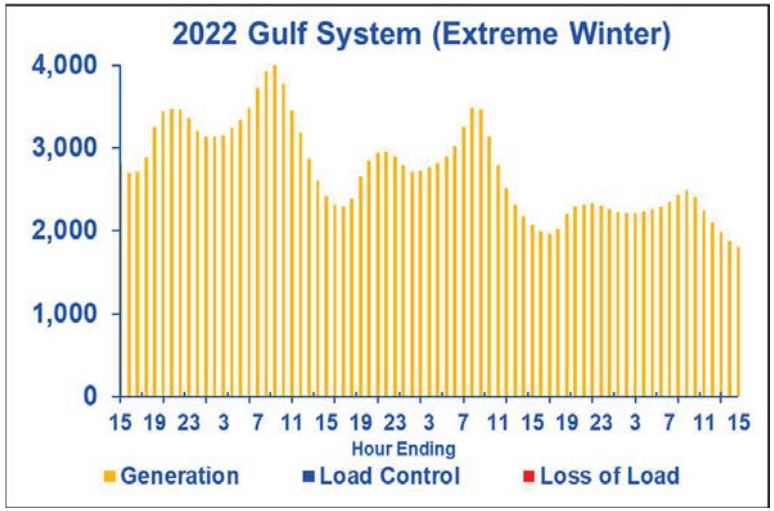
- The same assumptions on the previous slide apply to the graphs above except for Gulf's excess capacity
- Gulf's excess capacity was determined by calculating the resource capacity that Gulf has over and above the load forecast in each hour
- FPL's loss of load is reduced from ~15,400 MWh to ~1,000 MWh with 2 hours projected to have some loss of load

In this scenario, FPL's average interruption time for rotation-eligible customers remains at 30 minutes, but only 330K customers are interrupted

With an extreme Winter forecast, Gulf is still OK in 2022 (but has less excess capacity); FPL is unable to meet load in many hours

For 2022: FPL and Gulf With an Extreme Winter Forecast





With an extreme Winter forecast, FPL's average interruption time is 13 hours even assuming access to all of Gulf's excess capacity

CHANGING THE CURRENT. FPL.

FPL has projected declining Winter total reserve margins in both its 2020 and 2021 TYSP resource plans

Projected Winter Total Reserve Margins (%) (using a P50 forecast for Winter Peaks)

	2020 TYSP	2021 TYSP
2022	41.3%	40.7%
2023	46.0%	44.0%
2024	39.5%	35.8%
2025	39.1%	34.0%
2026	38.5%	32.2%
2027	37.0%	30.6%
2028	35.9%	28.6%
2029	36.1%	28.0%
2030	- -	27.8%

The primary changes in the 2021 TYSP vs the 2020 TYSP are: (i) forecasted higher Winter load, and (ii) reduced unit upgrades

These projected Winter reserve margin values all exceed the minimum 20% total reserve margin criterion, but show a trend of declining Winter reserves over the 10-year periods

In February 2021, Texas experienced a Winter storm of unprecedent severity

2021 Texas Record Cold

- **Record-setting, multiple day sub-freezing temperatures across Texas**
  - A similar cold weather event occurred in Texas in 2011
- **Approximately 48.6% of generation (52,300 MW) was unavailable**
  - Majority of unit issues associated with fossil generation and fuel supply
  - "Winterization" of plants a central issue
- **Customer outages were implemented to prevent statewide blackouts**
  - Maximum at one time of ~ 20,000 MW (4 to 4.5 MM customers) load unserved with ~ 10,000 to 12,000 MW shed on average
  - Outages lasted for three days
- **In addition, a number of customer outages were "non-surgical"**
  - Critical accounts, including natural gas pumping stations, were among those experiencing outages

As a result of this event, FERC issued a report with a series of recommendations for improving reliability under severe weather events *(one of which, # 9, addressed resource planning)*

FERC Recommendation # 9

"Planning Coordinators should reconsider some of the inputs to their publicly-reported winter season anticipated reserve margin calculations for their respective BA footprints so that the reported reserve margins will better predict the reserve levels that the BAs could experience during winter peak conditions" (emphasis added)

BA= Balancing Authority

NERC: February 2021 Cold Weather Grid Operations: Preliminary Findings and Recommendations, September 23, 2021

FPL is planning changes such as this in its IRP work regarding being able to meet very cold Winter loads

In the past 45 years there have been three major cold weather events in Florida (1977, 1989, and 2010)

Florida Cold Fronts

- **January 2010 event characterized by a cold front the week before, temperatures staying cool for the next several days, and then a deep arctic front on January 9th**
  - Peak demand of 24,486 MW (FPL's 2009 TYSP P50 forecasted Winter load for 2010 was ~ 18,800)
  - Very cold temperatures throughout the state (Miami was 35 degrees), Skies overcast, event affected all entities in Florida and in the SE US, limiting purchases or imports
- **December 1989 event was during the Christmas holiday**
  - Temperatures in Miami appear to be approximately 5 degrees colder than in 2010, also with overcast skies: Southeast US also experienced very high loads limiting Florida imports
- **January 1977 event - - "the day it snowed in Miami"**
  - Similar to the 1989 event in terms of temperatures

Of these three events, 1989 had the most severe impact on FPL's customers who experienced rotating outages over a two-day period

In order to analyze the impact of a future very cold Winter event, 3 new forecasts were developed largely based on these historical Winter events

3 New Winter Peak Forecasts

- **A P50 Winter forecast has typically been used in FPL's IRP work** (which is based on a system average temperature of ~ 39 degrees F)
- **Three new Winter peak forecasts were developed for these analyses:**
  1) **A "2010 Actual temperature" forecast** (w/ a system average temperature of ~ 33 degrees F.)
  2) **A "1989 Actual temperature" forecast** (w/ a system average temperature of ~ 29 degrees F.)
  3) **An "Extreme" forecast** (w/ a system average temperature of ~ 19 degrees F.)

The intent was to develop forecasts for Winter conditions that FPL had already experienced, plus a "Texas-like" extreme cold weather event

All three of the new load forecasts were developed using a similar methodology

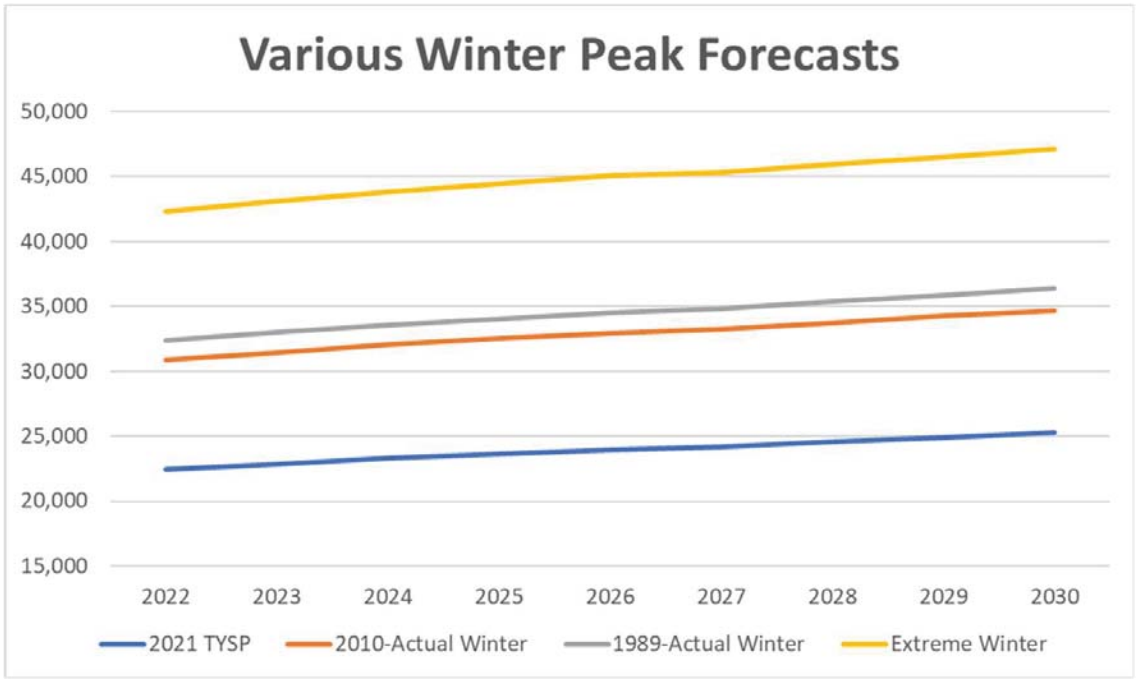
How the New Winter Peak Forecasts Were Developed

- **The first two forecasts were based on the actual temperatures experienced during the 2010 and 1989 cold fronts**
- **The third forecast used temperatures that were 10 degrees colder than experienced during the 1989 event**
- **The hourly daily pattern for the three forecasts were based on the 2010 event** (accurate hourly loads for the 1989 event were not available due to the rotating outages)
- **All load forecasting parameters** (such as number of customers, etc.)**, other than temperatures, were unchanged from the P50 Winter forecast developed for the 2021 TYSP**

All three new forecasts resulted in peak loads that were significantly higher than with the current P50 forecast (see next slide)

Each of the 3 new Winter forecasts have peaks that are at least 40% higher than the P50 2021 TYSP forecast

New Winter Forecasts vs 2021 TYSP Forecast



About 88% higher than 2021 TYSP

About 40-44% higher than 2021 TYSP

2021 TYSP

See Appendix for table showing annual MW values for each forecast

FPL selected the 1989 Actual (temperature) forecast as the focus of its preliminary analyses

Why the 1989 Actual Forecast Was the Focus of FPL's Analyses

- **Comparing the 2010 Actual forecast vs the 1989-Actual forecast showed that the 1989 Actual forecast's peak load was ~ 1,600 MW higher than the 2010 Actual forecast** *(and FPL had already experienced the colder temperatures associated with the 1989-Actual forecast)*
- **Preliminary analyses using the Extreme forecast resulted in projections of massive problems in meeting customer load** *(see the Appendix for the results for the years 2025 & 2030)*
  - However, this extreme load in Florida was viewed as very unlikely
  - In addition, the projected amount of load unable to be served in those years exceeds 12,000 MW, thus making it very expensive to attempt to prepare for such a load

For these reasons, FPL's focus in its preliminary analyses was the 1989 Actual forecast

Approach # 1 first examined the projected LOLP values for each year using the TIGER model

Annual LOLP Results with the TIGER Model 1989 Actual Winter Forecast: 2022-2025

Assumptions	Case 1: w/ 1989-Actual Forecast & Revised LC
2021 TYSP resource plan with 1989-Actual Load Forecast	X
LC - Use Summer MW values as a proxy for LC capabilities w/ very cold temps	X
Projected Annual LOLP	
2022	5.486
2023	4.092
2024	5.871
2025	6.537

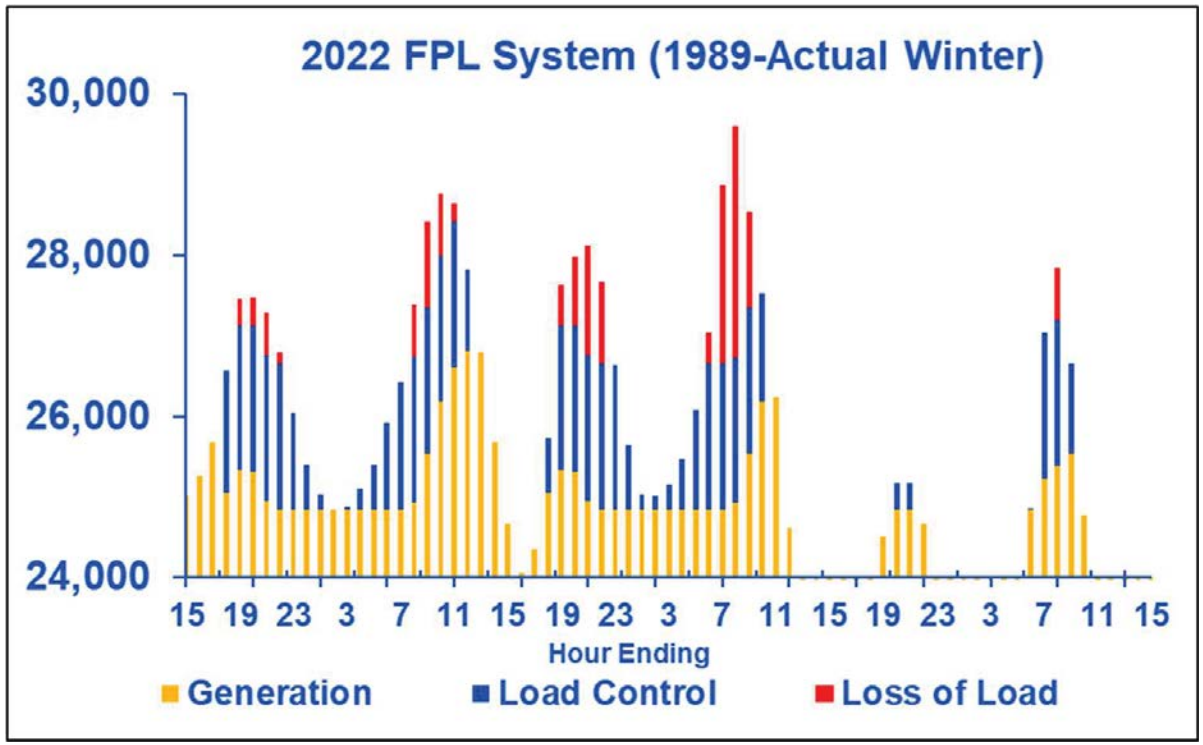
LOLP criterion is a maximum of 0.1 day per year

This analysis assumed the 2021 TYSP resource plan w/ no additional generation resources

The LOLP criterion is projected to be violated in each year of the 2022-2025 period w/ the 1989 Actual forecast

Approach # 2 examined hourly loads and capabilities & confirmed the projected inability to serve all load in 2022

Projected Loss of Load Based on 1989 Actual Forecast For the Year 2022 (FPL Only)



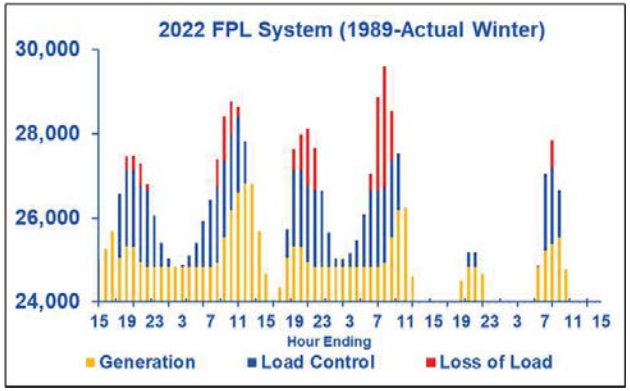
These preliminary analyses assumed the 2021 TYSP resource plan w/ no additional resources

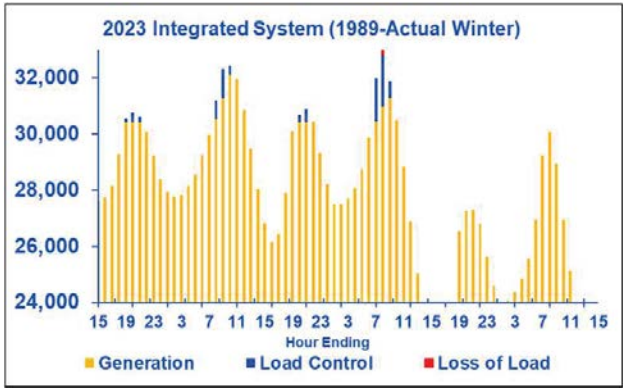
Note: At this point in the analyses using Approach # 2, **no generation forced outages** are assumed

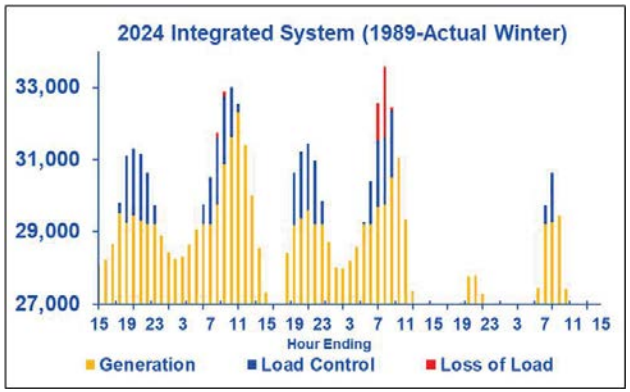
The loss of load projected for 2022 is ~ 2,400 MW at the worst hour and 15,000 MWh of unserved energy over the 3 days

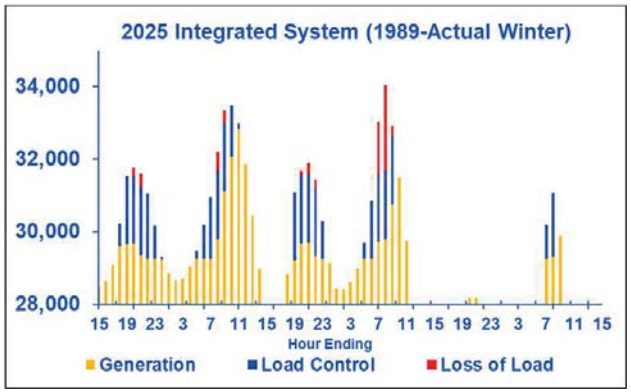
Projections improve for 2023 (due to the integration of FPL & Gulf and Dania Beach)**, but problems are again projected for 2024 & 2025**

Projected Loss of Load based on 1989 Actual Forecast For the Years 2022-2025









These preliminary analyses assumed the 2021 TYSP resource plan w/ no additional resources (and **no generation forced outages**)

The projected unserved energy values were converted to outage times for the subset of customers whose feeders can be rotated

Projected Customer Outages Over the 3-Day Period
(assuming no addl. resources & no generation forced outages)

Number of Rotation Eligible Customers* = 3,500,000

	2022	2023	2024	2025
Assumed Generation Forced Outages (MW)	**0**	**0**	**0**	**0**
Shortage in Peak Hour (MW)	2,402	168	1,971	2,484
Total Loss of Load over the cold-front period (MWh)	15,027	168	3,382	6,295
# of Customer Outages (30 minutes each)	6,010,800	67,200	1,352,800	2,518,000
# of Outages per Rotation Eligible Customer	1.72	0.02	0.39	0.72

*"Rotation eligible" customers are customers who are served by feeders that can be switched off in extreme conditions (*i.e.*, feeders which do not have any identified critical customers such as hospitals and police stations). Currently, there are ~ 3.5 million such customers on FPL's system.

The next slide shows how these outage projections change if 1,000 MW or 2,000 MW of generation forced outages are assumed

The condensed table below shows how projected outage times increase if generation forced outages are assumed

Projected Customer Outages: 2022-2025

(assumes no addl. resource & 3 levels of generation forced outages)

Number of Rotation Eligible Customers* = 3,500,000

	2022	2023	2024	2025
Assumed Generation Forced Outages (MW)	**0**	**0**	**0**	**0**
# of Customer Outages (30 minutes each)	3,005,400	33,600	676,400	1,259,000
# of Outages per Rotation Eligible Customer	0.86	0.01	0.19	0.36
Assumed Generation Forced Outages (MW)	**1,000**	**1,000**	**1,000**	**1,000**
# of Customer Outages (30 minutes each)	7,480,120	281,573	3,485,036	4,805,329
# of Outages per Rotation Eligible Customer	2.14	0.08	1.00	1.37
Assumed Generation Forced Outages (MW)	**2,000**	**2,000**	**2,000**	**2,000**
# of Customer Outages (30 minutes each)	14,447,062	1,187,254	7,645,237	9,350,204
# of Outages per Rotation Eligible Customer	4.13	0.34	2.18	2.67

Note: the derivation of the 1,000 MW and 2,000 MW forced outage assumptions is discussed in the Appendix

The projected number of outages increases significantly if non-zero generation forced outages are assumed

In addition, several near-term generation enhancements are underway

Near-Term Capacity Increases That Can Help Address Projected Loss-of-Load Thru 2025

1) **Short-term capacity purchases for the 2021 – 2022 Winter months only totaling ~ 315 MW**

2) **2) Winter upgrades to CC units over several years (no Summer MW increases):**
   - Adds up to ~ 790 MW of Winter (only) capacity *(MW value subject to change)*

3) **Retaining the Manatee 1 & 2 units for limited operation only during high Winter load periods** (see next slide)
   - Retain ~ 1,600 MW of Winter (only) capacity

In the analyses that followed, FPL assumed that each of these near-term resources were added

The Manatee 1 and 2 units will be available for use only during forecasted very cold Winter events

Manatee 1 and 2 units in Inactive Reserve-Winter Capable" Status

- **System operators typically plan for high Winter peak loads several days before occurrence, thus allowing advance warning regarding the need for the Manatee units to be operational**

- **When a very cold front is forecast, personnel will be transferred from other plants to Manatee for the duration of the high load period** (the Manatee units will be unmanned by operators at all other times)

- **Retaining the capability to utilize Manatee in this way will add about 1,600 MW of Winter peak capability that can run on oil** (thus preserving the ability of the rest of the fossil generation system to utilize all available natural gas)

FPL currently plans to maintain the Inactive Reserve-Winter Capable status for Manatee 1 & 2 through 2030

With Approach # 1, the LOLP criterion is still not projected to be met even after these near-term resources are added

Annual LOLP Results with the TIGER Model
1989 Actual Winter Forecast: 2022-2025

Assumptions	Case 1: w/ 1989-Actual Forecast & Revised LC	Case 2: Case 1 plus near-term resource additions
2021 TYSP resource plan with 1989-Actual Load Forecast	X	X
LC - Use Summer MW values as a proxy for LC capabilities w/ very cold temps	X	X
Short Term Winter 2022 PPAs (315 MW)		X
Winter Upgrades (794 MW)		X
Manatee 1 & 2 Retained - Winter Capacity Only (1,600 MW)		X
Projected Annual LOLP		
2022	5.486	2.416
2023	4.092	1.690
2024	5.871	2.493
2025	6.537	3.939

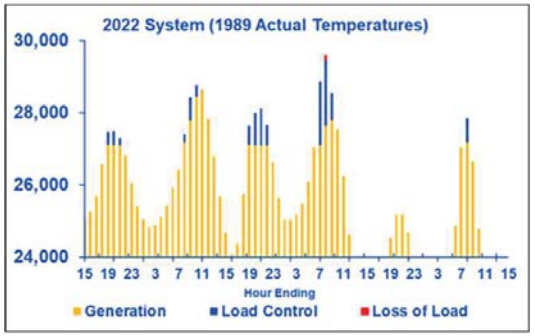
LOLP criterion is a maximum of 0.1 day per year

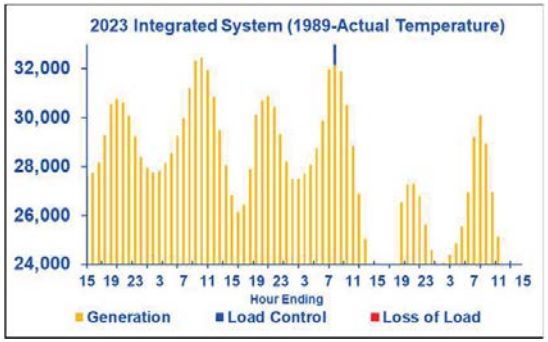
This analysis assumed the 2021 TYSP resource plan w/ no additional resources except for the near-term resources

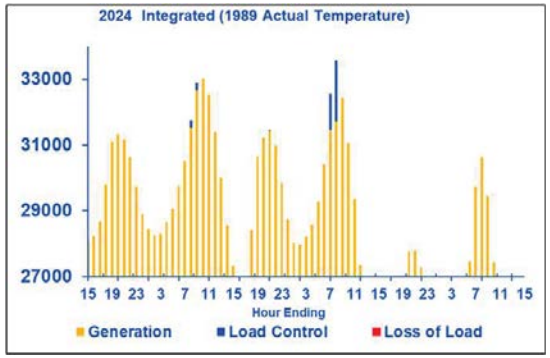
Additional resources would be needed to meet the LOLP criterion in the near-term with Approach # 1

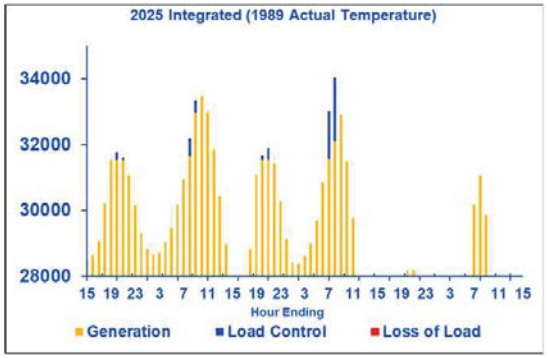
With Approach # 2, most of the problems are addressed by the near-term additions (assuming no forced outages)

Projected loss of load based on 1989 Actual Forecast 2022- 2025 (with near-term resource additions)









These preliminary analyses assumed the 2021 TYSP resource plan w/ the near-term additional resources (and **no generation forced outages**)

The previously projected inability to meet load is now addressed for 2023 & 2024 (w/ small amount of projected loss of load for one hour in 2022 and 2025)

The table below shows revised customer outage projections assuming the near-term additions are in place

Projected Customer Outages: 2022-2025

(assumes near-term additions & 3 levels of generation forced outages)

Number of Rotation Eligible Customers* = 3,500,000

	2022	2023	2024	2025
Assumed Generation Forced Outages (MW)	**0**	**0**	**0**	**0**
# of Customer Outages (30 minutes each)	30,869	0	0	10,320
# of Outages per Rotation Eligible Customer	0.01	0.00	0.00	0.00
Assumed Generation Forced Outages (MW)	**1,000**	**1,000**	**1,000**	**1,000**
# of Customer Outages (30 minutes each)	328,745	0	123,577	210,320
# of Outages per Rotation Eligible Customer	0.09	0.00	0.04	0.06
Assumed Generation Forced Outages (MW)	**2,000**	**2,000**	**2,000**	**2,000**
# of Customer Outages (30 minutes each)	2,056,570	8,496	458,939	629,124
# of Outages per Rotation Eligible Customer	0.59	0.00	0.13	0.18

The near-term additions are projected to significantly reduce the number of customer outages (for example, from ~ 9.43 million to ~ 630,000 in 2025 assuming 2,000 MW of generation forced outages)

With a 1989 Actual Winter occurrence , FPL projects problems in being able to meet load in 2022 through 2025

Summary of Results from Near-Term Analyses: 2022-2025

- **Using a 1989 Actual temperature forecast for Winter peak load, and assuming no changes to FPL's 2021 TYSP resource plan, FPL is projected to not be able to meet customer load under either an LOLP perspective or an hourly perspective in any of these 4 years**

- **Assuming the winterization efforts for generation and fuel supply, plus the addition of the previously described 3 types of near-term resource additions** (310 MW of PPAs for 2021/2022, ~ 790 MW of Winter upgrades, and retaining Manatee 1 & 2's 1,600 MW for use in very cold Winter conditions only), the results improve, but the projected problems are not eliminated:
  - Projected LOLP values are reduced by (roughly) a factor of 2
  - The hourly analysis shows customer outages are projected to still occur, but to a lesser degree

FPL's analyses then expanded to examine the years 2026 through 2030

With a 1989 Actual Winter occurrence , FPL projects problems in being able to meet load in 2022 through 2025

Summary of Results from Near-Term Analyses: 2022-2025

- **Using a 1989 Actual temperature forecast for Winter peak load, and assuming no changes to FPL's 2021 TYSP resource plan, FPL is projected to not be able to meet customer load under either an LOLP perspective or an hourly perspective in any of these 4 years**

- **Assuming the winterization efforts for generation and fuel supply, plus the addition of the previously described 3 types of near-term resource additions** (310 MW of PPAs for 2021/2022, ~ 790 MW of Winter upgrades, and retaining Manatee 1 & 2's 1,600 MW for use in very cold Winter conditions only), the results improve, but the projected problems are not eliminated:
  - Projected LOLP values are reduced by (roughly) a factor of 2
  - The hourly analysis shows customer outages are projected to still occur, but to a lesser degree

FPL's analyses then expanded to examine the years 2026 through 2030

Contents

With Approach # 1, the projected LOLP values get worse as the years 2026 thru 2030 are accounted for

Annual LOLP Results with the TIGER Model
1989 Actual Winter Forecast: 2022-2030

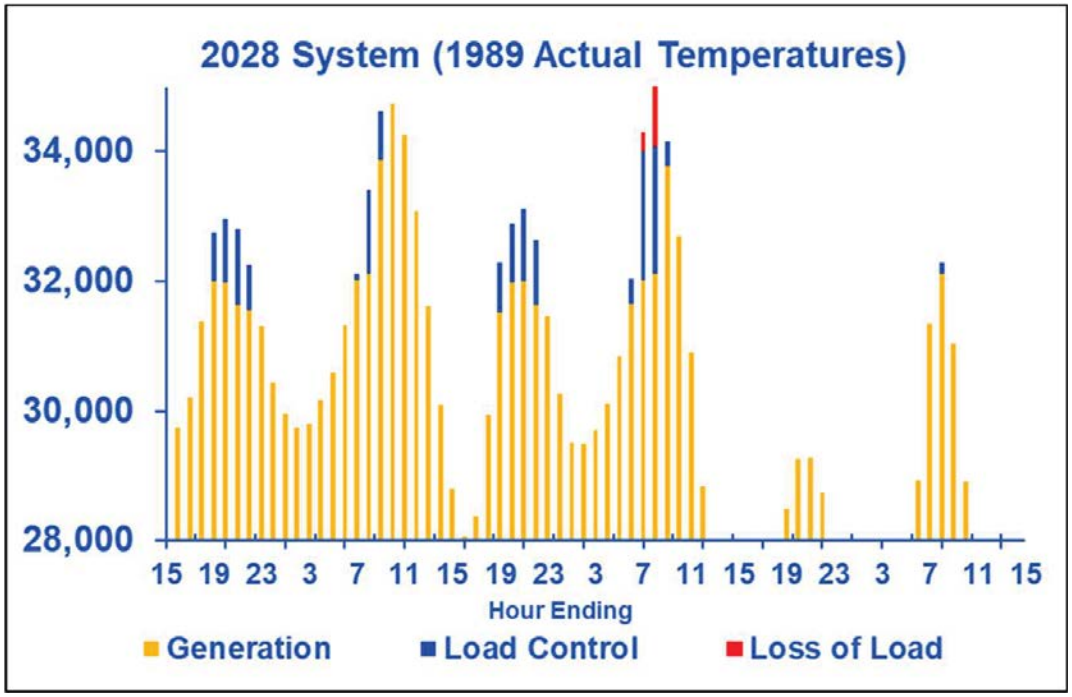
Assumptions	Case 1: w/ 1989-Actual Forecast & Revised LC	Case 2: Case 1 plus near-term resource additions
2021 TYSP resource plan with 1989-Actual Load Forecast	X	X
LC - Use Summer MW values as a proxy for LC capabilities w/ very cold temps	X	X
Short Term Winter 2022 PPAs (315 MW)		X
Winter Upgrades (794 MW)		X
Manatee 1 & 2 Retained - Winter Capacity Only (1,600 MW)		X
Projected Annual LOLP		
2022	5.486	2.416
2023	4.092	1.690
2024	5.871	2.493
2025	6.537	3.939
2026	6.529	3.915
2027	7.032	4.862
2028	7.293	5.428
2029	7.204	5.257
2030	7.090	5.155

LOLP criterion is a maximum of 0.10 day per year

Includes the near-term resource additions previously discussed

Approach # 2 again projects an inability to meet all load in the 2026-2030 period (the graph below shows the results for 2028 only)

Projected Loss of Load based on 1989 Actual Forecast For the Year 2028



These preliminary analyses assumed the 2021 TYSP resource plan w/ near-term resource additions and **no generation forced outages**

The next slide examines projected customer outages with the same 3 generation forced outage levels used earlier

Approach # 2 again quantified the amount of expected unserved energy and resulting customer impacts

Projected Customer Outages: 2026-2030
(includes the near-term resources & 3 levels of generation forced outages)

Number of Rotation Eligible Customers* = 3,500,000

	2026	2027	2028	2029	2030
Assumed Generation Forced Outages (MW)	**0**	**0**	**0**	**0**	**0**
# of Customer Outages (30 minutes each)	78,092	153,304	309,295	374,445	402,861
# of Outages per Rotation Eligible Customer	0.02	0.04	0.09	0.11	0.12
Assumed Generation Forced Outages (MW)	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
# of Customer Outages (30 minutes each)	363,871	513,441	802,024	1,090,181	1,967,514
# of Outages per Rotation Eligible Customer	0.10	0.15	0.23	0.31	0.56
Assumed Generation Forced Outages (MW)	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**
# of Customer Outages (30 minutes each)	1,109,847	2,043,446	3,645,483	4,660,002	5,522,585
# of Outages per Rotation Eligible Customer	0.32	0.58	1.04	1.33	1.58

Even with the near-term additions, significant numbers of customer outages are still projected in the 2026 thru 2030 time period – additional resources will be needed to address this

The next step was to determine how many MW of new resources are needed to meet the LOLP criterion each year

Approach # 1: Resource MW Needed Thru 2030

- **Although the TIGER model is often used to project LOLP values for a given resource plan, it can also be used to determine how many MW of new resources would need to be added to a resource plan to allow that plan to meet the LOLP criterion**
- **Assuming no new resources can be added until 2023, the TIGER results call for 6,000 MW of additional resources** (beyond the 2021 TYSP plan plus near-term resources) **thru 2030 as follows:**

Year	Addl. MW Needed	Resulting LOLP
2023	2,200	0.098
2024	1,200	0.090
2025	1,300	0.098
2026	100	0.087
2027	700	0.091
2028	500	0.097
2029	0	0.082
2030	0	0.076
Total =	6,000	

LOLP values are lower in 2029 & 2030 due to the addition of batteries (300 MW in 2029 and another 400 MW in 2030) in the 2021 TYSP resource plan

Also with Approach # 2, the next step was to determine how many MW of new resources are needed

Approach # 2: Resource MW Needed thru 2030

Using the previously introduced forced outage values (1,000 MW & 2,000 MW) **for each year, the projected amounts of incremental MW (beyond the near-term additions) that were projected to allow FPL to serve the previously determined unserved load are shown in the tables below:**

1,000 MW out	
Year	Addl. MW Needed
2024	1,400
2025	0
2026	100
2027	300
2028	500
2029	200
2030	100
Total =	2,600

2,000 MW out	
Year	Addl. MW Needed
2024	2,400
2025	0
2026	0
2027	400
2028	500
2029	300
2030	500
Total =	4,100

Hourly projections of system performance during winter high load days is being analyzed for 3 load forecasts

High Winter Load Forecasts

- **"January 2010-like" forecast (presented at March OpComm – results are shown in the appendix)**
  - Miami low temperature assumed to be ~35 degrees F.
  - 2025 load can be met in all hours with Manatee (1 hour loss of ~800 MW of load without Manatee)
- **"1989-like" forecast**
  - New forecast completed and results are shown here
  - Miami low temperature assumed to be ~27 degrees F. *(coldest ever Miami temperature was ~27 degrees F. in 1917)*
- **Extreme Winter forecast**
  - New forecast completed and results are shown here
  - Miami low temperature assumed to be ~20 degrees F.

The 1989-like forecast is the primary focus for the April OpComm discussion

The January 2010 hourly load shape profile was scaled to develop the 1989-like load forecast

Process to Develop the 1989-Like Load Forecast

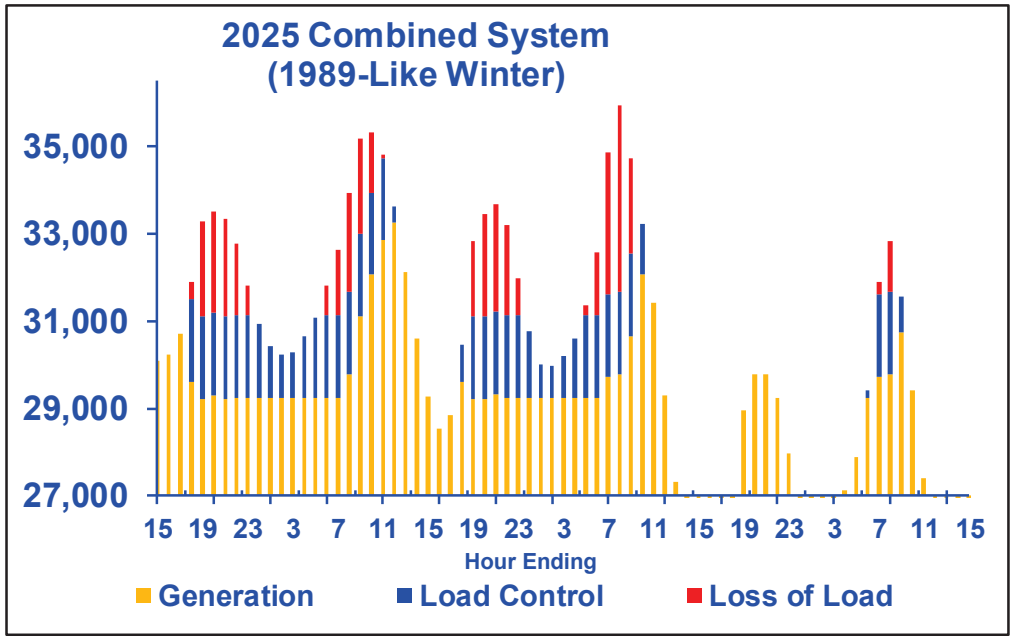
- The actual hourly load profile for January 2010 was used as a "seed" for developing the 1989-like forecast
- This seed hourly profile was then "scaled" as needed to reflect the higher MW and MWh values associated with the colder temperatures, and associated higher load, experienced in 1989
- The assumed system average temperature was 25 degrees F which corresponds to a Miami temperature of 27 degrees F
- These temperatures increase the Winter peak by ~54% compared to the current P50 Winter peak forecast

We assumed the temperature in Miami was 27 degrees F (the coldest temperature ever recorded) to ensure we were not underestimating load

Forecasted hourly system performance for 2025 with 2021 TYSP resource plan is shown below

2025 Performance with 1989-like Load Forecast

(assumes no loss of generation)



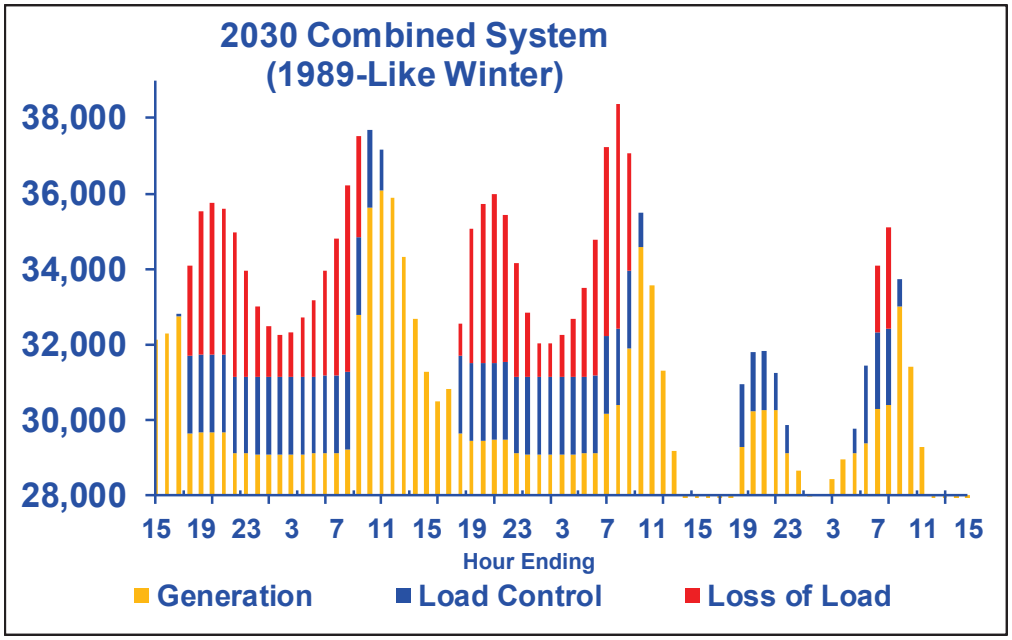
Max. load not served is ~4,300 MW (~12% of the peak hour load)

Forecasting that Load Control is used for 40 hours and load is not served in 24 hours

Forecasted hourly system performance for 2030 with 2021 TYSP resource plan is shown below

2030 Performance with 1989-like Load Forecast

(assumes no loss of generation)



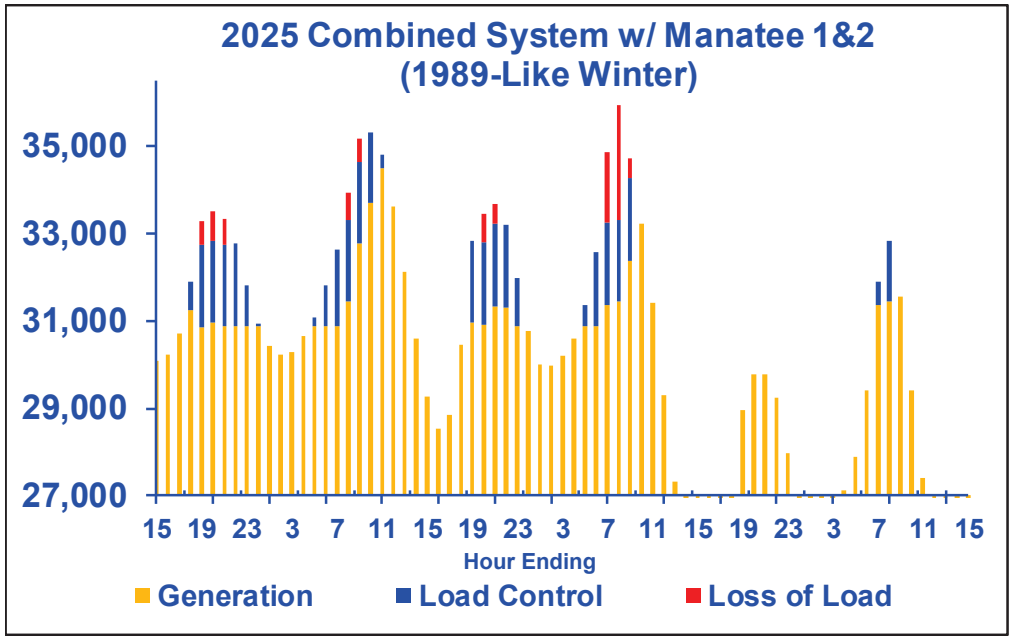
Max load not served is ~5,900 MW (~15% of the peak hour load)

Forecasting that Load Control is used for 46 hours and load is not served in 34 hours

Forecasted hourly system performance for 2025 with 2021 TYSP resource plan, plus Manatee 1&2, is shown below

2025 Performance with 1989-like Load Forecast

(assumes Manatee 1&2 remain operational and no loss of generation)



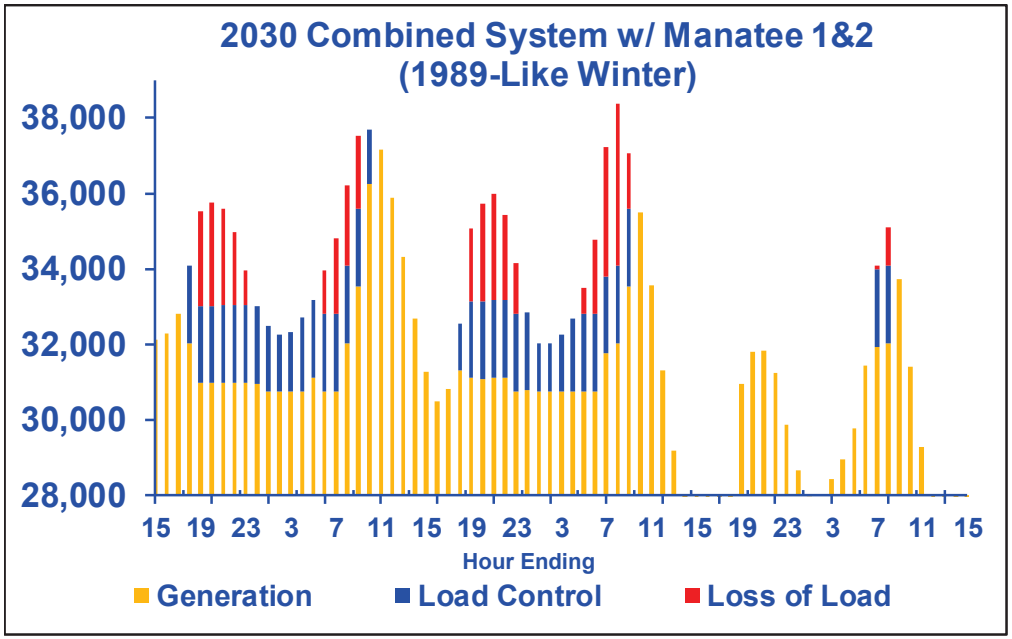
Max. load not served is ~2,600 MW (~7% of the peak hour load)

Forecasting that Load Control is used for 26 hours (vs. 40 hours w/o Manatee) and load is not served for 10 hours (vs. 24 hours w/o Manatee)

Forecasted hourly system performance for 2030 with 2021 TYSP resource plan, plus Manatee 1&2, is shown below

2030 Performance with 1989-like Load Forecast

(assumes Manatee 1&2 remain operational and no loss of generation)



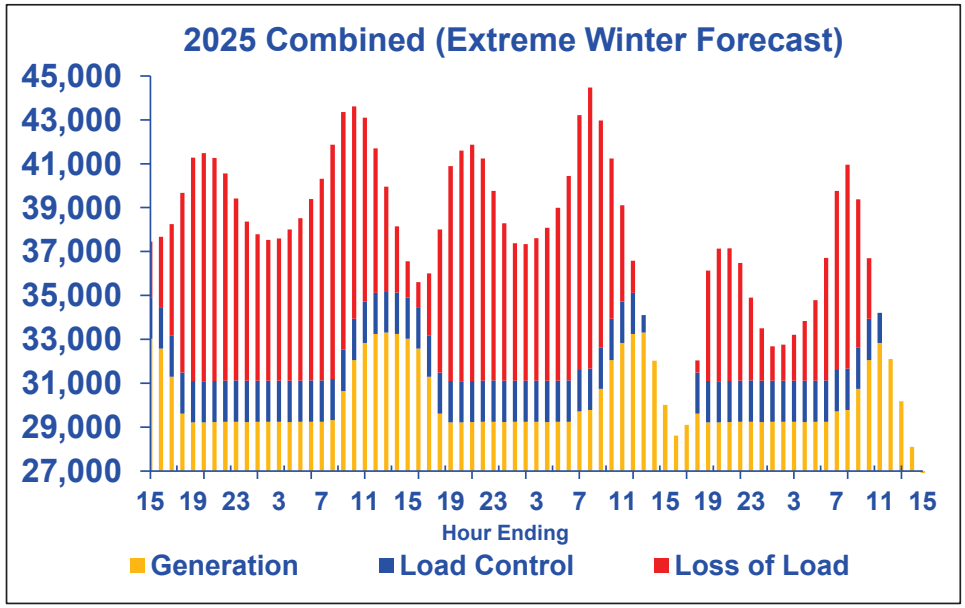
Max. load not served is ~4,300MW (~11% of the peak hour load)

Forecasting that Load Control is used for 35 hours (vs. 46 hours w/o Manatee) and load is not served for 21 hours (vs. 34 hours w/o Manatee)

Forecasted hourly system performance w/ the Extreme Winter forecast for 2025 and the 2021 TYSP resource plan is shown below

2025 Performance with w/ Extreme Winter Load Forecast

(assumes no loss of generation)



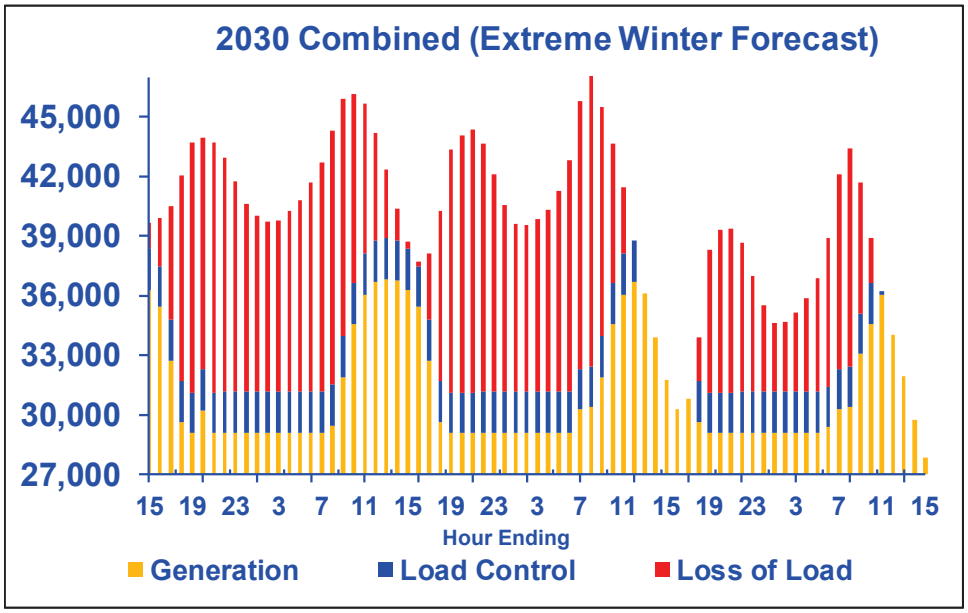
Max load not served is ~12,800 MW (~29% of the peak hour load)

Forecasting that Load Control is used for 78 hours and load is not served in 74 hours

Forecasted hourly system performance w/ the Extreme Winter forecast for 2030 and the 2021 TYSP resource plan is shown below

2030 Performance with w/ Extreme Winter Load Forecast

(assumes no loss of generation)



Max load not served is ~14,700 MW (~31% of the peak hour load)

Forecasting that Load Control is used for 78 hours and load is not served in 74 hours

Winter Reserves Projections – Results To-Date

The objective is to project reserves assuming an extreme Winter load forecast

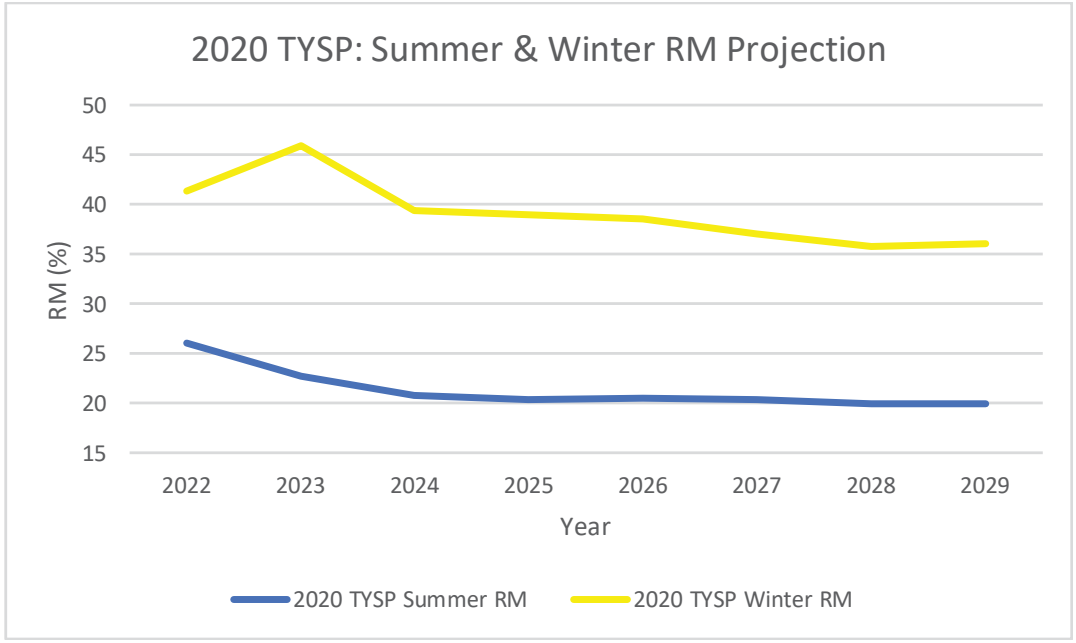
Background & Key Assumptions

- **The annual TYSP filing uses a P50 load forecast and provides projections of Summer and Winter RMs for the FPL/Gulf integrated system for a 10-year period** (2021 thru 2030 in the April 2021 filing)
- **Projections for the integrated system from the 2020 TYSP and the 2021 TYSP are shown first in this presentation** (because the Winter RM projection has noticeably changed in the 2021 TYSP)
- **The Load Forecasting group provided the following Winter load scenarios based on 2021 TYSP assumptions:**
  - P50 load for the FPL only area, Gulf only area, and the integrated system
  - January 2010-like load for these same three areas
- **Key assumptions include:**
  - DSM: all planned incremental conservation and load control (LC) is achieved and 100% of load control capability is implemented at the Winter peak hour
  - Available generation: 100% of generation is available at the Winter peak hour (in Jan 2010, there were ~ 2,000 MW of unplanned outages)

A comparison of the 2020 and 2021 Winter RM projections for the FPL/Gulf integrated system is presented first

The 2020 TYSP* showed a consistently higher Winter reserve margins (RM) than Summer RM thru 2029 for the integrated system

2020 TYSP: Summer & Winter RMs (w/ P50 Load)

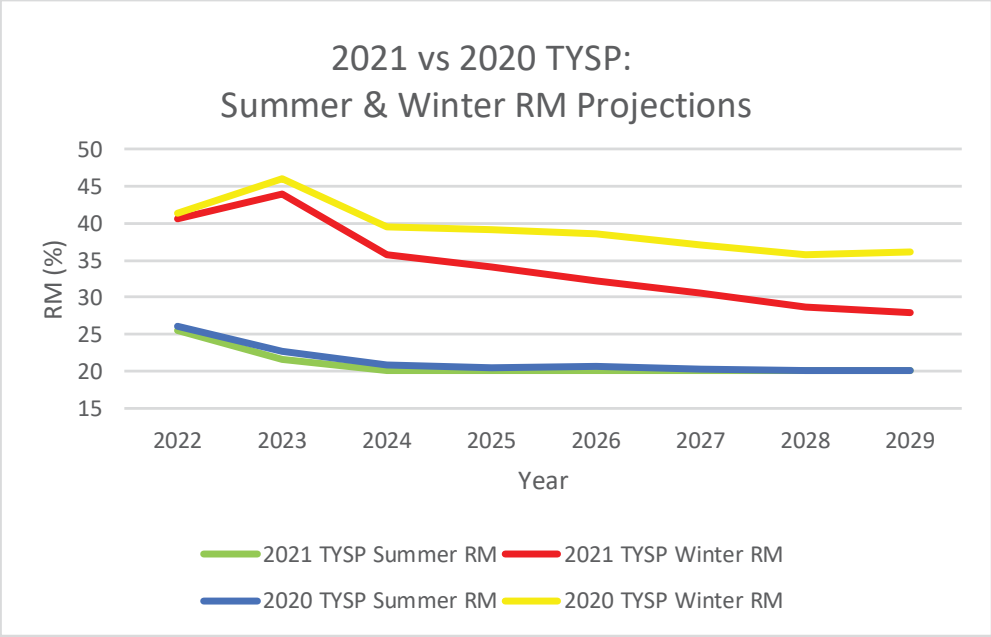


* The 2020 TYSP covered the years 2020 thru 2029. The chart starts at 2022 when FPL/Gulf become an integrated utility

In the 2020 TYSP, Winter RMs were projected to be above 35% every year based on a P50 load forecast

However, the 2021 TYSP will show Winter RM values (see red line below) **steadily declining over this same time period**

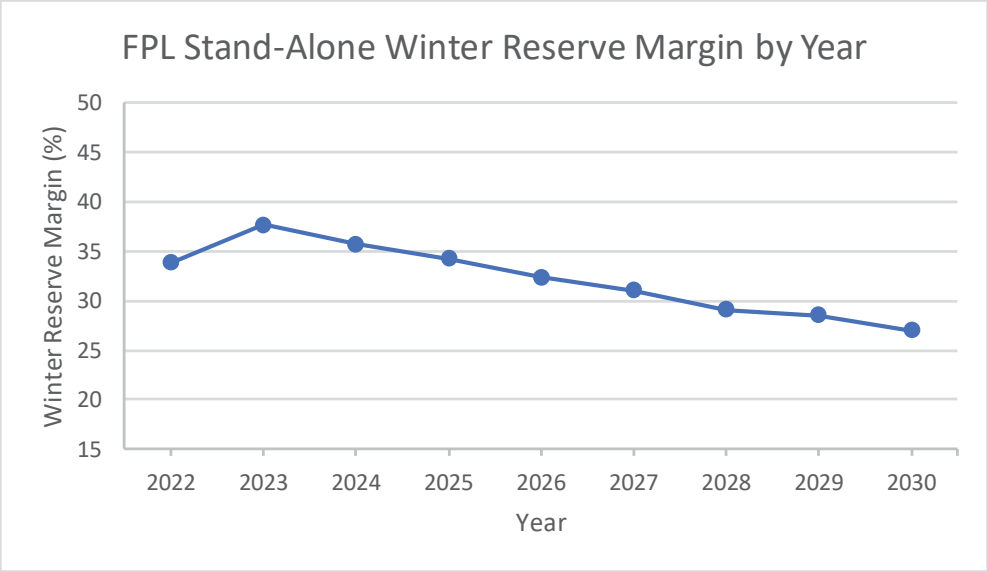
2021 vs 2020 TYSPs: Summer & Winter RMs (w/ P50 Load)



The lower Winter RM is due to 3 factors: (i) forecasted load is ~ 650 MW higher by 2029, (ii) CT upgrades have been revised and provide ~ 600 MW less Winter capacity, and (iii) ~ 400 MW of batteries were pushed back in the resource plan to allow more solar in 2026 thru 2030

The current Winter RM projection for the FPL only area using the P50 load forecast is shown below

Projected Winter RM: FPL Only Area – P50 Load*

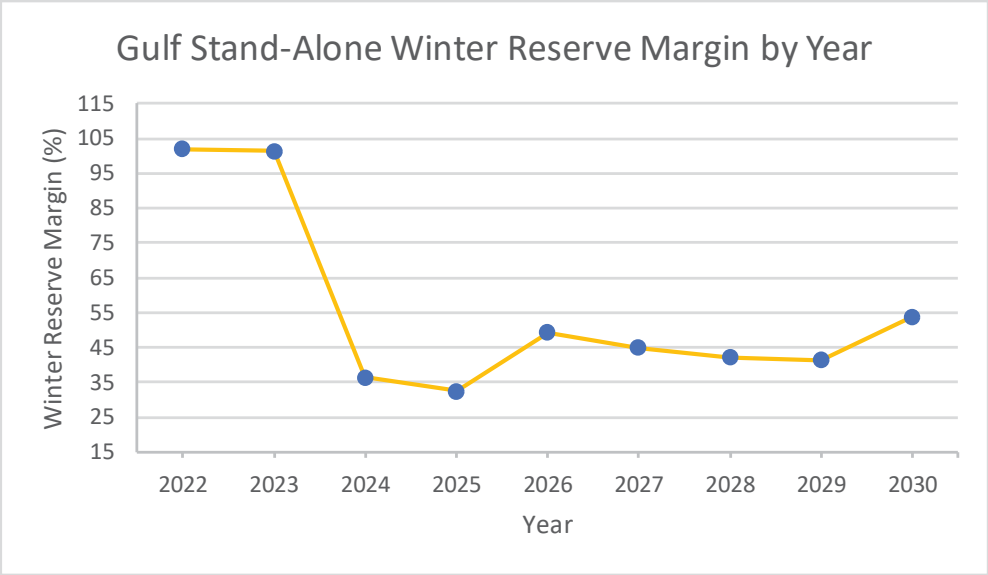


* For purposes of this analyses, the MW transfer from Gulf to FPL over the NFRC from Gulf to FPL on a Winter peak day is assumed to be zero

With a P50 load forecast, the Winter RMs for FPL only are similar in shape to, and ~ 1% lower than, for the FPL/Gulf integrated system

The current Winter RM projection for the Gulf only area using the P50 load forecast is shown below

Projected Winter RM: Gulf Only Area – P50 Load*



* For purposes of this analysis, the MW transfer from FPL to Gulf over the NFRC on a Winter peak day is assumed to be 0 MW thru 2025, and 400 MW thereafter

The 100% RM in 2022 is largely due to Crist CTs; the drop in 2024 is due to the loss of the Shell PPA (885 MW) and Daniel retirement (502 MW)

Next, projections for a January 2010-like Winter load were developed

Approaches for Developing Jan 2010-Like Winter Peaks

- **Three approaches were used to project a January 2010 load for each year from 2022 thru 2030**

- **The 1st and 2nd approaches addressed the FPL only area and were developed by Operations/IRP using the actual Jan 2010 peak as the starting point:**
  - The actual Jan 2010 peak was 24,846 MW
  - This load was 20.9% higher than the 20,550 MW peak that was forecasted only months before
- **The 3rd approach is a "from scratch" projection by the Load Forecasting group and it addresses the FPL only, Gulf only, and FPL/Gulf integrated system**

- **For each of these 3 approaches, once the Jan 2010-like loads for 2022 thru 2029 were developed, a projection of Winter reserves was made**

At the time these slides are being prepared (3/5/21), the 3rd approach (the "Load forecasting" approach) is being revised – therefore, no results using this approach are available at this time

Approach # 1 is a "load growth" approach

Approach # 1: – FPL Area Only

- **The starting point is the actual Jan 2010 load of 24,846 MW** (including accounting for ~ 500 MW of LC implemented to assist DEF)
- **Growth in customer load in the FPL only area since 2010 was then estimated:**
  - In 2010, the actual average no. of customers was ~ 4.52 million
  - For 2021, the forecasted avg. no. of customers is ~ 5.17 million
  - This equates to an ~ 14.5% growth in the number of customers in the FPL only area
- **The Jan 2010 load of 24,846 MW was multiplied by 1.145 to develop a Jan 2010-like load for the year 2022**
  - 24,846 MW x 1.145 = 28,449 MW (for 2022)
- **That 2022 value was then escalated annually by the annual growth rates in the current P50 load forecast**

The projected annual reserves for the FPL area are presented on the next slide

Even assuming no generation outages, and all LC MW are implemented, problems are projected in all years

Results Using Approach # 1

FPL Stand-Alone Winter Reserves - w/ Jan 2021-Like Load Forecast - w/ Approach # 1									
Year	Total Winter Firm Generation in FPL Area (MW)	Assumed Generation Outages: Planned & Unplanned (MW)	Adjusted Total Winter Firm Generation in FPL Area (MW)	Proxy for Jan 2010 Load Forecast (MW)	Conservation (MW)	Load After Conservation (MW)	Reserves (MW)	Load Control Available (MW) *	Reserves With LC (MW)
2022	25,298	0	25,298	28,449	26	28,423	(3,125)	1,812	(1,313)
2023	26,526	0	26,526	29,003	46	28,958	(2,432)	1,829	(603)
2024	26,659	0	26,659	29,570	67	29,503	(2,844)	1,851	(993)
2025	26,752	0	26,752	30,024	87	29,937	(3,185)	1,882	(1,303)
2026	26,762	0	26,762	30,472	87	30,385	(3,623)	1,916	(1,707)
2027	26,758	0	26,758	30,793	87	30,706	(3,948)	1,950	(1,998)
2028	26,758	0	26,758	31,268	87	31,181	(4,422)	1,984	(2,439)
2029	27,058	0	27,058	31,758	87	31,671	(4,613)	2,018	(2,595)
2030	27,158	0	27,158	32,262	87	32,175	(5,017)	2,052	(2,965)

A key outcome is that the picture is projected to worsen thru the 2020s because Winter generation grows only slightly

Approach # 2 is a "Winter 2010-to-P50 Summer" approach

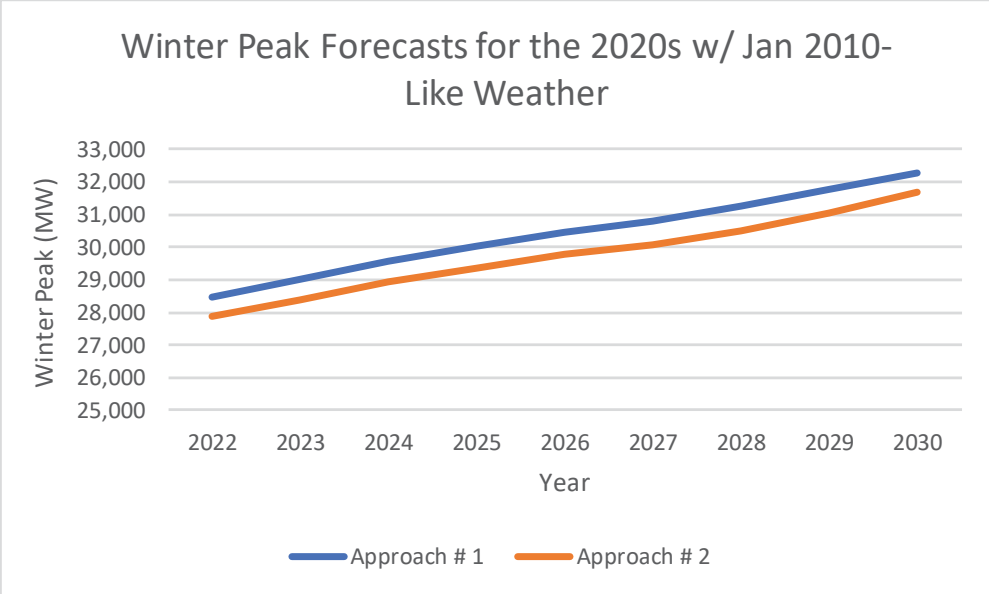
Approach # 2: – FPL Area Only

- **The starting point is again the actual Jan 2010 load of 24,846 MW**
- **The ratio of the actual Winter 2010 and Summer 2010 loads was calculated:**
  - In 2010, the actual Summer peak load was 22,256 MW
  - The Winter 2010 peak was ~ 11.64% higher than the Summer 2010 peak
- **The current P50 forecasted values for Summer peak for 2022 thru 2029 were multiplied by 1.116 to estimate Jan 2010-like loads for those years**
  - For example, the P50 forecasted Summer peak for 2022 is 24,967 MW
  - 24,967 MW x 1.1164 = 7,873 MW (for 2022)

The projections for Jan 2010-like load using Approaches # 1 and # 2 were then compared

Approach # 2 projects loads that are about ~ 2% (or ~ 660 MW) on average lower than with Approach # 1

Comparison of Projected Jan 2010-like Peaks Using Approaches # 1 and # 2



The projection of Winter reserves using Approach # 2 is shown on the next slide

Even with ~ 660 MW (on average) less load, the projection is much the same as with Approach # 1

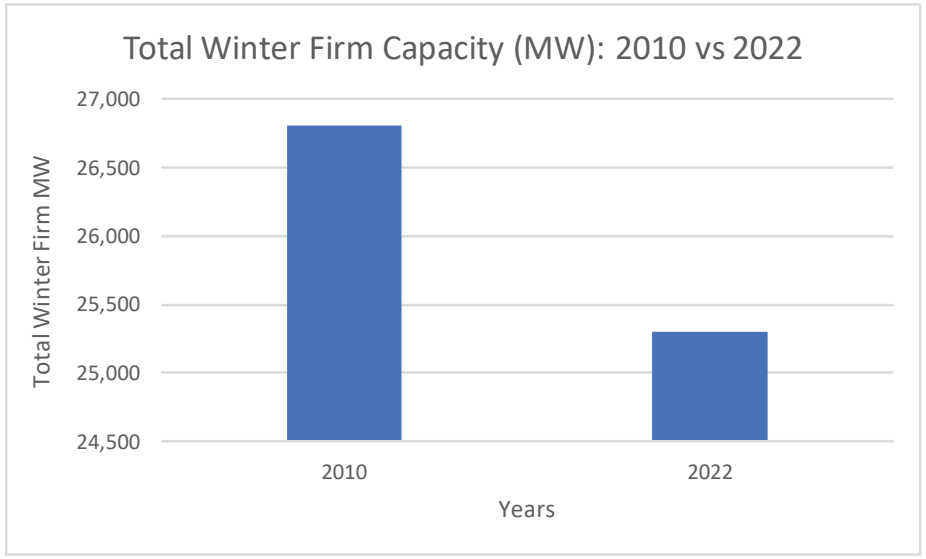
Results Using Approach # 2

FPL Stand-Alone Winter Reserves - w/ Jan 2021-Like Load Forecast - w/ Approach # 2									
Year	Total Winter Firm Generation in FPL Area (MW)	Assumed Generation Outages: Planned & Unplanned (MW)	Adjusted Total Winter Firm Generation in FPL Area (MW)	Proxy for Jan 2010 Load Forecast (MW)	Conservation (MW)	Load After Conservation (MW)	Reserves (MW)	Load Control Available (MW) *	Reserves With LC (MW)
2022	25,298	0	25,298	27,872	26	27,847	(2,549)	1,812	(737)
2023	26,526	0	26,526	28,402	46	28,356	(1,830)	1,829	(1)
2024	26,659	0	26,659	28,943	67	28,876	(2,218)	1,851	(366)
2025	26,752	0	26,752	29,368	87	29,281	(2,530)	1,882	(648)
2026	26,762	0	26,762	29,773	87	29,686	(2,924)	1,916	(1,008)
2027	26,758	0	26,758	30,080	87	29,993	(3,234)	1,950	(1,284)
2028	26,758	0	26,758	30,491	87	30,405	(3,646)	1,984	(1,662)
2029	27,058	0	27,058	31,037	87	30,950	(3,892)	2,018	(1,874)
2030	27,158	0	27,158	31,678	87	31,591	(4,433)	2,052	(2,381)

Problems are again projected for all years

To get another perspective, a comparison was made of total Winter firm capacity (FPL units + purchases) for 2010 vs 2022

Total Winter Firm Capacity (MW): 2010 vs 2022



- **In 2010, the total Winter firm capacity (w/o outages) was 26,809 MW; the projection for 2022 is 25,298 MW (and FPL area generation is not projected to return to the 2010 level until 2029)**

Since 2010, the FPL area total Winter firm capacity has decreased by ~ 1,500 MW or ~ 5.6% (in comparison, the total Summer MW have increased since 2010 by ~ 800 MW or 3.3%)

Based on the projections using Approaches # 1 and # 2, several preliminary conclusions are drawn

Conclusions To-Date

- **Both of these approaches to estimating what Jan 2010-like loads might be thru the 2020s result in a similar projection: FPL area loads similar to Jan 2010 weather would not be able to be met**
- **Assuming these loads, the actual situation would likely be worse than in these projections because it is probable that some unplanned generation outages will occur** (recall that on Jan 2010 there were ~ 2,000 MW of unplanned outages)
- **In addition, the situation is projected to worsen from 2022 thru 2029 given the current resource plan which adds little/no Winter MW until 2029 (when batteries begin to be added)**
- **Therefore, there is little value to be gained from spending further time/effort trying to determine what the load might be if 10-to-20 degrees colder weather were experienced**
- **More productive efforts would be to: (i) see how we can best prepare/winterize the generation/transmission/fuel systems we have, and (ii) examine how likely such loads are and if/when/how more Winter resources should begin to be added**

These conclusions will be revisited once the results from Approach # 3 (the load forecasting approach) are available

Appendix

Winter firm capacity projections from the 2021 TYSP are presented below

Projected Winter Firm Capacity: 2022 thru 2030

	FPL Only Area										
	Nuclear (MW)	Combined Cycle (MW)	CT/GT (MW)	Steam Turbine (MW)	Solar (Nameplate) (MW)	Solar(Firm) (MW)	Battery (2.2hr) (MW)	Battery (3hr) (MW)	Battery (4hr) (MW)	Purchased Power (MW)	Total (Firm) (MW)
2022	3,590	18,979	2,146	0	3,388	0	469	0	0	114	25,298
2023	3,590	20,207	2,146	0	3,760	0	469	0	0	114	26,526
2024	3,590	20,340	2,146	0	4,282	0	469	0	0	114	26,659
2025	3,590	20,433	2,146	0	4,803	0	469	0	0	114	26,752
2026	3,590	20,443	2,146	0	5,623	0	469	0	0	114	26,762
2027	3,590	20,443	2,146	0	6,666	0	469	0	0	110	26,758
2028	3,590	20,443	2,146	0	7,858	0	469	0	0	110	26,758
2029	3,590	20,443	2,146	0	8,901	0	469	300	0	110	27,058
2030	3,590	20,443	2,146	0	9,869	0	469	300	100	110	27,158

	Gulf Only Area										
	Nuclear (MW)	Combined Cycle (MW)	CT/GT (MW)	Steam Turbine (MW)	Solar (Nameplate (MW)	Solar(Firm) (MW)	Battery (2.2hr) (MW)	Battery (3hr) (MW)	Battery (4hr) (MW)	Purchased Power (MW)	Total (Firm) (MW)
2022	0	646	1,007	1,684	224	0	0	0	0	994	4,331
2023	0	646	1,007	1,684	596	0	0	0	0	994	4,331
2024	0	646	1,007	1,182	969	0	0	0	0	109	2,944
2025	0	646	1,007	1,104	1,341	0	0	0	0	109	2,866
2026	0	646	992	1,104	1,416	0	0	0	0	109	2,851
2027	0	646	992	1,026	1,416	0	0	0	0	109	2,773
2028	0	646	952	1,026	1,416	0	0	0	0	109	2,733
2029	0	646	952	1,026	1,565	0	0	0	0	109	2,733
2030	0	646	949	1,026	1,788	0	0	0	300	109	3,030

	FPL/Gulf Integrated System										
	Nuclear (MW)	Combined Cycle (MW)	CT/GT (MW)	Steam Turbine (MW)	Solar (Nameplate (MW)	Solar(Firm) (MW)	Battery (2.2hr) (MW)	Battery (3hr) (MW)	Battery (4hr) (MW)	Purchased Power (MW)	Total (Firm) (MW)
2022	3,590	19,625	3,153	1,684	3,611	0	469	0	0	1,108	29,629
2023	3,590	20,853	3,153	1,684	4,356	0	469	0	0	1,108	30,857
2024	3,590	20,986	3,153	1,182	5,250	0	469	0	0	223	29,603
2025	3,590	21,079	3,153	1,104	6,144	0	469	0	0	223	29,618
2026	3,590	21,089	3,138	1,104	7,038	0	469	0	0	223	29,613
2027	3,590	21,089	3,138	1,026	8,081	0	469	0	0	219	29,531
2028	3,590	21,089	3,098	1,026	9,273	0	469	0	0	219	29,491
2029	3,590	21,089	3,098	1,026	10,465	0	469	300	0	219	29,791
2030	3,590	21,089	3,095	1,026	11,657	0	469	300	400	219	30,188

Summer firm capacity projections from the 2021 TYSP are presented below

Projected Summer Firm Capacity: 2022 thru 2030

	FPL Only Area										
	Nuclear (MW)	Combined Cycle (MW)	CT/GT (MW)	Steam Turbine (MW)	Solar (Nameplate) (MW)	Solar(Firm) (MW)	Battery (2.2hr) (MW)	Battery (3hr) (MW)	Battery (4hr) (MW)	Purchased Power (MW)	Total (Firm) (MW)
2022	3,499	19,427	2,184	0	3,388	1,700	469	0	0	114	27,392
2023	3,499	19,519	2,184	0	3,760	1,845	469	0	0	114	27,629
2024	3,499	19,732	2,184	0	4,282	2,101	469	0	0	114	28,098
2025	3,499	19,836	2,184	0	4,803	2,357	469	0	0	114	28,458
2026	3,499	19,840	2,184	0	5,474	2,717	469	0	0	114	28,822
2027	3,499	19,840	2,184	0	6,517	3,102	469	0	0	110	29,204
2028	3,499	19,840	2,184	0	7,709	3,564	469	0	0	110	29,666
2029	3,499	19,840	2,184	0	8,826	3,775	469	300	0	110	30,177
2030	3,499	19,840	2,184	0	10,018	3,961	469	300	100	110	30,462

	Gulf Only Area										
	Nuclear (MW)	Combined Cycle (MW)	CT/GT (MW)	Steam Turbine (MW)	Solar (Nameplate) (MW)	Solar(Firm) (MW)	Battery (2.2hr) (MW)	Battery (3hr) (MW)	Battery (4hr) (MW)	Purchased Power (MW)	Total (Firm) (MW)
2022	0	660	985	1,684	344	133	0	0	0	1,015	4,477
2023	0	660	985	1,684	716	319	0	0	0	130	3,778
2024	0	660	985	1,182	1,089	488	0	0	0	130	3,445
2025	0	660	985	1,104	1,461	657	0	0	0	130	3,536
2026	0	660	973	1,104	1,685	689	0	0	0	130	3,555
2027	0	660	973	1,026	1,685	686	0	0	0	130	3,475
2028	0	660	941	1,026	1,685	684	0	0	0	129	3,441
2029	0	660	941	1,026	1,759	742	0	0	0	129	3,498
2030	0	660	941	1,026	1,759	829	0	0	300	129	3,885

	FPL/Gulf Integrated System										
	Nuclear (MW)	Combined Cycle (MW)	CT/GT (MW)	Steam Turbine (MW)	Solar (Nameplate) (MW)	Solar(Firm) (MW)	Battery (2.2hr) (MW)	Battery (3hr) (MW)	Battery (4hr) (MW)	Purchased Power (MW)	Total (Firm) (MW)
2022	3,499	20,087	3,169	1,684	3,731	1,833	469	0	0	1,129	31,870
2023	3,499	20,179	3,169	1,684	4,476	2,164	469	0	0	244	31,407
2024	3,499	20,392	3,169	1,182	5,370	2,589	469	0	0	244	31,543
2025	3,499	20,496	3,169	1,104	6,264	3,013	469	0	0	243	31,993
2026	3,499	20,500	3,157	1,104	7,158	3,406	469	0	0	243	32,377
2027	3,499	20,500	3,157	1,026	8,201	3,789	469	0	0	240	32,679
2028	3,499	20,500	3,125	1,026	9,393	4,248	469	0	0	239	33,106
2029	3,499	20,500	3,125	1,026	10,585	4,517	469	300	0	239	33,675
2030	3,499	20,500	3,125	1,026	11,777	4,789	469	300	400	239	34,347

The "Less-Extreme" Winter forecast significantly lowered the projected number of customer outages vs the "Extreme" forecast

Projected Customer Outages: w/ Extreme vs Less-Extreme

Assumptions:

- 3.5 million rotation-eligible customers
- 1,000 MW of generation forced outages
- 2021 TYSP resource plan is the basis for the projections (without any CT Winter upgrades, Winter-only units, etc.)

With Original Extreme Winter Forecast:

Year:	2023	2024	2025	2026	2027	2028	2029	2030
# of Customer Outages (30 minutes each)	423,067	5,375,031	7,549,264	10,304,868	13,547,592	17,438,134	20,794,957	23,809,483
# of Outages per Rotation Eligible Customer	0.12	1.54	2.16	2.94	3.87	4.98	5.94	6.80

With "Less-Extreme" Winter Forecast:

Year:	2023	2024	2025	2026	2027	2028	2029	2030
# of Customer Outages (30 minutes each)	0	7,782	161,749	288,264	554,538	911,203	1,017,723	1,027,485
# of Outages per Rotation Eligible Customer	0.00	0.00	0.05	0.08	0.16	0.26	0.29	0.29

A potential switch to using the "Less-Extreme" Winter forecast reduces the projected number of customer outages by a factor of ~ 20 at least.
(Manatee/Crist/L. Smith, upgrades would eliminate all outages thru 2030)

The "Mid-Extreme" Winter forecast lowers the projected number of customer outages, but by a reduced amount

Projected Customer Outages: w/ Extreme vs Mid-Extreme

Assumptions:

- 3.5 million rotation-eligible customers
- 1,000 MW of generation forced outages
- 2021 TYSP resource plan is the basis for the projections (without any CT Winter upgrades, Winter-only units, etc.)

With Original Extreme Winter Forecast:

Year:	2023	2024	2025	2026	2027	2028	2029	2030
# of Customer Outages (30 minutes each)	423,067	5,375,031	7,549,264	10,304,868	13,547,592	17,438,134	20,794,957	23,809,483
# of Outages per Rotation Eligible Customer	0.12	1.54	2.16	2.94	3.87	4.98	5.94	6.80

With "Mid-Extreme" Winter Forecast:

Year:	2023	2024	2025	2026	2027	2028	2029	2030
# of Customer Outages (30 minutes each)	0	338,982	603,425	902,254	1,332,216	2,858,049	4,833,716	6,177,077
# of Outages per Rotation Eligible Customer	0.00	0.10	0.17	0.26	0.38	0.82	1.38	1.76

A potential switch to using the "Mid-Extreme" Winter forecast reduces the projected number of customer outages by a factor ranging from 4 to 15. ***(Manatee/Crist/L. Smith, upgrades would again eliminate all outages thru 2030)***

The projected numbers of customer outages, both with and without the "near-term" Winter capacity additions are shown below

Projected Customer Outages (w/o BBB)

Assumptions:

- 5.5 million rotation-eligible customers starting in 2025
- No generation forced outages
- 2022 TYSP Alternate plan (w/o BBB, P50) is the basis for the projections
- "Near-Term Additions" include: Winter CC upgrades, plus retaining Manatee 1&2, Crist 4&5, and Lansing Smith A as Winter-only capacity

Without Near-Term Additions:

	2023	2024	2025	2026	2027	2028	2029	2030	2031
# of Customer Outages (30 minutes each)	0	1,097,322	3,605,376	5,979,664	8,845,401	12,207,715	15,951,503	15,736,480	16,043,446
# of Outages per Rotation Eligible Customer	0	0.20	0.66	1.09	1.61	2.22	2.90	2.86	2.92

With Near-Term Additions:

	2023	2024	2025	2026	2027	2028	2029	2030	2031
# of Customer Outages (30 minutes each)	0	0	119,085	193,538	350,488	694,333	825,234	604,294	526,343
# of Outages per Rotation Eligible Customer	0	0	0.02	0.04	0.06	0.13	0.15	0.11	0.10

The 2,700 MW of incremental 4-hour equivalent storage is projected to eliminate all remaining outages in 2025 thru 2031

The projected numbers of customer outages, both with and without the "near-term" Winter capacity additions are shown below

Projected Customer Outages (w/ BBB)

Assumptions:

- 5.5 million rotation-eligible customers
- No generation forced outages
- 2022 TYSP FYI-only plan #2 (w/ BBB, P50) is the basis for the projections
- "Near-Term Additions" include: Winter CC upgrades, plus retaining Manatee 1&2, Crist 4&5, and Lansing Smith A as Winter-only capacity

Without Near-Term Additions:

	2023	2024	2025	2026	2027	2028	2029	2030	2031
# of Customer Outages (30 minutes each)	0	1,097,335	3,230,473	5,503,641	7,986,766	10,994,878	16,078,356	18,663,365	14,027,549
# of Outages per Rotation Eligible Customer	0	0.20	0.59	1.00	1.45	2.00	2.92	3.39	2.55

With Near-Term Additions:

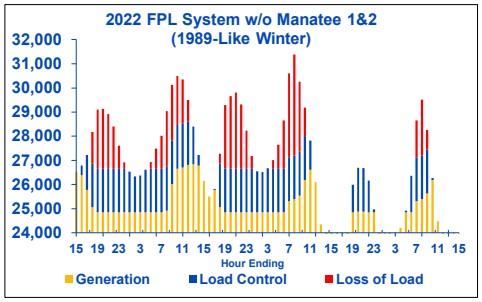
	2023	2024	2025	2026	2027	2028	2029	2030	2031
# of Customer Outages (30 minutes each)	0	0	119,085	144,414	255,798	543,665	1,038,498	1,137,360	13,335
# of Outages per Rotation Eligible Customer	0	0	0.02	0.03	0.05	0.10	0.19	0.21	0.00

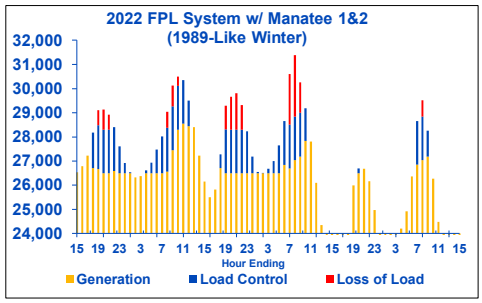
The 1,200 MW of incremental 4-hour equivalent storage is projected to eliminate all remaining outages in 2025 thru 2031

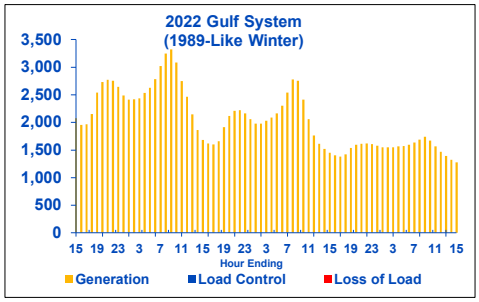
Load Control & Loss of Load Summary
("1989-Like Winter" - w/ and w/o Manatee 1&2)

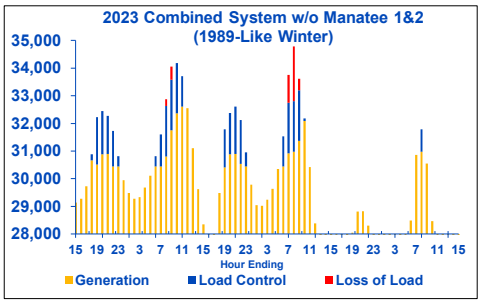
Year	Scenario	Load Control # of Hours	Load Control (MWh)	Loss of Load # of Hours	Loss of Load (MWh)	Maximum Loss of Load (MW)	% of Load Unserved	Loss of Load # of Hours w/ 1,000 MW Out
2022	FPL - w/o Manatee 1&2	53	82,567	33	56,948	4,182	2.4%	47
	FPL - w/ Manatee 1&2	38	47,398	14	15,425	2,540	0.6%	27
	Difference	(15)	(35,169)	(19)	(41,522)	(1,642)	-1.7%	(20)
	Gulf Stand-Alone	0	0	0	0	0	0.0%	0
2023	Combined - w/o Manatee 1&2	23	28,822	5	4,116	1,982	0.2%	17
	Combined - w/ Manatee 1&2	6	4,973	1	340	340	0.0%	2
	Difference	(17)	(23,849)	(4)	(3,776)	(1,642)	-0.1%	(15)

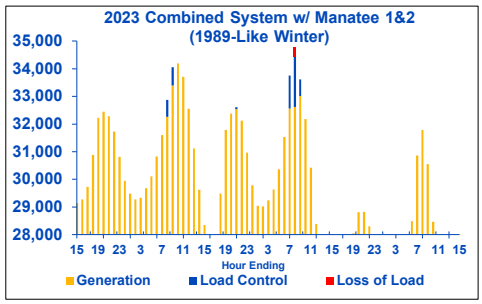
Note: Manatee 1&2 provide 1,642 MW of peak winter capacity


2022 FPL System w/o Manatee 1&2
(1989-Like Winter)
32,000
31,000
30,000
29,000
28,000
27,000
26,000
25,000
24,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Generation
Load Control
Loss of Load


2022 FPL System w/ Manatee 1&2
(1989-Like Winter)
32,000
31,000
30,000
29,000
28,000
27,000
26,000
25,000
24,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Generation
Load Control
Loss of Load


2022 Gulf System
(1989-Like Winter)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Generation
Load Control
Loss of Load


2023 Combined System w/o Manatee 1&2
(1989-Like Winter)
35,000
34,000
33,000
32,000
31,000
30,000
29,000
28,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Generation
Load Control
Loss of Load


2023 Combined System w/ Manatee 1&2
(1989-Like Winter)
35,000
34,000
33,000
32,000
31,000
30,000
29,000
28,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Generation
Load Control
Loss of Load

1989-Like Winter

	2022 FPL System							2022 Gulf System					2023 Combined System						
		W/o Manatee 1&2			W/ Manatee 1&2				--				W/o Manatee 1&2			W/ Manatee 1&2			
Hour	Load Forecast	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Forecast	Load Served Before Load Control	Load Control	Loss of Load	Load Forecast	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load
1	14,659	14,659	0	0	14,659	0	0	1,585	1,585	0	0	16,538	16,538	0	0	16,538	0	0
2	14,232	14,232	0	0	14,232	0	0	1,590	1,590	0	0	16,108	16,108	0	0	16,108	0	0
3	14,187	14,187	0	0	14,187	0	0	1,622	1,622	0	0	16,094	16,094	0	0	16,094	0	0
4	14,455	14,455	0	0	14,455	0	0	1,662	1,662	0	0	16,408	16,408	0	0	16,408	0	0
5	15,036	15,036	0	0	15,036	0	0	1,750	1,750	0	0	17,089	17,089	0	0	17,089	0	0
6	16,121	16,121	0	0	16,121	0	0	1,958	1,958	0	0	18,404	18,404	0	0	18,404	0	0
7	17,782	17,782	0	0	17,782	0	0	2,250	2,250	0	0	20,391	20,391	0	0	20,391	0	0
8	20,025	20,025	0	0	20,025	0	0	2,548	2,548	0	0	22,977	22,977	0	0	22,977	0	0
9	22,536	22,536	0	0	22,536	0	0	2,743	2,743	0	0	25,733	25,733	0	0	25,733	0	0
10	24,267	24,267	0	0	24,267	0	0	2,768	2,768	0	0	27,522	27,522	0	0	27,522	0	0
11	25,444	25,444	0	0	25,444	0	0	2,693	2,693	0	0	28,647	28,647	0	0	28,647	0	0
12	25,901	25,901	0	0	25,901	0	0	2,563	2,563	0	0	28,982	28,982	0	0	28,982	0	0
13	26,214	26,214	0	0	26,214	0	0	2,387	2,387	0	0	29,124	29,124	0	0	29,124	0	0
14	26,353	26,353	0	0	26,353	0	0	2,208	2,208	0	0	29,085	29,085	0	0	29,085	0	0
15	26,530	26,530	0	0	26,530	0	0	2,079	2,079	0	0	29,136	29,136	0	0	29,136	0	0
16	26,785	26,383	402	0	26,785	0	0	1,956	1,956	0	0	29,272	29,272	0	0	29,272	0	0
17	27,221	25,773	1,448	0	27,221	0	0	1,968	1,968	0	0	29,728	29,728	0	0	29,728	0	0
18	28,175	25,061	1,812	1,302	26,703	1,472	0	2,154	2,154	0	0	30,888	30,662	226	0	30,888	0	0
19	29,110	24,855	1,812	2,443	26,674	1,812	624	2,541	2,541	0	0	32,231	30,509	1,722	0	32,231	0	0
20	29,130	24,848	1,812	2,471	26,490	1,812	829	2,732	2,732	0	0	32,444	30,881	1,563	0	32,444	0	0
21	28,927	24,848	1,812	2,267	26,490	1,812	625	2,776	2,776	0	0	32,280	30,895	1,385	0	32,280	0	0
22	28,404	24,848	1,812	1,745	26,593	1,812	0	2,755	2,755	0	0	31,727	30,440	1,287	0	31,727	0	0
23	27,612	24,848	1,812	952	26,490	1,122	0	2,649	2,649	0	0	30,812	30,443	370	0	30,812	0	0
24	26,921	24,848	1,812	261	26,490	431	0	2,490	2,490	0	0	29,949	29,949	0	0	29,949	0	0
1	26,534	24,848	1,686	0	26,490	44	0	2,416	2,416	0	0	29,479	29,479	0	0	29,479	0	0
2	26,330	24,848	1,482	0	26,330	0	0	2,421	2,421	0	0	29,276	29,276	0	0	29,276	0	0
3	26,371	24,848	1,523	0	26,371	0	0	2,436	2,436	0	0	29,333	29,333	0	0	29,333	0	0
4	26,615	24,848	1,767	0	26,490	125	0	2,535	2,535	0	0	29,681	29,681	0	0	29,681	0	0
5	26,938	24,848	1,812	278	26,490	448	0	2,629	2,629	0	0	30,105	30,105	0	0	30,105	0	0
6	27,483	24,848	1,812	823	26,490	993	0	2,787	2,787	0	0	30,820	30,446	374	0	30,820	0	0
7	28,016	24,848	1,812	1,356	26,490	1,526	0	3,024	3,024	0	0	31,601	30,447	1,155	0	31,601	0	0
8	29,040	24,923	1,812	2,305	26,565	1,812	663	3,249	3,249	0	0	32,873	30,805	1,829	238	32,260	613	0
9	30,129	26,014	1,812	2,303	27,457	1,812	860	3,323	3,323	0	0	34,057	31,751	1,829	476	33,393	663	0
10	30,495	26,658	1,812	2,025	28,300	1,812	383	3,088	3,088	0	0	34,193	32,363	1,829	0	34,193	0	0
11	30,359	26,706	1,812	1,841	28,547	1,812	0	2,750	2,750	0	0	33,715	32,616	1,099	0	33,715	0	0
12	29,500	26,808	1,812	880	28,450	1,050	0	2,464	2,464	0	0	32,551	32,551	0	0	32,551	0	0
13	28,400	26,837	1,563	0	28,400	0	0	2,147	2,147	0	0	31,110	31,110	0	0	31,110	0	0
14	27,220	26,786	434	0	27,220	0	0	1,863	1,863	0	0	29,622	29,622	0	0	29,622	0	0
15	26,150	26,150	0	0	26,150	0	0	1,680	1,680	0	0	28,347	28,347	0	0	28,347	0	0
16	25,500	25,500	0	0	25,500	0	0	1,617	1,617	0	0	27,621	27,621	0	0	27,621	0	0
17	25,823	25,773	50	0	25,823	0	0	1,601	1,601	0	0	27,934	27,934	0	0	27,934	0	0
18	27,282	25,061	1,812	409	26,703	579	0	1,659	1,659	0	0	29,479	29,479	0	0	29,479	0	0
19	29,290	24,855	1,812	2,623	26,497	1,812	981	1,917	1,917	0	0	31,785	30,415	1,370	0	31,785	0	0
20	29,670	24,848	1,812	3,010	26,490	1,812	1,368	2,121	2,121	0	0	32,378	30,881	1,497	0	32,378	0	0
21	29,811	24,848	1,812	3,151	26,490	1,812	1,509	2,209	2,209	0	0	32,611	30,895	1,716	0	32,537	74	0
22	29,323	24,848	1,812	2,663	26,490	1,812	1,021	2,222	2,222	0	0	32,126	30,534	1,592	0	32,126	0	0
23	28,236	24,848	1,812	1,577	26,490	1,746	0	2,163	2,163	0	0	30,959	30,443	516	0	30,959	0	0
24	27,185	24,848	1,812	526	26,490	695	0	2,058	2,058	0	0	29,782	29,782	0	0	29,782	0	0
1	26,543	24,848	1,695	0	26,490	53	0	1,976	1,976	0	0	29,046	29,046	0	0	29,046	0	0
2	26,515	24,848	1,667	0	26,490	25	0	1,980	1,980	0	0	29,021	29,021	0	0	29,021	0	0
3	26,679	24,848	1,812	19	26,490	189	0	2,034	2,034	0	0	29,242	29,242	0	0	29,242	0	0
4	27,006	24,848	1,812	346	26,490	516	0	2,087	2,087	0	0	29,629	29,629	0	0	29,629	0	0
5	27,644	24,848	1,812	984	26,490	1,154	0	2,165	2,165	0	0	30,358	30,358	0	0	30,358	0	0
6	28,657	24,848	1,812	1,997	26,845	1,812	0	2,303	2,303	0	0	31,530	30,446	1,084	0	31,530	0	0
7	30,601	25,317	1,812	3,472	26,698	1,812	2,092	2,543	2,543	0	0	33,753	30,916	1,829	1,008	32,558	1,195	0
8	31,386	25,392	1,812	4,182	27,034	1,812	2,540	2,781	2,781	0	0	34,792	30,981	1,829	1,982	32,623	1,829	340
9	30,259	25,545	1,812	2,903	27,187	1,812	1,261	2,755	2,755	0	0	33,617	31,376	1,829	412	33,018	599	0
10	29,184	26,189	1,812	1,182	27,831	1,352	0	2,416	2,416	0	0	32,180	32,094	86	0	32,180	0	0
11	27,814	26,613	1,201	0	27,814	0	0	2,060	2,060	0	0	30,425	30,425	0	0	30,425	0	0
12	26,097	26,097	0	0	26,097	0	0	1,764	1,764	0	0	28,378	28,378	0	0	28,378	0	0
13	24,354	24,354	0	0	24,354	0	0	1,613	1,613	0	0	26,448	26,448	0	0	26,448	0	0
14	22,864	22,864	0	0	22,864	0	0	1,522	1,522	0	0	24,838	24,838	0	0	24,838	0	0
15	21,398	21,398	0	0	21,398	0	0	1,452	1,452	0	0	23,273	23,273	0	0	23,273	0	0
16	20,384	20,384	0	0	20,384	0	0	1,403	1,403	0	0	22,190	22,190	0	0	22,190	0	0
17	20,791	20,791	0	0	20,791	0	0	1,381	1,381	0	0	22,583	22,583	0	0	22,583	0	0
18	22,989	22,989	0	0	22,989	0	0	1,422	1,422	0	0	24,865	24,865	0	0	24,865	0	0
19	25,992	24,855	1,137	0	25,992	0	0	1,541	1,541	0	0	28,045	28,045	0	0	28,045	0	0
20	26,691	24,879	1,812	0	26,490	200	0	1,597	1,597	0	0	28,814	28,814	0	0	28,814	0	0
21	26,684	24,873	1,812	0	26,684	0	0	1,613	1,613	0	0	28,824	28,824	0	0	28,824	0	0
22	26,162	24,848	1,314	0	26,162	0	0	1,621	1,621	0	0	28,300	28,300	0	0	28,300	0	0
23	24,969	24,848	121	0	24,969	0	0	1,606	1,606	0	0	27,068	27,068	0	0	27,068	0	0
24	23,927	23,927	0	0	23,927	0	0	1,578	1,578	0	0	25,978	25,978	0	0	25,978	0	0
1	23,336	23,336	0	0	23,336	0	0	1,550	1,550	0	0	25,348	25,348	0	0	25,348	0	0
2	23,397	23,397	0	0	23,397	0	0	1,547	1,547	0	0	25,407	25,407	0	0	25,407	0	0
3	23,742	23,742	0	0	23,742	0	0	1,548	1,548	0	0	25,759	25,759	0	0	25,759	0	0
4	24,205	24,205	0	0	24,205	0	0	1,565	1,565	0	0	26,248	26,248	0	0	26,248	0	0
5	24,923	24,848	75	0	24,923	0	0	1,573	1,573	0	0	26,988	26,988	0	0	26,988	0	0
6	26,365	24,848	1,517	0	26,365	0	0	1,597	1,597	0	0	28,481	28,481	0	0	28,481	0	0
7	28,661	25,317	1,812	1,532	26,850	1,812	0	1,639	1,639	0	0	30,865	30,865	0	0	30,865	0	0
8	29,516	25,392	1,812	2,312	27,034	1,812	670	1,688	1,688	0	0	31,785	30,981	805	0	31,785	0	0
9	28,255	25,639	1,812	804	27,187	1,068	0	1,740	1,740	0	0	30,552	30,552	0	0	30,552	0	0
10	26,267	26,189	77	0	26,267	0	0	1,673	1,673	0	0	28,459	28,459	0	0	28,459	0	0
11	24,486	24,486	0	0	24,486	0	0	1,567	1,567	0	0	26,537	26,537	0	0	26,537	0	0
12	22,989	22,989	0	0	22,989	0	0	1,468	1,468	0	0	24,911	24,911	0	0	24,911	0	0
13	21,601	21,601	0	0	21,601	0	0	1,393	1,393	0	0	23,421	23,421	0	0	23,421	0	0
14	20,088	20,088	0	0	20,088	0	0	1,324	1,324	0	0	21,810	21,810	0	0	21,810	0	0
15	18,754	18,754	0	0	18,754	0	0	1,278	1,278	0	0	20,403	20,403	0	0	20,403	0	0
16	18,064	18,064	0	0	18,064	0	0	1,257	1,257	0	0	19,679	19,679	0	0	19,679	0	0
17	18,444	18,444	0	0	18,444	0	0	1,252	1,252	0	0	20,061	20,061	0	0	20,061	0	0
18	20,487	20,487	0	0	20,487	0	0	1,273	1,273	0	0	22,164	22,164	0	0	22,164	0	0
19	23,155	23,155	0	0	23,155	0	0	1,357	1,357	0	0	24,968	24,968	0	0	24,968	0	0
20	23,820	23,820	0	0	23,820	0	0	1,391	1,391	0	0	25,679	25,679	0	0	25,679	0	0
21	23,882	23,882	0	0	23,882	0	0	1,382	1,382	0	0	25,735	25,735	0	0	25,735	0	0
22	23,432	23,432	0	0	23,432	0	0	1,363	1,363	0	0	25,257	25,257	0	0	25,257	0	0
23	22,570	22,570	0	0	22,570	0	0	1,335	1,335	0	0	24,350	24,350	0	0	24,350	0	0
24	21,243	21,243	0	0	21,243	0	0	1,308	1,308	0	0	22,970	22,970	0	0	22,970	0	0

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	82,567	53	1,812
Loss of Load	56,948	33	4,182

"What If" Gen MW Unavailable
1,000
47

2022 FPL System Winter Peak Day Without Manatee 1&2 - (1989-Like Winter)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
9	1	14,659	3,590	0	20	114	10,936	0	0	0	0	0	0	0
9	2	14,232	3,590	0	20	114	10,508	0	0	0	0	0	0	0
9	3	14,187	3,590	0	20	114	10,464	0	0	0	0	0	0	0
9	4	14,455	3,590	0	20	114	10,732	0	0	0	0	0	0	0
9	5	15,036	3,590	0	20	114	11,313	0	0	0	0	0	0	0
9	6	16,121	3,590	0	20	114	12,398	0	0	0	0	0	0	0
9	7	17,782	3,590	0	20	114	14,059	0	0	0	0	0	0	0
9	8	20,025	3,590	75	20	114	16,227	0	0	0	0	0	0	0
9	9	22,536	3,590	697	20	114	18,116	0	0	0	0	0	0	0
9	10	24,267	3,590	1,341	20	114	18,979	223	0	0	0	0	0	0
9	11	25,444	3,590	1,765	20	114	18,979	977	0	0	0	0	0	0
9	12	25,901	3,590	1,960	20	114	18,979	1,239	0	0	0	0	0	0
9	13	26,214	3,590	1,989	20	114	18,979	1,523	0	0	0	0	0	0
9	14	26,353	3,590	1,938	20	114	18,979	1,713	0	0	0	0	0	0
9	15	26,530	3,590	1,803	20	114	18,979	2,025	0	0	0	0	0	0
9	16	26,785	3,590	1,535	20	114	18,979	2,146	0	0	402	402	0	0
9	17	27,221	3,590	925	20	114	18,979	2,146	0	0	1,448	1,448	0	637
9	18	28,175	3,590	213	20	114	18,979	2,146	0	0	3,114	1,812	1,302	2,302
9	19	29,110	3,590	7	20	114	18,979	2,146	0	0	4,255	1,812	2,443	3,443
9	20	29,130	3,590	0	20	114	18,979	2,146	0	0	4,282	1,812	2,471	3,471
9	21	28,927	3,590	0	20	114	18,979	2,146	0	0	4,079	1,812	2,267	3,267
9	22	28,404	3,590	0	20	114	18,979	2,146	0	0	3,556	1,812	1,745	2,745
9	23	27,612	3,590	0	20	114	18,979	2,146	0	0	2,764	1,812	952	1,952
9	24	26,921	3,590	0	20	114	18,979	2,146	0	0	2,073	1,812	261	1,261
10	1	26,534	3,590	0	20	114	18,979	2,146	0	0	1,686	1,686	0	875
10	2	26,330	3,590	0	20	114	18,979	2,146	0	0	1,482	1,482	0	670
10	3	26,371	3,590	0	20	114	18,979	2,146	0	0	1,523	1,523	0	711
10	4	26,615	3,590	0	20	114	18,979	2,146	0	0	1,767	1,767	0	955
10	5	26,938	3,590	0	20	114	18,979	2,146	0	0	2,090	1,812	278	1,278
10	6	27,483	3,590	0	20	114	18,979	2,146	0	0	2,635	1,812	823	1,823
10	7	28,016	3,590	0	20	114	18,979	2,146	0	0	3,168	1,812	1,356	2,356
10	8	29,040	3,590	75	20	114	18,979	2,146	0	0	4,117	1,812	2,305	3,305
10	9	30,129	3,590	697	20	114	18,979	2,146	0	469	4,115	1,812	2,303	3,303
10	10	30,495	3,590	1,341	20	114	18,979	2,146	0	469	3,836	1,812	2,025	3,025
10	11	30,359	3,590	1,765	20	114	18,979	2,146	0	94	3,653	1,812	1,841	2,841
10	12	29,500	3,590	1,960	20	114	18,979	2,146	0	0	2,692	1,812	880	1,880
10	13	28,400	3,590	1,989	20	114	18,979	2,146	0	0	1,563	1,563	0	751
10	14	27,220	3,590	1,938	20	114	18,979	2,146	0	0	434	434	0	0
10	15	26,150	3,590	1,803	20	114	18,979	2,114	0	(469)	0	0	0	0
10	16	25,500	3,590	1,535	20	114	18,979	1,732	0	(469)	0	0	0	0
10	17	25,823	3,590	925	20	114	18,979	2,146	0	0	50	50	0	0
10	18	27,282	3,590	213	20	114	18,979	2,146	0	0	2,221	1,812	409	1,409
10	19	29,290	3,590	7	20	114	18,979	2,146	0	0	4,434	1,812	2,623	3,623
10	20	29,670	3,590	0	20	114	18,979	2,146	0	0	4,822	1,812	3,010	4,010
10	21	29,811	3,590	0	20	114	18,979	2,146	0	0	4,963	1,812	3,151	4,151
10	22	29,323	3,590	0	20	114	18,979	2,146	0	0	4,475	1,812	2,663	3,663
10	23	28,236	3,590	0	20	114	18,979	2,146	0	0	3,388	1,812	1,577	2,577
10	24	27,185	3,590	0	20	114	18,979	2,146	0	0	2,337	1,812	526	1,526
11	1	26,543	3,590	0	20	114	18,979	2,146	0	0	1,695	1,695	0	883
11	2	26,515	3,590	0	20	114	18,979	2,146	0	0	1,667	1,667	0	856
11	3	26,679	3,590	0	20	114	18,979	2,146	0	0	1,831	1,812	19	1,019
11	4	27,006	3,590	0	20	114	18,979	2,146	0	0	2,158	1,812	346	1,346
11	5	27,644	3,590	0	20	114	18,979	2,146	0	0	2,796	1,812	984	1,984
11	6	28,657	3,590	0	20	114	18,979	2,146	0	0	3,809	1,812	1,997	2,997
11	7	30,601	3,590	0	20	114	18,979	2,146	0	469	5,284	1,812	3,472	4,472
11	8	31,386	3,590	75	20	114	18,979	2,146	0	469	5,993	1,812	4,182	5,182
11	9	30,259	3,590	697	20	114	18,979	2,146	0	0	4,714	1,812	2,903	3,903
11	10	29,184	3,590	1,341	20	114	18,979	2,146	0	0	2,994	1,812	1,182	2,182
11	11	27,814	3,590	1,765	20	114	18,979	2,146	0	0	1,201	1,201	0	390
11	12	26,097	3,590	1,960	20	114	18,979	1,435	0	0	0	0	0	0
11	13	24,354	3,590	1,989	20	114	18,642	469	0	(469)	0	0	0	0
11	14	22,864	3,590	1,938	20	114	17,203	469	0	(469)	0	0	0	0
11	15	21,398	3,590	1,803	20	114	15,871	94	0	(94)	0	0	0	0
11	16	20,384	3,590	1,535	20	114	15,126	0	0	0	0	0	0	0
11	17	20,791	3,590	925	20	114	16,143	0	0	0	0	0	0	0
11	18	22,989	3,590	213	20	114	18,979	74	0	0	0	0	0	0
11	19	25,992	3,590	7	20	114	18,979	2,146	0	0	1,137	1,137	0	325
11	20	26,691	3,590	0	20	114	18,979	2,146	0	31	1,812	1,812	0	1,000
11	21	26,684	3,590	0	20	114	18,979	2,146	0	24	1,812	1,812	0	1,000
11	22	26,162	3,590	0	20	114	18,979	2,146	0	0	1,314	1,314	0	502
11	23	24,969	3,590	0	20	114	18,979	2,146	0	0	121	121	0	0
11	24	23,927	3,590	0	20	114	18,979	1,225	0	0	0	0	0	0
12	1	23,336	3,590	0	20	114	18,979	665	0	(31)	0	0	0	0
12	2	23,397	3,590	0	20	114	18,979	719	0	(24)	0	0	0	0
12	3	23,742	3,590	0	20	114	18,979	1,040	0	0	0	0	0	0
12	4	24,205	3,590	0	20	114	18,979	1,503	0	0	0	0	0	0
12	5	24,923	3,590	0	20	114	18,979	2,146	0	0	75	75	0	0
12	6	26,365	3,590	0	20	114	18,979	2,146	0	0	1,517	1,517	0	705
12	7	28,661	3,590	0	20	114	18,979	2,146	0	469	3,344	1,812	1,532	2,532
12	8	29,516	3,590	75	20	114	18,979	2,146	0	469	4,124	1,812	2,312	3,312
12	9	28,255	3,590	697	20	114	18,979	2,146	0	94	2,616	1,812	804	1,804
12	10	26,267	3,590	1,341	20	114	18,979	2,146	0	0	77	77	0	0
12	11	24,486	3,590	1,765	20	114	18,979	20	0	0	0	0	0	0
12	12	22,989	3,590	1,960	20	114	17,306	0	0	0	0	0	0	0
12	13	21,601	3,590	1,989	20	114	15,889	0	0	0	0	0	0	0
12	14	20,088	3,590	1,938	20	114	14,427	0	0	0	0	0	0	0
12	15	18,754	3,590	1,803	20	114	13,228	0	0	0	0	0	0	0
12	16	18,064	3,590	1,535	20	114	12,806	0	0	0	0	0	0	0
12	17	18,444	3,590	925	20	114	13,796	0	0	0	0	0	0	0
12	18	20,487	3,590	213	20	114	16,551	0	0	0	0	0	0	0
12	19	23,155	3,590	7	20	114	18,979	446	0	0	0	0	0	0
12	20	23,820	3,590	0	20	114	18,979	1,118	0	0	0	0	0	0
12	21	23,882	3,590	0	20	114	18,979	1,180	0	0	0	0	0	0
12	22	23,432	3,590	0	20	114	18,979	730	0	0	0	0	0	0
12	23	22,570	3,590	0	20	114	18,847	0	0	0	0	0	0	0
12	24	21,243	3,590	0	20	114	17,520	0	0	0	0	0	0	0
		2,414,998										**82,567**	**56,948**	**100,208**

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	47,398	38	1,812
Loss of Load	15,425	14	2,540

"What If" Gen MW Unavailable
1,000
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2022 FPL System Winter Peak Day With Manatee 1&2 - (1989-Like Winter)

(1) Day	(2) Hour Ending	(3) Load (MWh)	(4) Nuclear (MWh)	(5) Solar (MWh)	(6) Conservation (MWh)	(7) Purchases (MWh)	(8) Combined Cycle (MWh)	(9) CT/GT (MWh)	(10) Steam Turbine (MWh)	(11) Storage (MWh)	(12) Loss of Load w/o LC (MWh)	(13) Load Control (MWh)	(14) Loss of Load w/ LC (MWh)	(15) Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	14,659	3,590	0	20	114	10,936	0	0	0	0	0	0	0
9	2	14,232	3,590	0	20	114	10,508	0	0	0	0	0	0	0
9	3	14,187	3,590	0	20	114	10,464	0	0	0	0	0	0	0
9	4	14,455	3,590	0	20	114	10,732	0	0	0	0	0	0	0
9	5	15,036	3,590	0	20	114	11,313	0	0	0	0	0	0	0
9	6	16,121	3,590	0	20	114	12,398	0	0	0	0	0	0	0
9	7	17,782	3,590	0	20	114	14,059	0	0	0	0	0	0	0
9	8	20,025	3,590	75	20	114	16,227	0	0	0	0	0	0	0
9	9	22,536	3,590	697	20	114	18,116	0	0	0	0	0	0	0
9	10	24,267	3,590	1,341	20	114	18,979	223	0	0	0	0	0	0
9	11	25,444	3,590	1,765	20	114	18,979	977	0	0	0	0	0	0
9	12	25,901	3,590	1,960	20	114	18,979	1,239	0	0	0	0	0	0
9	13	26,214	3,590	1,989	20	114	18,979	1,523	0	0	0	0	0	0
9	14	26,353	3,590	1,938	20	114	18,979	1,713	0	0	0	0	0	0
9	15	26,530	3,590	1,803	20	114	18,979	2,025	0	0	0	0	0	0
9	16	26,785	3,590	1,535	20	114	18,979	2,548	0	0	0	0	0	0
9	17	27,221	3,590	925	20	114	18,979	3,594	0	0	0	0	0	0
9	18	28,175	3,590	213	20	114	18,979	3,788	0	0	1,472	1,472	0	660
9	19	29,110	3,590	7	20	114	18,979	3,788	0	177	2,436	1,812	624	1,624
9	20	29,130	3,590	0	20	114	18,979	3,788	0	0	2,640	1,812	829	1,829
9	21	28,927	3,590	0	20	114	18,979	3,788	0	0	2,437	1,812	625	1,625
9	22	28,404	3,590	0	20	114	18,979	3,788	0	103	1,812	1,812	0	1,000
9	23	27,612	3,590	0	20	114	18,979	3,788	0	0	1,122	1,122	0	310
9	24	26,921	3,590	0	20	114	18,979	3,788	0	0	431	431	0	0
10	1	26,534	3,590	0	20	114	18,979	3,788	0	0	44	44	0	0
10	2	26,330	3,590	0	20	114	18,979	3,788	0	(160)	0	0	0	0
10	3	26,371	3,590	0	20	114	18,979	3,788	0	(119)	0	0	0	0
10	4	26,615	3,590	0	20	114	18,979	3,788	0	0	125	125	0	0
10	5	26,938	3,590	0	20	114	18,979	3,788	0	0	448	448	0	0
10	6	27,483	3,590	0	20	114	18,979	3,788	0	0	993	993	0	181
10	7	28,016	3,590	0	20	114	18,979	3,788	0	0	1,526	1,526	0	714
10	8	29,040	3,590	75	20	114	18,979	3,788	0	0	2,475	1,812	663	1,663
10	9	30,129	3,590	697	20	114	18,979	3,788	0	270	2,672	1,812	860	1,860
10	10	30,495	3,590	1,341	20	114	18,979	3,788	0	469	2,194	1,812	383	1,383
10	11	30,359	3,590	1,765	20	114	18,979	3,788	0	293	1,812	1,812	0	1,000
10	12	29,500	3,590	1,960	20	114	18,979	3,788	0	0	1,050	1,050	0	238
10	13	28,400	3,590	1,989	20	114	18,979	3,709	0	0	0	0	0	0
10	14	27,220	3,590	1,938	20	114	18,979	3,049	0	(469)	0	0	0	0
10	15	26,150	3,590	1,803	20	114	18,979	2,114	0	(469)	0	0	0	0
10	16	25,500	3,590	1,535	20	114	18,979	1,357	0	(94)	0	0	0	0
10	17	25,823	3,590	925	20	114	18,979	2,196	0	0	0	0	0	0
10	18	27,282	3,590	213	20	114	18,979	3,788	0	0	579	579	0	0
10	19	29,290	3,590	7	20	114	18,979	3,788	0	0	2,792	1,812	981	1,981
10	20	29,670	3,590	0	20	114	18,979	3,788	0	0	3,180	1,812	1,368	2,368
10	21	29,811	3,590	0	20	114	18,979	3,788	0	0	3,321	1,812	1,509	2,509
10	22	29,323	3,590	0	20	114	18,979	3,788	0	0	2,833	1,812	1,021	2,021
10	23	28,236	3,590	0	20	114	18,979	3,788	0	0	1,746	1,746	0	935
10	24	27,185	3,590	0	20	114	18,979	3,788	0	0	695	695	0	0
11	1	26,543	3,590	0	20	114	18,979	3,788	0	0	53	53	0	0
11	2	26,515	3,590	0	20	114	18,979	3,788	0	0	25	25	0	0
11	3	26,679	3,590	0	20	114	18,979	3,788	0	0	189	189	0	0
11	4	27,006	3,590	0	20	114	18,979	3,788	0	0	516	516	0	0
11	5	27,644	3,590	0	20	114	18,979	3,788	0	0	1,154	1,154	0	342
11	6	28,657	3,590	0	20	114	18,979	3,788	0	355	1,812	1,812	0	1,000
11	7	30,601	3,590	0	20	114	18,979	3,788	0	208	3,903	1,812	2,092	3,092
11	8	31,386	3,590	75	20	114	18,979	3,788	0	469	4,351	1,812	2,540	3,540
11	9	30,259	3,590	697	20	114	18,979	3,788	0	0	3,072	1,812	1,261	2,261
11	10	29,184	3,590	1,341	20	114	18,979	3,788	0	0	1,352	1,352	0	540
11	11	27,814	3,590	1,765	20	114	18,979	3,347	0	0	0	0	0	0
11	12	26,097	3,590	1,960	20	114	18,979	1,904	0	(469)	0	0	0	0
11	13	24,354	3,590	1,989	20	114	18,642	469	0	(469)	0	0	0	0
11	14	22,864	3,590	1,938	20	114	17,203	94	0	(94)	0	0	0	0
11	15	21,398	3,590	1,803	20	114	15,871	0	0	0	0	0	0	0
11	16	20,384	3,590	1,535	20	114	15,126	0	0	0	0	0	0	0
11	17	20,791	3,590	925	20	114	16,143	0	0	0	0	0	0	0
11	18	22,989	3,590	213	20	114	18,979	74	0	0	0	0	0	0
11	19	25,992	3,590	7	20	114	18,979	3,283	0	0	0	0	0	0
11	20	26,691	3,590	0	20	114	18,979	3,788	0	0	200	200	0	0
11	21	26,684	3,590	0	20	114	18,979	3,788	0	194	0	0	0	0
11	22	26,162	3,590	0	20	114	18,979	3,460	0	0	0	0	0	0
11	23	24,969	3,590	0	20	114	18,979	2,267	0	0	0	0	0	0
11	24	23,927	3,590	0	20	114	18,979	1,225	0	0	0	0	0	0
12	1	23,336	3,590	0	20	114	18,979	634	0	0	0	0	0	0
12	2	23,397	3,590	0	20	114	18,979	695	0	0	0	0	0	0
12	3	23,742	3,590	0	20	114	18,979	1,040	0	0	0	0	0	0
12	4	24,205	3,590	0	20	114	18,979	1,503	0	0	0	0	0	0
12	5	24,923	3,590	0	20	114	18,979	2,221	0	0	0	0	0	0
12	6	26,365	3,590	0	20	114	18,979	3,663	0	0	0	0	0	0
12	7	28,661	3,590	0	20	114	18,979	3,788	0	359	1,812	1,812	0	1,000
12	8	29,516	3,590	75	20	114	18,979	3,788	0	469	2,482	1,812	670	1,670
12	9	28,255	3,590	697	20	114	18,979	3,788	0	0	1,068	1,068	0	256
12	10	26,267	3,590	1,341	20	114	18,979	2,223	0	0	0	0	0	0
12	11	24,486	3,590	1,765	20	114	18,979	20	0	0	0	0	0	0
12	12	22,989	3,590	1,960	20	114	17,306	0	0	0	0	0	0	0
12	13	21,601	3,590	1,989	20	114	15,889	0	0	0	0	0	0	0
12	14	20,088	3,590	1,938	20	114	14,427	0	0	0	0	0	0	0
12	15	18,754	3,590	1,803	20	114	13,228	0	0	0	0	0	0	0
12	16	18,064	3,590	1,535	20	114	12,806	0	0	0	0	0	0	0
12	17	18,444	3,590	925	20	114	13,796	0	0	0	0	0	0	0
12	18	20,487	3,590	213	20	114	16,551	0	0	0	0	0	0	0
12	19	23,155	3,590	7	20	114	18,979	446	0	0	0	0	0	0
12	20	23,820	3,590	0	20	114	18,979	1,118	0	0	0	0	0	0
12	21	23,882	3,590	0	20	114	18,979	1,180	0	0	0	0	0	0
12	22	23,432	3,590	0	20	114	18,979	730	0	0	0	0	0	0
12	23	22,570	3,590	0	20	114	18,847	0	0	0	0	0	0	0
12	24	21,243	3,590	0	20	114	17,520	0	0	0	0	0	0	0
		2,414,998										**47,398**	**15,425**	**37,603**

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	0	0	0
Loss of Load	0	0	0

"What If" Gen MW Unavailable
1,000
0

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)

2022 Gulf System Winter Peak Day - (1989-Like Winter)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*	Excess Capacity
9	1	1,585	0	0	6	112	1,467	0	0	0	0	0	0	0	2,755
9	2	1,590	0	0	6	112	1,472	0	0	0	0	0	0	0	2,750
9	3	1,622	0	0	6	113	1,502	0	0	0	0	0	0	0	2,720
9	4	1,662	0	0	6	109	1,531	15	0	0	0	0	0	0	2,676
9	5	1,750	0	0	6	115	1,531	98	0	0	0	0	0	0	2,593
9	6	1,958	0	0	6	121	1,531	300	0	0	0	0	0	0	2,391
9	7	2,250	0	0	6	122	1,531	590	0	0	0	0	0	0	2,101
9	8	2,548	0	0	6	109	1,531	901	0	0	0	0	0	0	1,790
9	9	2,743	0	31	6	113	1,531	1,007	54	0	0	0	0	0	1,630
9	10	2,768	0	85	6	120	1,531	1,007	18	0	0	0	0	0	1,666
9	11	2,693	0	107	6	126	1,531	922	0	0	0	0	0	0	1,769
9	12	2,563	0	122	6	137	1,531	767	0	0	0	0	0	0	1,924
9	13	2,387	0	127	6	143	1,531	580	0	0	0	0	0	0	2,111
9	14	2,208	0	128	6	143	1,531	401	0	0	0	0	0	0	2,290
9	15	2,079	0	124	6	133	1,531	285	0	0	0	0	0	0	2,406
9	16	1,956	0	115	6	123	1,531	181	0	0	0	0	0	0	2,510
9	17	1,968	0	87	6	106	1,531	238	0	0	0	0	0	0	2,453
9	18	2,154	0	22	6	84	1,531	510	0	0	0	0	0	0	2,181
9	19	2,541	0	0	6	83	1,531	920	0	0	0	0	0	0	1,771
9	20	2,732	0	0	6	87	1,531	1,007	100	0	0	0	0	0	1,584
9	21	2,776	0	0	6	101	1,531	1,007	130	0	0	0	0	0	1,554
9	22	2,755	0	0	6	115	1,531	1,007	96	0	0	0	0	0	1,588
9	23	2,649	0	0	6	118	1,531	993	0	0	0	0	0	0	1,698
9	24	2,490	0	0	6	110	1,531	843	0	0	0	0	0	0	1,848
10	1	2,416	0	0	6	112	1,531	766	0	0	0	0	0	0	1,925
10	2	2,421	0	0	6	112	1,531	772	0	0	0	0	0	0	1,919
10	3	2,436	0	0	6	113	1,531	786	0	0	0	0	0	0	1,905
10	4	2,535	0	0	6	109	1,531	888	0	0	0	0	0	0	1,803
10	5	2,629	0	0	6	115	1,531	976	0	0	0	0	0	0	1,715
10	6	2,787	0	0	6	121	1,531	1,007	122	0	0	0	0	0	1,562
10	7	3,024	0	0	6	122	1,531	1,007	357	0	0	0	0	0	1,327
10	8	3,249	0	0	6	109	1,531	1,007	596	0	0	0	0	0	1,088
10	9	3,323	0	31	6	113	1,531	1,007	635	0	0	0	0	0	1,049
10	10	3,088	0	85	6	120	1,531	1,007	338	0	0	0	0	0	1,346
10	11	2,750	0	107	6	126	1,531	979	0	0	0	0	0	0	1,712
10	12	2,464	0	122	6	137	1,531	668	0	0	0	0	0	0	2,023
10	13	2,147	0	127	6	143	1,531	340	0	0	0	0	0	0	2,351
10	14	1,863	0	128	6	143	1,531	56	0	0	0	0	0	0	2,635
10	15	1,680	0	124	6	133	1,417	0	0	0	0	0	0	0	2,805
10	16	1,617	0	115	6	123	1,373	0	0	0	0	0	0	0	2,849
10	17	1,601	0	87	6	106	1,402	0	0	0	0	0	0	0	2,820
10	18	1,659	0	22	6	84	1,531	15	0	0	0	0	0	0	2,676
10	19	1,917	0	0	6	83	1,531	296	0	0	0	0	0	0	2,395
10	20	2,121	0	0	6	87	1,531	497	0	0	0	0	0	0	2,194
10	21	2,209	0	0	6	101	1,531	570	0	0	0	0	0	0	2,121
10	22	2,222	0	0	6	115	1,531	569	0	0	0	0	0	0	2,122
10	23	2,163	0	0	6	118	1,531	507	0	0	0	0	0	0	2,184
10	24	2,058	0	0	6	110	1,531	410	0	0	0	0	0	0	2,281
11	1	1,976	0	0	6	112	1,531	327	0	0	0	0	0	0	2,364
11	2	1,980	0	0	6	112	1,531	331	0	0	0	0	0	0	2,360
11	3	2,034	0	0	6	113	1,531	383	0	0	0	0	0	0	2,308
11	4	2,087	0	0	6	109	1,531	440	0	0	0	0	0	0	2,251
11	5	2,165	0	0	6	115	1,531	513	0	0	0	0	0	0	2,178
11	6	2,303	0	0	6	121	1,531	645	0	0	0	0	0	0	2,046
11	7	2,543	0	0	6	122	1,531	884	0	0	0	0	0	0	1,807
11	8	2,781	0	0	6	109	1,531	1,007	128	0	0	0	0	0	1,556
11	9	2,755	0	31	6	113	1,531	1,007	66	0	0	0	0	0	1,618
11	10	2,416	0	85	6	120	1,531	673	0	0	0	0	0	0	2,018
11	11	2,060	0	107	6	126	1,531	289	0	0	0	0	0	0	2,402
11	12	1,764	0	122	6	137	1,499	0	0	0	0	0	0	0	2,723
11	13	1,613	0	127	6	143	1,337	0	0	0	0	0	0	0	2,885
11	14	1,522	0	128	6	143	1,245	0	0	0	0	0	0	0	2,977
11	15	1,452	0	124	6	133	1,189	0	0	0	0	0	0	0	3,033
11	16	1,403	0	115	6	123	1,158	0	0	0	0	0	0	0	3,064
11	17	1,381	0	87	6	106	1,182	0	0	0	0	0	0	0	3,040
11	18	1,422	0	22	6	84	1,309	0	0	0	0	0	0	0	2,913
11	19	1,541	0	0	6	83	1,451	0	0	0	0	0	0	0	2,771
11	20	1,597	0	0	6	87	1,504	0	0	0	0	0	0	0	2,718
11	21	1,613	0	0	6	101	1,506	0	0	0	0	0	0	0	2,716
11	22	1,621	0	0	6	115	1,500	0	0	0	0	0	0	0	2,722
11	23	1,606	0	0	6	118	1,481	0	0	0	0	0	0	0	2,741
11	24	1,578	0	0	6	110	1,462	0	0	0	0	0	0	0	2,760
12	1	1,550	0	0	6	112	1,432	0	0	0	0	0	0	0	2,790
12	2	1,547	0	0	6	112	1,429	0	0	0	0	0	0	0	2,793
12	3	1,548	0	0	6	113	1,429	0	0	0	0	0	0	0	2,793
12	4	1,565	0	0	6	109	1,449	0	0	0	0	0	0	0	2,773
12	5	1,573	0	0	6	115	1,452	0	0	0	0	0	0	0	2,770
12	6	1,597	0	0	6	121	1,469	0	0	0	0	0	0	0	2,753
12	7	1,639	0	0	6	122	1,511	0	0	0	0	0	0	0	2,711
12	8	1,688	0	0	6	109	1,531	41	0	0	0	0	0	0	2,650
12	9	1,740	0	31	6	113	1,531	59	0	0	0	0	0	0	2,632
12	10	1,673	0	85	6	120	1,462	0	0	0	0	0	0	0	2,760
12	11	1,567	0	107	6	126	1,327	0	0	0	0	0	0	0	2,895
12	12	1,468	0	122	6	137	1,203	0	0	0	0	0	0	0	3,019
12	13	1,393	0	127	6	143	1,116	0	0	0	0	0	0	0	3,106
12	14	1,324	0	128	6	143	1,048	0	0	0	0	0	0	0	3,174
12	15	1,278	0	124	6	133	1,015	0	0	0	0	0	0	0	3,207
12	16	1,257	0	115	6	123	1,013	0	0	0	0	0	0	0	3,209
12	17	1,252	0	87	6	106	1,053	0	0	0	0	0	0	0	3,169
12	18	1,273	0	22	6	84	1,160	0	0	0	0	0	0	0	3,062
12	19	1,357	0	0	6	83	1,267	0	0	0	0	0	0	0	2,955
12	20	1,391	0	0	6	87	1,297	0	0	0	0	0	0	0	2,925
12	21	1,382	0	0	6	101	1,275	0	0	0	0	0	0	0	2,947
12	22	1,363	0	0	6	115	1,242	0	0	0	0	0	0	0	2,980
12	23	1,335	0	0	6	118	1,211	0	0	0	0	0	0	0	3,011
12	24	1,308	0	0	6	110	1,192	0	0	0	0	0	0	0	3,030
		191,083										**0**	**0**	**0**	

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	28,822	23	1,829
Loss of Load	4,116	5	1,982

"What If" Gen MW Unavailable
1,000
17

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

2023 Combined System Winter Peak Day Without Manatee 1&2 - (1989-Like Winter)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	16,538	3,590	0	46	226	12,677	0	0	0	0	0	0	0
9	2	16,108	3,590	0	46	226	12,246	0	0	0	0	0	0	0
9	3	16,094	3,590	0	46	227	12,231	0	0	0	0	0	0	0
9	4	16,408	3,590	0	46	223	12,549	0	0	0	0	0	0	0
9	5	17,089	3,590	0	46	229	13,225	0	0	0	0	0	0	0
9	6	18,404	3,590	0	46	235	14,534	0	0	0	0	0	0	0
9	7	20,391	3,590	0	46	236	16,519	0	0	0	0	0	0	0
9	8	22,977	3,590	78	46	223	19,041	0	0	0	0	0	0	0
9	9	25,733	3,590	845	46	226	21,026	0	0	0	0	0	0	0
9	10	27,522	3,590	1,649	46	233	21,738	266	0	0	0	0	0	0
9	11	28,647	3,590	2,165	46	240	21,738	869	0	0	0	0	0	0
9	12	28,982	3,590	2,397	46	250	21,738	960	0	0	0	0	0	0
9	13	29,124	3,590	2,434	46	256	21,738	1,060	0	0	0	0	0	0
9	14	29,085	3,590	2,381	46	256	21,738	1,075	0	0	0	0	0	0
9	15	29,136	3,590	2,222	46	246	21,738	1,293	0	0	0	0	0	0
9	16	29,272	3,590	1,900	46	236	21,738	1,762	0	0	0	0	0	0
9	17	29,728	3,590	1,145	46	219	21,738	2,990	0	0	0	0	0	0
9	18	30,888	3,590	253	46	198	21,738	3,153	1,684	0	226	226	0	0
9	19	32,231	3,590	7	46	197	21,738	3,153	1,684	94	1,722	1,722	0	893
9	20	32,444	3,590	0	46	201	21,738	3,153	1,684	469	1,563	1,563	0	734
9	21	32,280	3,590	0	46	215	21,738	3,153	1,684	469	1,385	1,385	0	557
9	22	31,727	3,590	0	46	229	21,738	3,153	1,684	0	1,287	1,287	0	458
9	23	30,812	3,590	0	46	232	21,738	3,153	1,684	0	370	370	0	0
9	24	29,949	3,590	0	46	224	21,738	3,153	1,198	0	0	0	0	0
10	1	29,479	3,590	0	46	226	21,738	3,153	820	(94)	0	0	0	0
10	2	29,276	3,590	0	46	226	21,738	3,153	992	(469)	0	0	0	0
10	3	29,333	3,590	0	46	227	21,738	3,153	1,048	(469)	0	0	0	0
10	4	29,681	3,590	0	46	223	21,738	3,153	932	0	0	0	0	0
10	5	30,105	3,590	0	46	229	21,738	3,153	1,349	0	0	0	0	0
10	6	30,820	3,590	0	46	235	21,738	3,153	1,684	0	374	374	0	0
10	7	31,601	3,590	0	46	236	21,738	3,153	1,684	0	1,155	1,155	0	326
10	8	32,873	3,590	78	46	223	21,738	3,153	1,684	293	2,068	1,829	238	1,239
10	9	34,057	3,590	845	46	226	21,738	3,153	1,684	469	2,305	1,829	476	1,477
10	10	34,193	3,590	1,649	46	233	21,738	3,153	1,684	270	1,829	1,829	0	1,000
10	11	33,715	3,590	2,165	46	240	21,738	3,153	1,684	0	1,099	1,099	0	270
10	12	32,551	3,590	2,397	46	250	21,738	3,153	1,376	0	0	0	0	0
10	13	31,110	3,590	2,434	46	256	21,738	3,046	0	0	0	0	0	0
10	14	29,622	3,590	2,381	46	256	21,738	1,706	0	(94)	0	0	0	0
10	15	28,347	3,590	2,222	46	246	21,738	973	0	(469)	0	0	0	0
10	16	27,621	3,590	1,900	46	236	21,738	580	0	(469)	0	0	0	0
10	17	27,934	3,590	1,145	46	219	21,738	1,195	0	0	0	0	0	0
10	18	29,479	3,590	253	46	198	21,738	3,153	501	0	0	0	0	0
10	19	31,785	3,590	7	46	197	21,738	3,153	1,684	0	1,370	1,370	0	541
10	20	32,378	3,590	0	46	201	21,738	3,153	1,684	469	1,497	1,497	0	669
10	21	32,611	3,590	0	46	215	21,738	3,153	1,684	469	1,716	1,716	0	887
10	22	32,126	3,590	0	46	229	21,738	3,153	1,684	94	1,592	1,592	0	764
10	23	30,959	3,590	0	46	232	21,738	3,153	1,684	0	516	516	0	0
10	24	29,782	3,590	0	46	224	21,738	3,153	1,031	0	0	0	0	0
11	1	29,046	3,590	0	46	226	21,738	3,153	387	(94)	0	0	0	0
11	2	29,021	3,590	0	46	226	21,738	3,153	737	(469)	0	0	0	0
11	3	29,242	3,590	0	46	227	21,738	3,153	957	(469)	0	0	0	0
11	4	29,629	3,590	0	46	223	21,738	3,153	879	0	0	0	0	0
11	5	30,358	3,590	0	46	229	21,738	3,153	1,602	0	0	0	0	0
11	6	31,530	3,590	0	46	235	21,738	3,153	1,684	0	1,084	1,084	0	255
11	7	33,753	3,590	0	46	236	21,738	3,153	1,684	469	2,837	1,829	1,008	2,008
11	8	34,792	3,590	78	46	223	21,738	3,153	1,684	469	3,811	1,829	1,982	2,982
11	9	33,617	3,590	845	46	226	21,738	3,153	1,684	94	2,241	1,829	412	1,412
11	10	32,180	3,590	1,649	46	233	21,738	3,153	1,684	0	86	86	0	0
11	11	30,425	3,590	2,165	46	240	21,738	2,646	0	0	0	0	0	0
11	12	28,378	3,590	2,397	46	250	21,738	450	0	(94)	0	0	0	0
11	13	26,448	3,590	2,434	46	256	20,122	469	0	(469)	0	0	0	0
11	14	24,838	3,590	2,381	46	256	18,565	469	0	(469)	0	0	0	0
11	15	23,273	3,590	2,222	46	246	17,168	0	0	0	0	0	0	0
11	16	22,190	3,590	1,900	46	236	16,417	0	0	0	0	0	0	0
11	17	22,583	3,590	1,145	46	219	17,583	0	0	0	0	0	0	0
11	18	24,865	3,590	253	46	198	20,779	0	0	0	0	0	0	0
11	19	28,045	3,590	7	46	197	21,738	2,467	0	0	0	0	0	0
11	20	28,814	3,590	0	46	201	21,738	3,153	86	0	0	0	0	0
11	21	28,824	3,590	0	46	215	21,738	3,153	82	0	0	0	0	0
11	22	28,300	3,590	0	46	229	21,738	2,697	0	0	0	0	0	0
11	23	27,068	3,590	0	46	232	21,738	1,463	0	0	0	0	0	0
11	24	25,978	3,590	0	46	224	21,738	380	0	0	0	0	0	0
12	1	25,348	3,590	0	46	226	21,486	0	0	0	0	0	0	0
12	2	25,407	3,590	0	46	226	21,545	0	0	0	0	0	0	0
12	3	25,759	3,590	0	46	227	21,738	159	0	0	0	0	0	0
12	4	26,248	3,590	0	46	223	21,738	651	0	0	0	0	0	0
12	5	26,988	3,590	0	46	229	21,738	1,386	0	0	0	0	0	0
12	6	28,481	3,590	0	46	235	21,738	2,873	0	0	0	0	0	0
12	7	30,865	3,590	0	46	236	21,738	3,153	1,684	418	0	0	0	0
12	8	31,785	3,590	78	46	223	21,738	3,153	1,684	469	805	805	0	0
12	9	30,552	3,590	845	46	226	21,738	3,153	954	0	0	0	0	0
12	10	28,459	3,590	1,649	46	233	21,738	1,203	0	0	0	0	0	0
12	11	26,537	3,590	2,165	46	240	20,496	0	0	0	0	0	0	0
12	12	24,911	3,590	2,397	46	250	18,628	0	0	0	0	0	0	0
12	13	23,421	3,590	2,434	46	256	17,095	0	0	0	0	0	0	0
12	14	21,810	3,590	2,381	46	256	15,537	0	0	0	0	0	0	0
12	15	20,403	3,590	2,222	46	246	14,298	0	0	0	0	0	0	0
12	16	19,679	3,590	1,900	46	236	13,907	0	0	0	0	0	0	0
12	17	20,061	3,590	1,145	46	219	15,060	0	0	0	0	0	0	0
12	18	22,164	3,590	253	46	198	18,078	0	0	0	0	0	0	0
12	19	24,968	3,590	7	46	197	21,128	0	0	0	0	0	0	0
12	20	25,679	3,590	0	46	201	21,738	105	0	0	0	0	0	0
12	21	25,735	3,590	0	46	215	21,738	146	0	0	0	0	0	0
12	22	25,257	3,590	0	46	229	21,392	0	0	0	0	0	0	0
12	23	24,350	3,590	0	46	232	20,483	0	0	0	0	0	0	0
12	24	22,970	3,590	0	46	224	19,110	0	0	0	0	0	0	0
		2,654,040										**28,822**	**4,116**	**16,471**

Notes:
Combined Cycle Maximum Output: 21,079 MWh
CT/GT Maximum Output: 3,153 MWh
Steam Turbine Maximum Output: 1,104 MWh
Load Control Maximum Output: 1,882 MWh
Batteries can dispatch at maximum 469 MWh in one hour and 1,032 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	4,973	6	1,829
Loss of Load	340	1	340

"What If" Gen MW Unavailable
1,000
2

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

2023 Combined System Winter Peak Day With Manatee 1&2 - (1989-Like Winter)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	16,538	3,590	0	46	226	12,677	0	0	0	0	0	0	0
9	2	16,108	3,590	0	46	226	12,246	0	0	0	0	0	0	0
9	3	16,094	3,590	0	46	227	12,231	0	0	0	0	0	0	0
9	4	16,408	3,590	0	46	223	12,549	0	0	0	0	0	0	0
9	5	17,089	3,590	0	46	229	13,225	0	0	0	0	0	0	0
9	6	18,404	3,590	0	46	235	14,534	0	0	0	0	0	0	0
9	7	20,391	3,590	0	46	236	16,519	0	0	0	0	0	0	0
9	8	22,977	3,590	78	46	223	19,041	0	0	0	0	0	0	0
9	9	25,733	3,590	845	46	226	21,026	0	0	0	0	0	0	0
9	10	27,522	3,590	1,649	46	233	21,738	266	0	0	0	0	0	0
9	11	28,647	3,590	2,165	46	240	21,738	869	0	0	0	0	0	0
9	12	28,982	3,590	2,397	46	250	21,738	960	0	0	0	0	0	0
9	13	29,124	3,590	2,434	46	256	21,738	1,060	0	0	0	0	0	0
9	14	29,085	3,590	2,381	46	256	21,738	1,075	0	0	0	0	0	0
9	15	29,136	3,590	2,222	46	246	21,738	1,293	0	0	0	0	0	0
9	16	29,272	3,590	1,900	46	236	21,738	1,762	0	0	0	0	0	0
9	17	29,728	3,590	1,145	46	219	21,738	2,990	0	0	0	0	0	0
9	18	30,888	3,590	253	46	198	21,738	3,153	1,910	0	0	0	0	0
9	19	32,231	3,590	7	46	197	21,738	3,153	3,326	174	0	0	0	0
9	20	32,444	3,590	0	46	201	21,738	3,153	3,326	390	0	0	0	0
9	21	32,280	3,590	0	46	215	21,738	3,153	3,326	212	0	0	0	0
9	22	31,727	3,590	0	46	229	21,738	3,153	2,971	0	0	0	0	0
9	23	30,812	3,590	0	46	232	21,738	3,153	2,054	0	0	0	0	0
9	24	29,949	3,590	0	46	224	21,738	3,153	1,198	0	0	0	0	0
10	1	29,479	3,590	0	46	226	21,738	3,153	820	(94)	0	0	0	0
10	2	29,276	3,590	0	46	226	21,738	3,153	992	(469)	0	0	0	0
10	3	29,333	3,590	0	46	227	21,738	3,153	1,048	(469)	0	0	0	0
10	4	29,681	3,590	0	46	223	21,738	3,153	932	0	0	0	0	0
10	5	30,105	3,590	0	46	229	21,738	3,153	1,349	0	0	0	0	0
10	6	30,820	3,590	0	46	235	21,738	3,153	2,058	0	0	0	0	0
10	7	31,601	3,590	0	46	236	21,738	3,153	2,839	0	0	0	0	0
10	8	32,873	3,590	78	46	223	21,738	3,153	3,326	106	613	613	0	0
10	9	34,057	3,590	845	46	226	21,738	3,153	3,326	469	663	663	0	0
10	10	34,193	3,590	1,649	46	233	21,738	3,153	3,326	457	0	0	0	0
10	11	33,715	3,590	2,165	46	240	21,738	3,153	2,783	0	0	0	0	0
10	12	32,551	3,590	2,397	46	250	21,738	3,153	1,376	0	0	0	0	0
10	13	31,110	3,590	2,434	46	256	21,738	3,046	0	0	0	0	0	0
10	14	29,622	3,590	2,381	46	256	21,738	1,706	0	(94)	0	0	0	0
10	15	28,347	3,590	2,222	46	246	21,738	973	0	(469)	0	0	0	0
10	16	27,621	3,590	1,900	46	236	21,738	580	0	(469)	0	0	0	0
10	17	27,934	3,590	1,145	46	219	21,738	1,195	0	0	0	0	0	0
10	18	29,479	3,590	253	46	198	21,738	3,153	501	0	0	0	0	0
10	19	31,785	3,590	7	46	197	21,738	3,153	3,054	0	0	0	0	0
10	20	32,378	3,590	0	46	201	21,738	3,153	3,326	324	0	0	0	0
10	21	32,611	3,590	0	46	215	21,738	3,153	3,326	469	74	74	0	0
10	22	32,126	3,590	0	46	229	21,738	3,153	3,326	44	0	0	0	0
10	23	30,959	3,590	0	46	232	21,738	3,153	2,200	0	0	0	0	0
10	24	29,782	3,590	0	46	224	21,738	3,153	1,031	0	0	0	0	0
11	1	29,046	3,590	0	46	226	21,738	3,153	762	(469)	0	0	0	0
11	2	29,021	3,590	0	46	226	21,738	3,153	737	(469)	0	0	0	0
11	3	29,242	3,590	0	46	227	21,738	3,153	582	(94)	0	0	0	0
11	4	29,629	3,590	0	46	223	21,738	3,153	879	0	0	0	0	0
11	5	30,358	3,590	0	46	229	21,738	3,153	1,602	0	0	0	0	0
11	6	31,530	3,590	0	46	235	21,738	3,153	2,768	0	0	0	0	0
11	7	33,753	3,590	0	46	236	21,738	3,153	3,326	469	1,195	1,195	0	366
11	8	34,792	3,590	78	46	223	21,738	3,153	3,326	469	2,169	1,829	340	1,340
11	9	33,617	3,590	845	46	226	21,738	3,153	3,326	94	599	599	0	0
11	10	32,180	3,590	1,649	46	233	21,738	3,153	1,770	0	0	0	0	0
11	11	30,425	3,590	2,165	46	240	21,738	2,646	0	0	0	0	0	0
11	12	28,378	3,590	2,397	46	250	21,738	356	0	0	0	0	0	0
11	13	26,448	3,590	2,434	46	256	20,122	0	0	0	0	0	0	0
11	14	24,838	3,590	2,381	46	256	18,565	0	0	0	0	0	0	0
11	15	23,273	3,590	2,222	46	246	17,168	0	0	0	0	0	0	0
11	16	22,190	3,590	1,900	46	236	16,417	0	0	0	0	0	0	0
11	17	22,583	3,590	1,145	46	219	17,583	0	0	0	0	0	0	0
11	18	24,865	3,590	253	46	198	20,779	0	0	0	0	0	0	0
11	19	28,045	3,590	7	46	197	21,738	2,467	0	0	0	0	0	0
11	20	28,814	3,590	0	46	201	21,738	3,153	86	0	0	0	0	0
11	21	28,824	3,590	0	46	215	21,738	3,153	82	0	0	0	0	0
11	22	28,300	3,590	0	46	229	21,738	2,697	0	0	0	0	0	0
11	23	27,068	3,590	0	46	232	21,738	1,463	0	0	0	0	0	0
11	24	25,978	3,590	0	46	224	21,738	380	0	0	0	0	0	0
12	1	25,348	3,590	0	46	226	21,486	0	0	0	0	0	0	0
12	2	25,407	3,590	0	46	226	21,545	0	0	0	0	0	0	0
12	3	25,759	3,590	0	46	227	21,738	159	0	0	0	0	0	0
12	4	26,248	3,590	0	46	223	21,738	651	0	0	0	0	0	0
12	5	26,988	3,590	0	46	229	21,738	1,386	0	0	0	0	0	0
12	6	28,481	3,590	0	46	235	21,738	2,873	0	0	0	0	0	0
12	7	30,865	3,590	0	46	236	21,738	3,153	2,102	0	0	0	0	0
12	8	31,785	3,590	78	46	223	21,738	3,153	2,958	0	0	0	0	0
12	9	30,552	3,590	845	46	226	21,738	3,153	954	0	0	0	0	0
12	10	28,459	3,590	1,649	46	233	21,738	1,203	0	0	0	0	0	0
12	11	26,537	3,590	2,165	46	240	20,496	0	0	0	0	0	0	0
12	12	24,911	3,590	2,397	46	250	18,628	0	0	0	0	0	0	0
12	13	23,421	3,590	2,434	46	256	17,095	0	0	0	0	0	0	0
12	14	21,810	3,590	2,381	46	256	15,537	0	0	0	0	0	0	0
12	15	20,403	3,590	2,222	46	246	14,298	0	0	0	0	0	0	0
12	16	19,679	3,590	1,900	46	236	13,907	0	0	0	0	0	0	0
12	17	20,061	3,590	1,145	46	219	15,060	0	0	0	0	0	0	0
12	18	22,164	3,590	253	46	198	18,078	0	0	0	0	0	0	0
12	19	24,968	3,590	7	46	197	21,128	0	0	0	0	0	0	0
12	20	25,679	3,590	0	46	201	21,738	105	0	0	0	0	0	0
12	21	25,735	3,590	0	46	215	21,738	146	0	0	0	0	0	0
12	22	25,257	3,590	0	46	229	21,392	0	0	0	0	0	0	0
12	23	24,350	3,590	0	46	232	20,483	0	0	0	0	0	0	0
12	24	22,970	3,590	0	46	224	19,110	0	0	0	0	0	0	0
		2,654,040										**4,973**	**340**	**1,706**

Notes:
Combined Cycle Maximum Output: 21,079 MWh
CT/GT Maximum Output: 3,153 MWh
Steam Turbine Maximum Output: 1,104 MWh
Load Control Maximum Output: 1,882 MWh
Batteries can dispatch at maximum 469 MWh in one hour and 1,032 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

Impact of 4-Hour Storage Additions to the 2021 TYSP (1989-Like Load Forecast, Manatee 1&2 Remain Until 2030): Summary of Analysis Approach

Initial Analysis *(results have been presented previously)* :

- The starting point assumptions were that: (i) all of the resource additions through 2030 in the 2021 TYSP will be made, plus (ii) Manatee 1& 2 would remain available in the Winter through 2030.
- An Aurora Optimization was run using a 1989-Like winter forecast for each winter 2025-on
- The Aurora optimization only allowed solar and 4-Hour duration storage to be selected as new resources
- The model selected ~1,700 MW of additional solar and 4,800 MW of 4-hour storage

New Analysis:

- The hourly output of this resource plan was then examined using the 'bar chart' EXCEL file that looked at the 4 highest load days in Winter. This showed tht the battery additions were not sufficient enough to completely eliminate loss of load (it was more than 3,000 MWh short in 2030)
- Using the resource plan selected by AURORA, additional 4-hour storage batteries were then manually added each year until there was was 0 MWh of loss of load in each year. (Shown in the first unshaded row in **Tables 1 & 2)**
- The results showed that we needed a total of 5,800 MW of 4-hour storage by 2030 in order to meet Winter load (i.e., 1,000 MW more thru 2030 than the 4,800 MW that AURORA selected).
- Then, 300 MW of batteries were removed from the amount above in the year 2025 only and the loss of load was again examined (Shown in the 2nd unshaded row in **Tables 1 & 2)**
- Using 300 MW increments, the total amount of storage was decreased from 5,800 MW to 3,100 MW and the loss of load for each year for 2025 thru 2030 was determined for the different amounts of storage.
- Then the annual capital spend was calculated for each of the resource plans in Table 1 (shown in **Table 3**)
- Next the annual revenue requirements for each plan from Table 1 were calculated (shown in **Table 4).**
- Lastly the customer bill impact was determined based on a 1,000 kWh bill using the annual NEL and the annual revenue revenue requirements (shown in **Table 5**).

Annual Incremental Storage Additions and Loss of Load

Table 1: Annual Storage Additions Incremental to the 2021 TYSP (MW)*							
Scenario	2025	2026	2027	2028	2029	2030	**Total**
Base Case (2021 TYSP)	0	0	0	0	300	400	700
5,800 MW Storage	2,700	400	400	700	800	800	5,800
5,500 MW Storage	2,400	400	400	700	800	800	5,500
5,200 MW Storage	2,100	400	400	700	800	800	5,200
4,900 MW Storage	1,800	400	400	700	800	800	4,900
4,600 MW Storage	1,500	400	400	700	800	800	4,600
4,300 MW Storage	1,200	400	400	700	800	800	4,300
4,000 MW Storage	900	400	400	700	800	800	4,000
3,700 MW Storage	600	400	400	700	800	800	3,700
3,400 MW Storage	300	400	400	700	800	800	3,400
3,100 MW Storage	0	400	400	700	800	800	3,100

* - The "Base Case (2021 TYSP)" storage additions are included in each scenario, however the MW values shown in the 2029 and 2030 columns do not include the TYSP storage for ease of calculating incremental costs

Table 2: Annual Loss of Load (MWh)						
Scenario	2025	2026	2027	2028	2029	2030
Base Case (2021 TYSP)	7,763	13,980	20,674	29,117	35,663	41,697
5,800 MW Storage	0	0	0	0	0	0
5,500 MW Storage	214	278	272	1,189	1,181	752
5,200 MW Storage	514	578	876	2,389	2,381	1,952
4,900 MW Storage	814	878	2,076	3,589	3,581	3,152
4,600 MW Storage	1,228	1,348	3,276	4,789	4,781	4,352
4,300 MW Storage	1,828	2,301	4,476	6,714	6,659	6,174
4,000 MW Storage	2,428	3,501	6,752	9,114	9,059	8,574
3,700 MW Storage	3,047	5,816	9,152	11,514	11,459	10,974
3,400 MW Storage	4,321	8,216	11,552	13,914	13,859	13,374
3,100 MW Storage	7,763	10,616	13,952	16,314	16,259	15,774

Installed Cost of 100 MW 4-Hour Storage* ($/kW)						
	2025	**2026**	**2027**	**2028**	**2029**	**2030**
Installed Cost ($/kW)	739	680	656	632	611	595

* - Does not include AFUDC or transmission integration costs

Revenue Requirements as a Percentage of Installed Cost						
Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
% of Installed Cost	16.84%	15.69%	14.54%	13.66%	12.88%	12.17%

Table 3: Incremental Annual Capital Spend ($M)**						
Scenario	2025	2026	2027	2028	2029	2030
5,800 MW Storage	1,996	272	262	443	489	476
5,500 MW Storage	1,774	272	262	443	489	476
5,200 MW Storage	1,553	272	262	443	489	476
4,900 MW Storage	1,331	272	262	443	489	476
4,600 MW Storage	1,109	272	262	443	489	476
4,300 MW Storage	887	272	262	443	489	476
4,000 MW Storage	665	272	262	443	489	476
3,700 MW Storage	444	272	262	443	489	476
3,400 MW Storage	222	272	262	443	489	476
3,100 MW Storage	0	272	262	443	489	476

** - The capital costs were calculated by multiplying the $/kW value above with the incremental MW of storage in Table 1

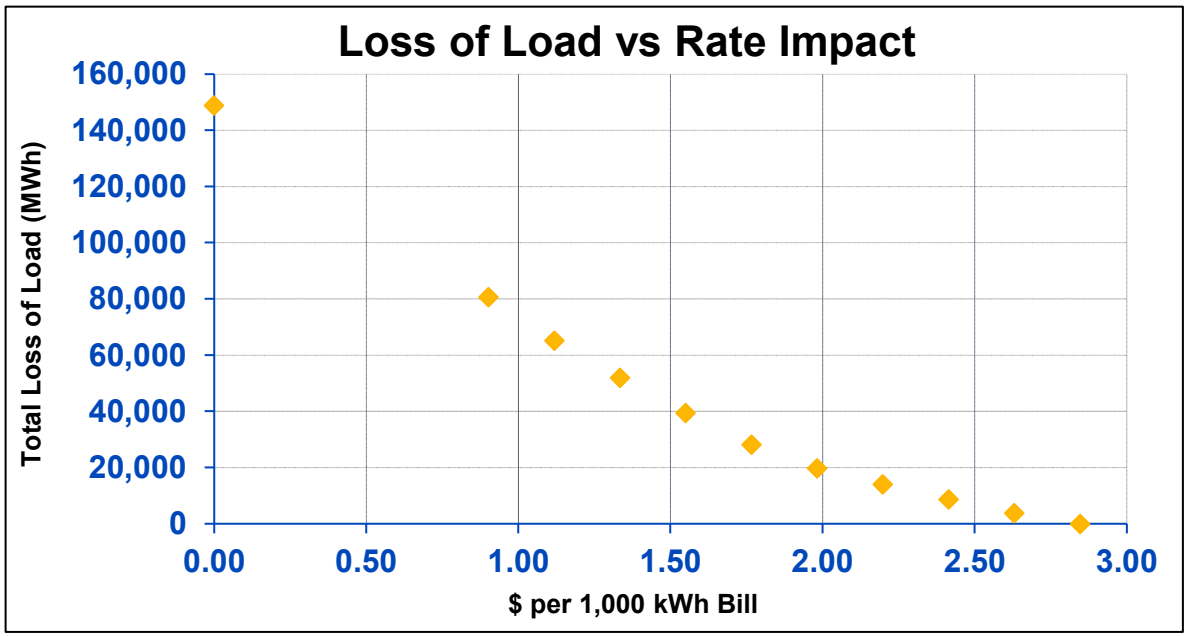
Table 4: Incremental Annual Revenue Requirements ($M)						
Scenario	2025	2026	2027	2028	2029	2030
5,800 MW Storage	336	359	377	428	484	535
5,500 MW Storage	299	324	345	398	456	508
5,200 MW Storage	262	289	313	367	427	481
4,900 MW Storage	224	255	280	337	398	454
4,600 MW Storage	187	220	248	307	370	427
4,300 MW Storage	149	185	216	276	341	400
4,000 MW Storage	112	150	184	246	313	373
3,700 MW Storage	75	115	151	216	284	346
3,400 MW Storage	37	81	119	186	256	319
3,100 MW Storage	0	46	87	155	227	292

Annual NEL (MWh)					
2025	2026	2027	2028	2029	2030
143,722,933	144,861,079	145,843,132	147,589,598	149,316,838	151,265,837

Table 5: Incremental Rate Impact ($ Increase on a 1,000 kWh Bill)							
Scenario	2025	2026	2027	2028	2029	2030	Average
5,800 MW Storage	2.34	2.48	2.59	2.90	3.24	3.54	2.85
5,500 MW Storage	2.08	2.24	2.36	2.69	3.05	3.36	2.63
5,200 MW Storage	1.82	2.00	2.14	2.49	2.86	3.18	2.41
4,900 MW Storage	1.56	1.76	1.92	2.28	2.67	3.00	2.20
4,600 MW Storage	1.30	1.52	1.70	2.08	2.48	2.82	1.98
4,300 MW Storage	1.04	1.28	1.48	1.87	2.29	2.64	1.77
4,000 MW Storage	0.78	1.04	1.26	1.67	2.09	2.47	1.55
3,700 MW Storage	0.52	0.80	1.04	1.46	1.90	2.29	1.33
3,400 MW Storage	0.26	0.56	0.82	1.26	1.71	2.11	1.12
3,100 MW Storage	0.00	0.32	0.60	1.05	1.52	1.93	0.90

- Calculated as ((annual revenue requirement($M) * 1,000,000) / (NEL(MWh) * 1,000)) * 1,000

Loss of Load per Rate Impact		
Scenario	Total Loss of Load (2025-2030)	Average Rate Impact on a 1,000 kWh bill ($)
2021 TYSP	148,894	0.00
3,100 MW Storage	80,678	0.90
3,400 MW Storage	65,236	1.12
3,700 MW Storage	51,962	1.33
4,000 MW Storage	39,428	1.55
4,300 MW Storage	28,152	1.77
4,600 MW Storage	19,775	1.98
4,900 MW Storage	14,091	2.20
5,200 MW Storage	8,691	2.41
5,500 MW Storage	3,887	2.63
5,800 MW Storage	0	2.85

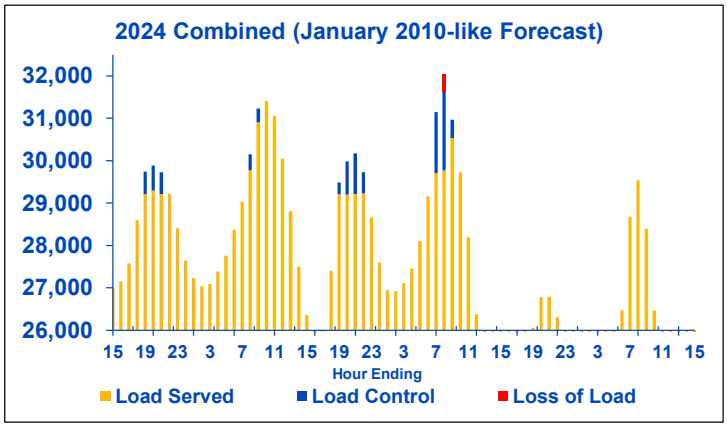


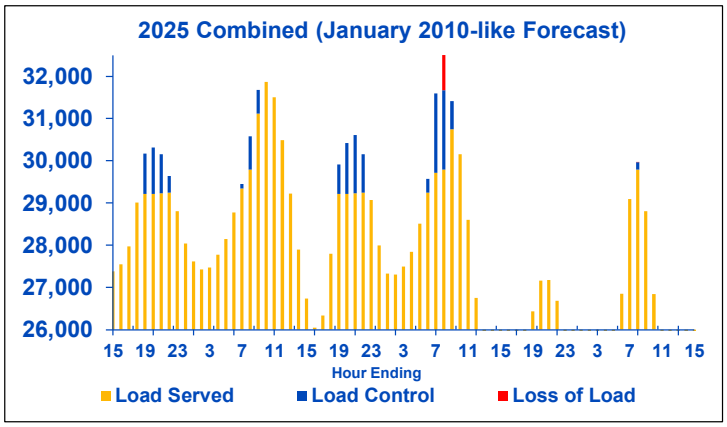
	ITC for Storage (2026-on)	ITC for Solar (2026-on)	CPVRR ($M)	Difference from Revised TYSP Case ($M)	Avg. Monthly Bill Increase from TYSP: ($/1,000kWh, 2025-2030)
2021 TYSP (Revised)*	0%	10%	84,774	--	--
Zero Loss of Load w/ CTs			85,209	435	0.46
Zero Loss of Load w/ Storage (4 Hr Battery)			85,283	509	0.63
Zero Loss of Load w/ Storage (2.5 Hr Battery)			**85,197**	**423**	**0.45**
2021 TYSP (Revised)*	10%	10%	84,757	--	--
Zero Loss of Load w/ CTs			85,192	435	0.46
Zero Loss of Load w/ Storage (4 Hr Battery)			85,224	467	0.58
Zero Loss of Load w/ Storage (2.5 Hr Battery)			**85,154**	**397**	**0.41**
2021 TYSP (Revised)*	30%	30%	84,354	--	--
Zero Loss of Load w/ CTs			84,807	453	0.45
Zero Loss of Load w/ Storage (4 Hr Battery)			84,754	400	0.53
Zero Loss of Load w/ Storage (2.5 Hr Battery)			**84,665**	**311**	**0.37**

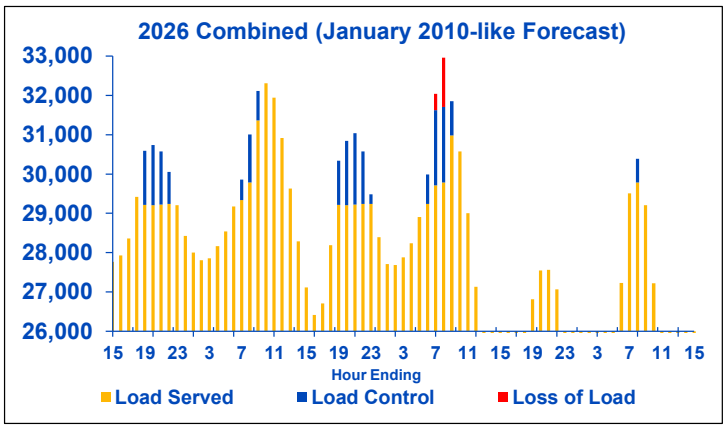
Load Control & Loss of Load Summary
(2010-like Load Forecast - 4 Day Period)

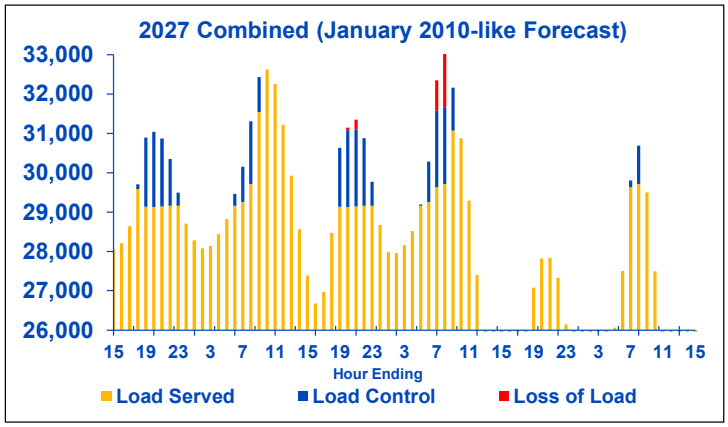
Year	Load Control # of Hours	Load Control (MWh)	Loss of Load # of Hours	Loss of Load (MWh)	Loss of Load # of Hours w/ 1,000 MW Out
2024	12	6,956	1	423	3
2025	78	111,654	74	345,437	75
2026	17	14,694	2	1,667	10
2027	22	18,592	4	2,713	14
2028	21	19,022	5	3,906	14
2029	27	26,846	11	6,962	18
2030	78	121,808	74	431,379	76

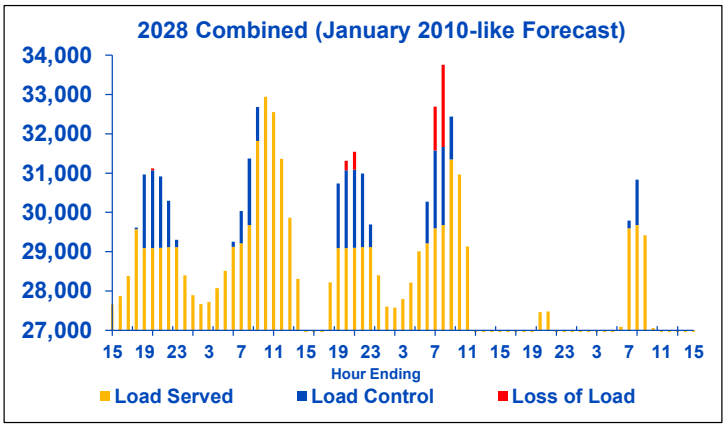
Hour	Combined 2024			Combined 2025			Combined 2026			Combined 2027			Combined 2028			Combined 2029			Combined 2030		
	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load
1	15,426	0	0	15,644	0	0	15,859	0	0	16,013	0	0	16,718	0	0	16,469	0	0	16,702	0	0
2	15,029	0	0	15,241	0	0	15,450	0	0	15,600	0	0	16,412	0	0	16,043	0	0	16,270	0	0
3	15,020	0	0	15,232	0	0	15,440	0	0	15,590	0	0	16,414	0	0	16,032	0	0	16,259	0	0
4	15,316	0	0	15,532	0	0	15,744	0	0	15,897	0	0	16,654	0	0	16,348	0	0	16,578	0	0
5	15,942	0	0	16,166	0	0	16,387	0	0	16,547	0	0	17,158	0	0	17,016	0	0	17,256	0	0
6	17,105	0	0	17,346	0	0	17,583	0	0	17,753	0	0	18,094	0	0	18,256	0	0	18,514	0	0
7	18,867	0	0	19,133	0	0	19,394	0	0	19,582	0	0	19,508	0	0	20,137	0	0	20,421	0	0
8	21,182	0	0	21,481	0	0	21,775	0	0	21,987	0	0	21,352	0	0	22,611	0	0	22,930	0	0
9	23,681	0	0	24,016	0	0	24,346	0	0	24,583	0	0	23,505	0	0	25,283	0	0	25,641	0	0
10	25,328	0	0	25,688	0	0	26,042	0	0	26,296	0	0	25,522	0	0	27,048	0	0	27,432	0	0
11	26,388	0	0	26,764	0	0	27,134	0	0	27,399	0	0	26,831	0	0	28,185	0	0	28,587	0	0
12	26,730	0	0	27,112	0	0	27,488	0	0	27,757	0	0	27,269	0	0	28,555	0	0	28,963	0	0
13	26,906	0	0	27,292	0	0	27,672	0	0	27,943	0	0	27,509	0	0	28,748	0	0	29,161	0	0
14	26,917	0	0	27,303	0	0	27,684	0	0	27,956	0	0	27,545	0	0	28,764	0	0	29,178	0	0
15	26,997	0	0	27,385	0	0	27,768	0	0	28,041	0	0	27,661	0	0	28,853	0	0	29,269	0	0
16	27,153	0	0	27,545	0	0	27,931	0	0	28,206	0	0	27,870	0	0	29,024	0	0	29,443	0	0
17	27,572	0	0	27,970	0	0	28,363	0	0	28,642	0	0	28,382	0	0	29,473	0	0	29,899	0	0
18	28,597	0	0	29,009	0	0	29,415	0	0	29,584	121	0	29,575	38	0	29,616	949	0	29,658	1,349	0
19	29,203	537	0	29,217	950	0	29,211	1,377	0	29,132	1,756	0	29,091	1,871	0	29,091	2,018	672	29,087	2,052	1,099
20	29,293	595	0	29,214	1,102	0	29,208	1,531	0	29,129	1,911	0	29,088	1,984	46	29,088	2,018	829	29,084	2,052	1,257
21	29,214	512	0	29,228	923	0	29,222	1,349	0	29,143	1,727	0	29,102	1,810	0	29,102	2,018	640	29,098	2,052	1,065
22	29,219	0	0	29,242	396	0	29,236	814	0	29,157	1,187	0	29,116	1,179	0	29,116	2,018	84	29,112	2,052	501
23	28,401	0	0	28,807	0	0	29,208	0	0	29,160	334	0	29,119	186	0	29,119	1,224	0	29,115	1,663	0
24	27,643	0	0	28,039	0	0	28,429	0	0	28,708	0	0	28,397	0	0	29,111	424	0	29,107	851	0
1	27,228	0	0	27,618	0	0	28,002	0	0	28,277	0	0	27,899	0	0	29,092	0	0	29,109	401	0
2	27,039	0	0	27,426	0	0	27,808	0	0	28,080	0	0	27,666	0	0	28,889	0	0	29,109	195	0
3	27,088	0	0	27,476	0	0	27,858	0	0	28,131	0	0	27,724	0	0	28,941	0	0	29,110	246	0
4	27,384	0	0	27,776	0	0	28,162	0	0	28,438	0	0	28,075	0	0	29,110	147	0	29,106	570	0
5	27,752	0	0	28,149	0	0	28,540	0	0	28,820	0	0	28,513	0	0	29,116	533	0	29,112	961	0
6	28,372	0	0	28,778	0	0	29,177	0	0	29,163	299	0	29,122	130	0	29,122	1,187	0	29,334	1,408	0
7	29,035	0	0	29,343	106	0	29,337	520	0	29,258	890	0	29,217	815	0	29,566	1,446	0	30,288	1,167	0
8	29,773	380	0	29,788	794	0	29,786	1,219	0	29,713	1,595	0	29,679	1,693	0	29,985	2,018	202	30,386	2,052	226
9	30,908	321	0	31,117	557	0	31,360	752	0	31,542	884	0	31,816	865	0	32,415	940	0	33,071	760	0
10	31,414	0	0	31,863	0	0	32,306	0	0	32,622	0	0	32,941	0	0	33,561	0	0	34,041	0	0
11	31,058	0	0	31,504	0	0	31,943	0	0	32,257	0	0	32,550	0	0	33,188	0	0	33,665	0	0
12	30,055	0	0	30,487	0	0	30,914	0	0	31,217	0	0	31,359	0	0	32,120	0	0	32,583	0	0
13	28,804	0	0	29,220	0	0	29,629	0	0	29,921	0	0	29,868	0	0	30,788	0	0	31,233	0	0
14	27,501	0	0	27,898	0	0	28,290	0	0	28,569	0	0	28,309	0	0	29,399	0	0	29,824	0	0
15	26,357	0	0	26,738	0	0	27,114	0	0	27,382	0	0	26,933	0	0	28,178	0	0	28,587	0	0
16	25,677	0	0	26,049	0	0	26,416	0	0	26,676	0	0	26,113	0	0	27,452	0	0	27,850	0	0
17	25,964	0	0	26,340	0	0	26,711	0	0	26,975	0	0	26,468	0	0	27,760	0	0	28,163	0	0
18	27,401	0	0	27,798	0	0	28,190	0	0	28,468	0	0	28,217	0	0	29,297	0	0	29,658	65	0
19	29,203	284	0	29,217	697	0	29,211	1,124	0	29,132	1,502	0	29,091	1,645	0	29,091	2,018	417	29,087	2,052	844
20	29,200	784	0	29,214	1,203	0	29,208	1,636	0	29,129	1,950	69	29,088	1,984	245	29,088	2,018	947	29,084	2,052	1,380
21	29,214	962	0	29,228	1,383	0	29,222	1,819	0	29,143	1,950	254	29,102	1,984	455	29,102	2,018	1,137	29,098	2,052	1,573
22	29,228	497	0	29,242	911	0	29,236	1,340	0	29,157	1,720	0	29,116	1,870	0	29,116	2,018	639	29,112	2,052	1,067
23	28,661	0	0	29,074	0	0	29,239	242	0	29,160	611	0	29,119	571	0	29,119	1,515	0	29,115	1,961	0
24	27,599	0	0	27,997	0	0	28,389	0	0	28,669	0	0	28,403	0	0	29,111	389	0	29,107	818	0
1	26,939	0	0	27,327	0	0	27,710	0	0	27,983	0	0	27,604	0	0	28,794	0	0	29,210	0	0
2	26,916	0	0	27,303	0	0	27,686	0	0	27,959	0	0	27,575	0	0	28,769	0	0	29,184	0	0
3	27,106	0	0	27,496	0	0	27,881	0	0	28,156	0	0	27,801	0	0	28,971	0	0	29,389	0	0
4	27,450	0	0	27,845	0	0	28,235	0	0	28,513	0	0	28,215	0	0	29,110	229	0	29,106	655	0
5	28,104	0	0	28,509	0	0	28,908	0	0	29,157	35	0	29,007	0	0	29,116	922	0	29,112	1,358	0
6	29,152	0	0	29,248	324	0	29,242	744	0	29,257	1,024	0	29,216	1,057	0	29,565	1,591	0	30,050	1,556	0
7	29,704	1,443	0	29,718	1,877	0	29,712	1,916	409	29,633	1,950	768	29,592	1,984	1,110	29,892	2,018	1,378	30,288	2,052	1,427
8	29,773	1,851	423	29,788	1,882	838	29,786	1,916	1,259	29,713	1,950	1,622	29,679	1,984	2,095	29,985	2,018	2,243	30,386	2,052	2,301
9	30,533	434	0	30,742	669	0	30,985	864	0	31,073	1,089	0	31,347	1,091	0	31,646	1,444	0	31,902	1,663	0
10	29,725	0	0	30,152	0	0	30,574	0	0	30,874	0	0	30,960	0	0	31,767	0	0	32,225	0	0
11	28,193	0	0	28,600	0	0	29,000	0	0	29,286	0	0	29,130	0	0	30,135	0	0	30,571	0	0
12	26,375	0	0	26,756	0	0	27,132	0	0	27,400	0	0	26,942	0	0	28,195	0	0	28,603	0	0
13	24,592	0	0	24,947	0	0	25,298	0	0	25,547	0	0	24,783	0	0	26,289	0	0	26,670	0	0
14	23,091	0	0	23,424	0	0	23,753	0	0	23,988	0	0	22,961	0	0	24,684	0	0	25,042	0	0
15	21,634	0	0	21,947	0	0	22,255	0	0	22,474	0	0	21,490	0	0	23,127	0	0	23,461	0	0
16	20,626	0	0	20,924	0	0	21,217	0	0	21,426	0	0	20,695	0	0	22,048	0	0	22,367	0	0
17	20,986	0	0	21,290	0	0	21,589	0	0	21,801	0	0	20,969	0	0	22,435	0	0	22,760	0	0
18	23,102	0	0	23,437	0	0	23,767	0	0	24,001	0	0	22,997	0	0	24,700	0	0	25,059	0	0
19	26,058	0	0	26,437	0	0	26,810	0	0	27,074	0	0	26,597	0	0	27,864	0	0	28,269	0	0
20	26,777	0	0	27,165	0	0	27,548	0	0	27,821	0	0	27,466	0	0	28,632	0	0	29,048	0	0
21	26,789	0	0	27,177	0	0	27,560	0	0	27,832	0	0	27,476	0	0	28,643	0	0	29,059	0	0
22	26,305	0	0	26,686	0	0	27,062	0	0	27,329	0	0	26,882	0	0	28,125	0	0	28,533	0	0
23	25,165	0	0	25,529	0	0	25,888	0	0	26,143	0	0	25,487	0	0	26,903	0	0	27,293	0	0
24	24,152	0	0	24,502	0	0	24,846	0	0	25,091	0	0	24,251	0	0	25,820	0	0	26,194	0	0
1	23,566	0	0	23,907	0	0	24,242	0	0	24,481	0	0	23,538	0	0	25,193	0	0	25,557	0	0
2	23,620	0	0	23,962	0	0	24,298	0	0	24,538	0	0	23,605	0	0	25,251	0	0	25,616	0	0
3	23,946	0	0	24,292	0	0	24,634	0	0	24,877	0	0	24,005	0	0	25,600	0	0	25,971	0	0
4	24,400	0	0	24,753	0	0	25,101	0	0	25,349	0	0	24,558	0	0	26,086	0	0	26,464	0	0
5	25,086	0	0	25,449	0	0	25,807	0	0	26,062	0	0	25,397	0	0	26,820	0	0	27,209	0	0
6	26,470	0	0	26,853	0	0	27,232	0	0	27,501	0	0	27,089	0	0	28,302	0	0	28,713	0	0
7	28,680	0	0	29,096	0	0	29,507	0	0	29,633	166	0	29,592	197	0	29,892	777	0	30,288	827	0
8	29,537	0	0	29,788	178	0	29,786	603	0	29,713	977	0	29,679	1,152	0	29,985	1,601	0	30,386	1,659	0
9	28,392	0	0	28,804	0	0	29,209	0	0	29,498	0	0	29,418	0	0	30,357	0	0	30,798	0	0
10	26,460	0	0	26,842	0	0	27,220	0	0	27,489	0	0	27,060	0	0	28,288	0	0	28,699	0	0
11	24,667	0	0	25,024	0	0	25,376	0	0	25,627	0	0	24,885	0	0	26,372	0	0	26,755	0	0
12	23,151	0	0	23,486	0	0	23,816	0	0	24,051	0	0	23,047	0	0	24,751	0	0	25,110	0	0
13	21,762	0	0	22,077	0	0	22,388	0	0	22,608	0	0	21,573	0	0	23,266	0	0	23,603	0	0
14	20,263	0	0	20,556	0	0	20,845	0	0	21,051	0	0	20,394	0	0	21,663	0	0	21,976	0	0
15	18,957	0	0	19,231	0	0	19,501	0	0	19,692	0	0	19,369	0	0	20,264	0	0	20,557	0	0
16	18,284	0	0	18,548	0	0	18,808	0	0	18,993	0	0	18,843	0	0	19,544	0	0	19,827	0	0
17	18,636	0	0	18,905	0	0	19,171	0	0	19,359	0	0	19,114	0	0	19,922	0	0	20,210	0	0
18	20,584	0	0	20,882	0	0	21,176	0	0	21,385	0	0	20,628	0	0	22,008	0	0	22,327	0	0
19	23,188	0	0	23,525	0	0	23,857	0	0	24,092	0	0	23,116	0	0	24,795	0	0	25,156	0	0
20	23,850	0	0	24,197	0	0	24,538	0	0	24,781	0	0	23,921	0	0	25,504	0	0	25,875	0	0
21	23,900	0	0	24,247	0	0	24,590	0	0	24,833	0	0	23,984	0	0	25,557	0	0	25,929	0	0
22	23,456	0	0	23,796	0	0	24,132	0	0	24,371	0	0	23,443	0	0	25,082	0	0	25,447	0	0
23	22,614	0	0	22,942	0	0	23,266	0	0	23,495	0	0	22,417	0	0	24,181	0	0	24,532	0	0
24	21,334	0	0	21,643	0	0	21,948	0	0	22,164	0	0	21,218	0	0	22,810	0	0	23,141	0	0

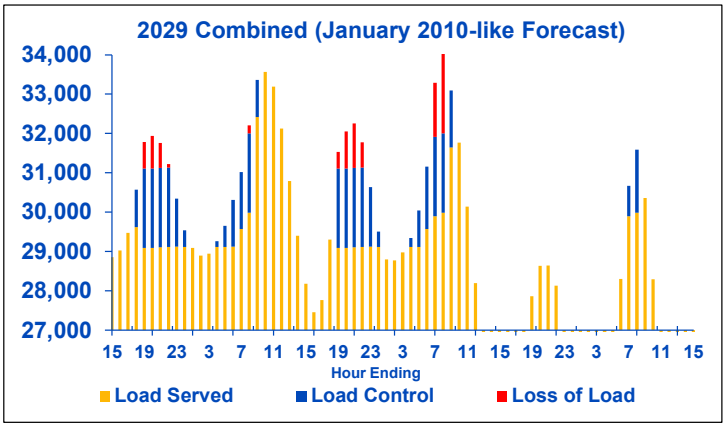

2024 Combined (January 2010-like Forecast)
32,000
31,000
30,000
29,000
28,000
27,000
26,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Load Served
Load Control
Loss of Load

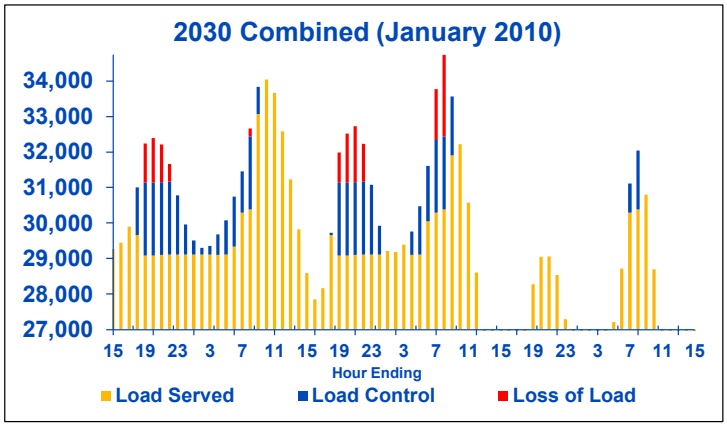

2025 Combined (January 2010-like Forecast)
32,000
31,000
30,000
29,000
28,000
27,000
26,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Load Served
Load Control
Loss of Load


2026 Combined (January 2010-like Forecast)
33,000
32,000
31,000
30,000
29,000
28,000
27,000
26,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Load Served
Load Control
Loss of Load


2027 Combined (January 2010-like Forecast)
33,000
32,000
31,000
30,000
29,000
28,000
27,000
26,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Load Served
Load Control
Loss of Load


2028 Combined (January 2010-like Forecast)
34,000
33,000
32,000
31,000
30,000
29,000
28,000
27,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Load Served
Load Control
Loss of Load


2029 Combined (January 2010-like Forecast)
34,000
33,000
32,000
31,000
30,000
29,000
28,000
27,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Load Served
Load Control
Loss of Load


2030 Combined (January 2010)
34,000
33,000
32,000
31,000
30,000
29,000
28,000
27,000
15 19 23 3 7 11 15 19 23 3 7 11 15 19 23 3 7 11 15
Hour Ending
Load Served
Load Control
Loss of Load

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	6,956	12	1,851
Loss of Load	423	1	423

"What If" Gen MW Unavailable
1,000
3

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

2024 Combined System Winter Peak Day - ("2010-like" Winter Scenario)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	21,430	3,590	0	87	226	17,527	0	0	0	0	0	0	0
9	2	20,881	3,590	0	87	226	16,978	0	0	0	0	0	0	0
9	3	20,871	3,590	0	87	227	16,967	0	0	0	0	0	0	0
9	4	21,283	3,590	0	87	223	17,382	0	0	0	0	0	0	0
9	5	22,153	3,590	0	87	229	18,247	0	0	0	0	0	0	0
9	6	23,770	3,590	0	87	235	19,858	0	0	0	0	0	0	0
9	7	26,219	3,590	0	87	236	20,986	1,320	0	0	0	0	0	0
9	8	29,433	3,590	82	87	223	20,986	3,153	1,182	0	130	0	130	0
9	9	32,896	3,590	1,213	87	227	20,986	3,153	1,182	0	2,458	0	2,458	1,607
9	10	35,177	3,590	2,410	87	234	20,986	3,153	1,182	0	3,534	0	3,534	2,683
9	11	36,639	3,590	3,101	87	240	20,986	3,153	1,182	0	4,299	0	4,299	3,449
9	12	37,108	3,590	3,433	87	251	20,986	3,153	1,182	0	4,426	0	4,426	3,575
9	13	37,345	3,590	3,483	87	256	20,986	3,153	1,182	0	4,606	0	4,606	3,756
9	14	37,352	3,590	3,425	87	256	20,986	0	1,182	0	7,825	0	7,825	3,821
9	15	37,458	3,590	3,227	87	247	20,986	0	1,182	0	8,138	0	8,138	4,134
9	16	37,670	3,590	2,825	87	237	20,986	0	1,182	0	8,763	0	8,763	4,759
9	17	38,250	3,590	1,744	87	220	20,986	3,153	1,182	0	7,288	0	7,288	6,437
9	18	39,674	3,590	350	87	198	20,986	3,153	1,182	0	10,127	0	10,127	9,277
9	19	41,270	3,590	7	87	197	20,986	3,153	1,182	0	12,067	537	11,530	11,217
9	20	41,482	3,590	0	87	201	20,986	3,153	1,182	94	12,189	595	11,594	11,338
9	21	41,259	3,590	0	87	215	20,986	3,153	1,182	0	12,046	512	11,534	11,195
9	22	40,558	3,590	0	87	229	20,986	3,153	1,182	0	11,331	0	11,331	10,480
9	23	39,422	3,590	0	87	232	20,986	3,153	1,182	0	10,192	0	10,192	9,341
9	24	38,367	3,590	0	87	224	20,986	3,153	1,182	0	9,144	0	9,144	8,294
10	1	27,228	3,590	0	87	226	20,986	2,339	0	0	0	0	0	0
10	2	27,039	3,590	0	87	226	20,986	2,149	0	0	0	0	0	0
10	3	27,088	3,590	0	87	227	20,986	2,197	0	0	0	0	0	0
10	4	27,384	3,590	0	87	223	20,986	2,498	0	0	0	0	0	0
10	5	27,752	3,590	0	87	229	20,986	2,860	0	0	0	0	0	0
10	6	28,372	3,590	0	87	235	20,986	3,153	321	0	0	0	0	0
10	7	29,035	3,590	0	87	236	20,986	3,153	982	0	0	0	0	0
10	8	30,152	3,590	82	87	223	20,986	3,153	1,182	469	380	380	0	0
10	9	31,228	3,590	1,213	87	227	20,986	3,153	1,182	469	321	321	0	0
10	10	31,414	3,590	2,410	87	234	20,986	3,153	953	0	0	0	0	0
10	11	31,058	3,590	3,101	87	240	20,986	3,054	0	0	0	0	0	0
10	12	30,055	3,590	3,433	87	251	20,986	1,709	0	0	0	0	0	0
10	13	28,804	3,590	3,483	87	256	20,986	401	0	0	0	0	0	0
10	14	27,501	3,590	3,425	87	256	20,142	0	0	0	0	0	0	0
10	15	26,357	3,590	3,227	87	247	19,300	0	0	(94)	0	0	0	0
10	16	25,677	3,590	2,825	87	237	19,407	0	0	(469)	0	0	0	0
10	17	25,964	3,590	1,744	87	220	20,792	0	0	(469)	0	0	0	0
10	18	27,401	3,590	350	87	198	20,986	2,189	0	0	0	0	0	0
10	19	29,487	3,590	7	87	197	20,986	3,153	1,182	0	284	284	0	0
10	20	29,983	3,590	0	87	201	20,986	3,153	1,182	0	784	784	0	0
10	21	30,176	3,590	0	87	215	20,986	3,153	1,182	0	962	962	0	112
10	22	29,724	3,590	0	87	229	20,986	3,153	1,182	0	497	497	0	0
10	23	28,661	3,590	0	87	232	20,986	3,153	612	0	0	0	0	0
10	24	27,599	3,590	0	87	224	20,986	2,712	0	0	0	0	0	0
11	1	26,939	3,590	0	87	226	20,986	2,050	0	0	0	0	0	0
11	2	26,916	3,590	0	87	226	20,986	2,026	0	0	0	0	0	0
11	3	27,106	3,590	0	87	227	20,986	2,216	0	0	0	0	0	0
11	4	27,450	3,590	0	87	223	20,986	2,564	0	0	0	0	0	0
11	5	28,104	3,590	0	87	229	20,986	3,153	58	0	0	0	0	0
11	6	29,152	3,590	0	87	235	20,986	3,153	1,100	0	0	0	0	0
11	7	31,146	3,590	0	87	236	20,986	3,153	1,182	469	1,443	1,443	0	592
11	8	32,047	3,590	82	87	223	20,986	3,153	1,182	469	2,274	1,851	423	1,423
11	9	30,967	3,590	1,213	87	227	20,986	3,153	1,182	94	434	434	0	0
11	10	29,725	3,590	2,410	87	234	20,986	2,417	0	0	0	0	0	0
11	11	28,193	3,590	3,101	87	240	20,986	189	0	0	0	0	0	0
11	12	26,375	3,590	3,433	87	251	19,015	0	0	0	0	0	0	0
11	13	24,592	3,590	3,483	87	256	17,175	0	0	0	0	0	0	0
11	14	23,091	3,590	3,425	87	256	16,201	0	0	(469)	0	0	0	0
11	15	21,634	3,590	3,227	87	247	14,952	0	0	(469)	0	0	0	0
11	16	20,626	3,590	2,825	87	237	13,981	0	0	(94)	0	0	0	0
11	17	20,986	3,590	1,744	87	220	15,345	0	0	0	0	0	0	0
11	18	23,102	3,590	350	87	198	18,877	0	0	0	0	0	0	0
11	19	26,058	3,590	7	87	197	20,986	1,191	0	0	0	0	0	0
11	20	26,777	3,590	0	87	201	20,986	1,913	0	0	0	0	0	0
11	21	26,789	3,590	0	87	215	20,986	1,910	0	0	0	0	0	0
11	22	26,305	3,590	0	87	229	20,986	1,413	0	0	0	0	0	0
11	23	25,165	3,590	0	87	232	20,986	269	0	0	0	0	0	0
11	24	24,152	3,590	0	87	224	20,251	0	0	0	0	0	0	0
12	1	23,566	3,590	0	87	226	19,663	0	0	0	0	0	0	0
12	2	23,620	3,590	0	87	226	19,717	0	0	0	0	0	0	0
12	3	23,946	3,590	0	87	227	20,042	0	0	0	0	0	0	0
12	4	24,400	3,590	0	87	223	20,500	0	0	0	0	0	0	0
12	5	25,086	3,590	0	87	229	20,986	194	0	0	0	0	0	0
12	6	26,470	3,590	0	87	235	20,986	1,571	0	0	0	0	0	0
12	7	28,680	3,590	0	87	236	20,986	3,153	627	0	0	0	0	0
12	8	29,537	3,590	82	87	223	20,986	3,153	1,182	233	0	0	0	0
12	9	28,392	3,590	1,213	87	227	20,986	2,289	0	0	0	0	0	0
12	10	26,460	3,590	2,410	87	234	20,138	0	0	0	0	0	0	0
12	11	24,667	3,590	3,101	87	240	17,649	0	0	0	0	0	0	0
12	12	23,151	3,590	3,433	87	251	15,790	0	0	0	0	0	0	0
12	13	21,762	3,590	3,483	87	256	14,345	0	0	0	0	0	0	0
12	14	20,263	3,590	3,425	87	256	12,904	0	0	0	0	0	0	0
12	15	18,957	3,590	3,227	87	247	11,805	0	0	0	0	0	0	0
12	16	18,284	3,590	2,825	87	237	11,545	0	0	0	0	0	0	0
12	17	18,636	3,590	1,744	87	220	12,995	0	0	0	0	0	0	0
12	18	20,584	3,590	350	87	198	16,358	0	0	0	0	0	0	0
12	19	23,188	3,590	7	87	197	19,306	0	0	0	0	0	0	0
12	20	23,850	3,590	0	87	201	19,972	0	0	0	0	0	0	0
12	21	23,900	3,590	0	87	215	20,008	0	0	0	0	0	0	0
12	22	23,456	3,590	0	87	229	19,549	0	0	0	0	0	0	0
12	23	22,614	3,590	0	87	232	18,704	0	0	0	0	0	0	0
12	24	21,334	3,590	0	87	224	17,432	0	0	0	0	0	0	0
											7,379	**6,956**	**423**	**2,127**

Notes:
Combined Cycle Maximum Output: 21,079 MWh
CT/GT Maximum Output: 3,153 MWh
Steam Turbine Maximum Output: 1,104 MWh
Load Control Maximum Output: 1,882 MWh
Batteries can dispatch at maximum 469 MWh in one hour and 1,032 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	111,654	78	1,882
Loss of Load	345,437	74	12,801

"What If" Gen MW Unavailable
1,000
75

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
												1,881.604		

2025 Combined System Winter Peak Day - ("2010-like" Winter Scenario)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	21,430	3,590	0	87	226	17,528	0	0	0	0	0	0	0
9	2	20,881	3,590	0	87	226	16,979	0	0	0	0	0	0	0
9	3	20,871	3,590	0	87	227	16,968	0	0	0	0	0	0	0
9	4	21,283	3,590	0	87	223	17,383	0	0	0	0	0	0	0
9	5	22,153	3,590	0	87	229	18,248	0	0	0	0	0	0	0
9	6	23,770	3,590	0	87	235	19,858	0	0	0	0	0	0	0
9	7	26,219	3,590	0	87	236	21,079	1,227	0	0	0	0	0	0
9	8	29,433	3,590	83	87	223	21,079	3,153	1,104	0	114	114	0	0
9	9	32,896	3,590	1,408	87	226	21,079	3,153	1,104	0	2,248	1,882	367	1,367
9	10	35,177	3,590	2,810	87	233	21,079	3,153	1,104	0	3,120	1,882	1,238	2,238
9	11	36,639	3,590	3,589	87	240	21,079	3,153	1,104	0	3,796	1,882	1,915	2,915
9	12	37,108	3,590	3,980	87	250	21,079	3,153	1,104	0	3,865	1,882	1,983	2,983
9	13	37,345	3,590	4,040	87	256	21,079	3,153	1,104	0	4,036	1,882	2,154	3,154
9	14	37,352	3,590	3,980	87	256	21,079	3,153	1,104	0	4,103	1,882	2,221	3,221
9	15	37,458	3,590	3,765	87	246	21,079	3,153	1,104	0	4,433	1,882	2,551	3,551
9	16	37,670	3,590	3,329	87	236	21,079	3,153	1,104	0	5,091	1,882	3,209	4,209
9	17	38,250	3,590	2,070	87	219	21,079	3,153	1,104	0	6,948	1,882	5,066	6,066
9	18	39,674	3,590	402	87	198	21,079	3,153	1,104	0	10,061	1,882	8,180	9,180
9	19	41,270	3,590	7	87	197	21,079	3,153	1,104	0	12,053	1,882	10,171	11,171
9	20	41,482	3,590	0	87	201	21,079	3,153	1,104	0	12,268	1,882	10,387	11,387
9	21	41,259	3,590	0	87	215	21,079	3,153	1,104	0	12,031	1,882	10,150	11,150
9	22	40,558	3,590	0	87	229	21,079	3,153	1,104	0	11,317	1,882	9,435	10,435
9	23	39,422	3,590	0	87	232	21,079	3,153	1,104	0	10,177	1,882	8,296	9,296
9	24	38,367	3,590	0	87	224	21,079	3,153	1,104	0	9,130	1,882	7,249	8,249
10	1	37,790	3,590	0	87	226	21,079	3,153	1,104	0	8,551	1,882	6,670	7,670
10	2	37,529	3,590	0	87	226	21,079	3,153	1,104	0	8,290	1,882	6,408	7,408
10	3	37,597	3,590	0	87	227	21,079	3,153	1,104	0	8,357	1,882	6,476	7,476
10	4	38,011	3,590	0	87	223	21,079	3,153	1,104	0	8,776	1,882	6,894	7,894
10	5	38,524	3,590	0	87	229	21,079	3,153	1,104	0	9,282	1,882	7,400	8,400
10	6	39,388	3,590	0	87	235	21,079	3,153	1,104	0	10,140	1,882	8,258	9,258
10	7	40,313	3,590	0	87	236	21,079	3,153	1,104	0	11,064	1,882	9,183	10,183
10	8	41,868	3,590	83	87	223	21,079	3,153	1,104	0	12,549	1,882	10,668	11,668
10	9	43,359	3,590	1,408	87	226	21,079	3,153	1,104	0	12,711	1,882	10,829	11,829
10	10	43,607	3,590	2,810	87	233	21,079	3,153	1,104	0	11,551	1,882	9,669	10,669
10	11	43,102	3,590	3,589	87	240	21,079	3,153	1,104	0	10,259	1,882	8,378	9,378
10	12	41,703	3,590	3,980	87	250	21,079	3,153	1,104	0	8,460	1,882	6,579	7,579
10	13	39,961	3,590	4,040	87	256	21,079	3,153	1,104	0	6,652	1,882	4,770	5,770
10	14	38,147	3,590	3,980	87	256	21,079	3,153	1,104	0	4,898	1,882	3,016	4,016
10	15	36,557	3,590	3,765	87	246	21,079	3,153	1,104	0	3,532	1,882	1,650	2,650
10	16	35,613	3,590	3,329	87	236	21,079	3,153	1,104	0	3,034	1,882	1,152	2,152
10	17	36,008	3,590	2,070	87	219	21,079	3,153	1,104	0	4,706	1,882	2,824	3,824
10	18	37,999	3,590	402	87	198	21,079	3,153	1,104	0	8,386	1,882	6,505	7,505
10	19	40,896	3,590	7	87	197	21,079	3,153	1,104	0	11,679	1,882	9,798	10,798
10	20	41,591	3,590	0	87	201	21,079	3,153	1,104	0	12,377	1,882	10,495	11,495
10	21	41,860	3,590	0	87	215	21,079	3,153	1,104	0	12,632	1,882	10,751	11,751
10	22	41,236	3,590	0	87	229	21,079	3,153	1,104	0	11,994	1,882	10,113	11,113
10	23	39,763	3,590	0	87	232	21,079	3,153	1,104	0	10,518	1,882	8,636	9,636
10	24	38,290	3,590	0	87	224	21,079	3,153	1,104	0	9,054	1,882	7,172	8,172
11	1	37,374	3,590	0	87	226	21,079	3,153	1,104	0	8,135	1,882	6,253	7,253
11	2	37,342	3,590	0	87	226	21,079	3,153	1,104	0	8,103	1,882	6,221	7,221
11	3	37,607	3,590	0	87	227	21,079	3,153	1,104	0	8,367	1,882	6,485	7,485
11	4	38,085	3,590	0	87	223	21,079	3,153	1,104	0	8,849	1,882	6,967	7,967
11	5	38,993	3,590	0	87	229	21,079	3,153	1,104	0	9,751	1,882	7,869	8,869
11	6	40,448	3,590	0	87	235	21,079	3,153	1,104	0	11,200	1,882	9,318	10,318
11	7	43,216	3,590	0	87	236	21,079	3,153	1,104	469	13,498	1,882	11,616	12,616
11	8	44,470	3,590	83	87	223	21,079	3,153	1,104	469	14,682	1,882	12,801	13,801
11	9	42,976	3,590	1,408	87	226	21,079	3,153	1,104	94	12,234	1,882	10,352	11,352
11	10	41,244	3,590	2,810	87	233	21,079	3,153	1,104	0	9,188	1,882	7,306	8,306
11	11	39,112	3,590	3,589	87	240	21,079	3,153	1,104	0	6,269	1,882	4,388	5,388
11	12	36,586	3,590	3,980	87	250	21,079	3,153	1,104	0	3,343	1,882	1,462	2,462
11	13	34,111	3,590	4,040	87	256	21,079	3,153	1,104	0	802	802	0	0
11	14	32,029	3,590	3,980	87	256	21,079	3,037	0	0	0	0	0	0
11	15	30,010	3,590	3,765	87	246	21,079	1,243	0	0	0	0	0	0
11	16	28,612	3,590	3,329	87	236	21,079	290	0	0	0	0	0	0
11	17	29,109	3,590	2,070	87	219	21,079	2,064	0	0	0	0	0	0
11	18	32,038	3,590	402	87	198	21,079	3,153	1,104	0	2,425	1,882	544	1,544
11	19	36,135	3,590	7	87	197	21,079	3,153	1,104	0	6,918	1,882	5,037	6,037
11	20	37,133	3,590	0	87	201	21,079	3,153	1,104	0	7,919	1,882	6,037	7,037
11	21	37,150	3,590	0	87	215	21,079	3,153	1,104	0	7,922	1,882	6,040	7,040
11	22	36,481	3,590	0	87	229	21,079	3,153	1,104	0	7,239	1,882	5,358	6,358
11	23	34,903	3,590	0	87	232	21,079	3,153	1,104	0	5,658	1,882	3,776	4,776
11	24	33,501	3,590	0	87	224	21,079	3,153	1,104	0	4,264	1,882	2,382	3,382
12	1	32,688	3,590	0	87	226	21,079	3,153	1,104	0	3,449	1,882	1,567	2,567
12	2	32,763	3,590	0	87	226	21,079	3,153	1,104	0	3,524	1,882	1,642	2,642
12	3	33,213	3,590	0	87	227	21,079	3,153	1,104	0	3,973	1,882	2,092	3,092
12	4	33,843	3,590	0	87	223	21,079	3,153	1,104	0	4,607	1,882	2,725	3,725
12	5	34,792	3,590	0	87	229	21,079	3,153	1,104	0	5,550	1,882	3,668	4,668
12	6	36,707	3,590	0	87	235	21,079	3,153	1,104	0	7,459	1,882	5,578	6,578
12	7	39,767	3,590	0	87	236	21,079	3,153	1,104	469	10,049	1,882	8,168	9,168
12	8	40,956	3,590	83	87	223	21,079	3,153	1,104	469	11,168	1,882	9,287	10,287
12	9	39,375	3,590	1,408	87	226	21,079	3,153	1,104	94	8,633	1,882	6,751	7,751
12	10	36,698	3,590	2,810	87	233	21,079	3,153	1,104	0	4,642	1,882	2,760	3,760
12	11	34,213	3,590	3,589	87	240	21,079	3,153	1,104	0	1,370	1,370	0	489
12	12	32,109	3,590	3,980	87	250	21,079	3,123	0	0	0	0	0	0
12	13	30,183	3,590	4,040	87	256	21,079	1,132	0	0	0	0	0	0
12	14	28,105	3,590	3,980	87	256	20,193	0	0	0	0	0	0	0
12	15	26,295	3,590	3,765	87	246	18,607	0	0	0	0	0	0	0
12	16	25,364	3,590	3,329	87	236	18,121	0	0	0	0	0	0	0
12	17	25,850	3,590	2,070	87	219	19,884	0	0	0	0	0	0	0
12	18	28,546	3,590	402	87	198	21,079	3,153	37	0	0	0	0	0
12	19	32,153	3,590	7	87	197	21,079	3,153	1,104	0	2,936	1,882	1,054	2,054
12	20	33,072	3,590	0	87	201	21,079	3,153	1,104	0	3,858	1,882	1,976	2,976
12	21	33,140	3,590	0	87	215	21,079	3,153	1,104	0	3,912	1,882	2,030	3,030
12	22	32,524	3,590	0	87	229	21,079	3,153	1,104	0	3,282	1,882	1,400	2,400
12	23	31,358	3,590	0	87	232	21,079	3,153	1,104	0	2,113	1,882	231	1,231
12	24	29,585	3,590	0	87	224	21,079	3,153	1,104	0	348	348	0	0
											457,091	**111,654**	**345,437**	**403,926**

Notes:
Combined Cycle Maximum Output: 21,079 MWh
CT/GT Maximum Output: 3,153 MWh
Steam Turbine Maximum Output: 1,104 MWh
Load Control Maximum Output: 1,882 MWh
Batteries can dispatch at maximum 469 MWh in one hour and 1,032 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	14,694	17	1,916
Loss of Load	1,667	2	1,259

"What If" Gen MW Unavailable
1,000
10

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

2026 Combined System Winter Peak Day - ("2010-like" Winter Scenario)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	15,859	3,590	0	87	225	11,957	0	0	0	0	0	0	0
9	2	15,450	3,590	0	87	225	11,548	0	0	0	0	0	0	0
9	3	15,440	3,590	0	87	226	11,537	0	0	0	0	0	0	0
9	4	15,744	3,590	0	87	222	11,845	0	0	0	0	0	0	0
9	5	16,387	3,590	0	87	228	12,483	0	0	0	0	0	0	0
9	6	17,583	3,590	0	87	234	13,672	0	0	0	0	0	0	0
9	7	19,394	3,590	0	87	235	15,482	0	0	0	0	0	0	0
9	8	21,775	3,590	87	87	222	17,789	0	0	0	0	0	0	0
9	9	24,346	3,590	1,658	87	226	18,785	0	0	0	0	0	0	0
9	10	26,042	3,590	3,287	87	233	18,845	0	0	0	0	0	0	0
9	11	27,134	3,590	4,185	87	239	19,034	0	0	0	0	0	0	0
9	12	27,488	3,590	4,620	87	249	18,942	0	0	0	0	0	0	0
9	13	27,672	3,590	4,687	87	255	19,053	0	0	0	0	0	0	0
9	14	27,684	3,590	4,624	87	255	19,129	0	0	0	0	0	0	0
9	15	27,768	3,590	4,374	87	245	19,472	0	0	0	0	0	0	0
9	16	27,931	3,590	3,865	87	235	20,155	0	0	0	0	0	0	0
9	17	28,363	3,590	2,360	87	218	21,089	1,019	0	0	0	0	0	0
9	18	29,415	3,590	433	87	197	21,089	3,138	882	0	0	0	0	0
9	19	30,588	3,590	7	87	196	21,089	3,138	1,104	0	1,377	1,377	0	461
9	20	30,738	3,590	0	87	200	21,089	3,138	1,104	0	1,531	1,531	0	615
9	21	30,571	3,590	0	87	214	21,089	3,138	1,104	0	1,349	1,349	0	433
9	22	30,050	3,590	0	87	228	21,089	3,138	1,104	0	814	814	0	0
9	23	29,208	3,590	0	87	231	21,089	3,138	1,073	0	0	0	0	0
9	24	28,429	3,590	0	87	223	21,089	3,138	302	0	0	0	0	0
10	1	28,002	3,590	0	87	225	21,089	3,012	0	0	0	0	0	0
10	2	27,808	3,590	0	87	225	21,089	2,817	0	0	0	0	0	0
10	3	27,858	3,590	0	87	226	21,089	2,866	0	0	0	0	0	0
10	4	28,162	3,590	0	87	222	21,089	3,138	36	0	0	0	0	0
10	5	28,540	3,590	0	87	228	21,089	3,138	408	0	0	0	0	0
10	6	29,177	3,590	0	87	234	21,089	3,138	1,039	0	0	0	0	0
10	7	29,856	3,590	0	87	235	21,089	3,138	1,104	94	520	520	0	0
10	8	31,005	3,590	87	87	222	21,089	3,138	1,104	469	1,219	1,219	0	303
10	9	32,112	3,590	1,658	87	226	21,089	3,138	1,104	469	752	752	0	0
10	10	32,306	3,590	3,287	87	233	21,089	3,138	882	0	0	0	0	0
10	11	31,943	3,590	4,185	87	239	21,089	2,754	0	0	0	0	0	0
10	12	30,914	3,590	4,620	87	249	21,089	1,279	0	0	0	0	0	0
10	13	29,629	3,590	4,687	87	255	21,011	0	0	0	0	0	0	0
10	14	28,290	3,590	4,624	87	255	19,735	0	0	0	0	0	0	0
10	15	27,114	3,590	4,374	87	245	18,912	0	0	(94)	0	0	0	0
10	16	26,416	3,590	3,865	87	235	19,108	0	0	(469)	0	0	0	0
10	17	26,711	3,590	2,360	87	218	20,925	0	0	(469)	0	0	0	0
10	18	28,190	3,590	433	87	197	21,089	2,794	0	0	0	0	0	0
10	19	30,335	3,590	7	87	196	21,089	3,138	1,104	0	1,124	1,124	0	208
10	20	30,844	3,590	0	87	200	21,089	3,138	1,104	0	1,636	1,636	0	720
10	21	31,041	3,590	0	87	214	21,089	3,138	1,104	0	1,819	1,819	0	903
10	22	30,576	3,590	0	87	228	21,089	3,138	1,104	0	1,340	1,340	0	424
10	23	29,481	3,590	0	87	231	21,089	3,138	1,104	0	242	242	0	0
10	24	28,389	3,590	0	87	223	21,089	3,138	262	0	0	0	0	0
11	1	27,710	3,590	0	87	225	21,089	2,719	0	0	0	0	0	0
11	2	27,686	3,590	0	87	225	21,089	2,695	0	0	0	0	0	0
11	3	27,881	3,590	0	87	226	21,089	2,889	0	0	0	0	0	0
11	4	28,235	3,590	0	87	222	21,089	3,138	109	0	0	0	0	0
11	5	28,908	3,590	0	87	228	21,089	3,138	776	0	0	0	0	0
11	6	29,985	3,590	0	87	234	21,089	3,138	1,104	0	744	744	0	0
11	7	32,037	3,590	0	87	235	21,089	3,138	1,104	469	2,325	1,916	409	1,409
11	8	32,961	3,590	87	87	222	21,089	3,138	1,104	469	3,175	1,916	1,259	2,259
11	9	31,849	3,590	1,658	87	226	21,089	3,138	1,104	94	864	864	0	0
11	10	30,574	3,590	3,287	87	233	21,089	2,288	0	0	0	0	0	0
11	11	29,000	3,590	4,185	87	239	20,900	0	0	0	0	0	0	0
11	12	27,132	3,590	4,620	87	249	18,586	0	0	0	0	0	0	0
11	13	25,298	3,590	4,687	87	255	16,773	0	0	-94	0	0	0	0
11	14	23,753	3,590	4,624	87	255	15,667	0	0	(469)	0	0	0	0
11	15	22,255	3,590	4,374	87	245	14,428	0	0	(469)	0	0	0	0
11	16	21,217	3,590	3,865	87	235	13,441	0	0	0	0	0	0	0
11	17	21,589	3,590	2,360	87	218	15,334	0	0	0	0	0	0	0
11	18	23,767	3,590	433	87	197	19,460	0	0	0	0	0	0	0
11	19	26,810	3,590	7	87	196	21,089	1,841	0	0	0	0	0	0
11	20	27,548	3,590	0	87	200	21,089	2,583	0	0	0	0	0	0
11	21	27,560	3,590	0	87	214	21,089	2,580	0	0	0	0	0	0
11	22	27,062	3,590	0	87	228	21,089	2,068	0	0	0	0	0	0
11	23	25,888	3,590	0	87	231	21,089	891	0	0	0	0	0	0
11	24	24,846	3,590	0	87	223	20,946	0	0	0	0	0	0	0
12	1	24,242	3,590	0	87	225	20,341	0	0	0	0	0	0	0
12	2	24,298	3,590	0	87	225	20,397	0	0	0	0	0	0	0
12	3	24,634	3,590	0	87	226	20,731	0	0	0	0	0	0	0
12	4	25,101	3,590	0	87	222	21,089	114	0	0	0	0	0	0
12	5	25,807	3,590	0	87	228	21,089	813	0	0	0	0	0	0
12	6	27,232	3,590	0	87	234	21,089	2,232	0	0	0	0	0	0
12	7	29,507	3,590	0	87	235	21,089	3,138	1,104	264	0	0	0	0
12	8	30,389	3,590	87	87	222	21,089	3,138	1,104	469	603	603	0	0
12	9	29,209	3,590	1,658	87	226	21,089	2,560	0	0	0	0	0	0
12	10	27,220	3,590	3,287	87	233	20,023	0	0	0	0	0	0	0
12	11	25,376	3,590	4,185	87	239	17,276	0	0	0	0	0	0	0
12	12	23,816	3,590	4,620	87	249	15,271	0	0	0	0	0	0	0
12	13	22,388	3,590	4,687	87	255	13,769	0	0	0	0	0	0	0
12	14	20,845	3,590	4,624	87	255	12,290	0	0	0	0	0	0	0
12	15	19,501	3,590	4,374	87	245	11,205	0	0	0	0	0	0	0
12	16	18,808	3,590	3,865	87	235	11,032	0	0	0	0	0	0	0
12	17	19,171	3,590	2,360	87	218	12,916	0	0	0	0	0	0	0
12	18	21,176	3,590	433	87	197	16,870	0	0	0	0	0	0	0
12	19	23,857	3,590	7	87	196	19,977	0	0	0	0	0	0	0
12	20	24,538	3,590	0	87	200	20,662	0	0	0	0	0	0	0
12	21	24,590	3,590	0	87	214	20,699	0	0	0	0	0	0	0
12	22	24,132	3,590	0	87	228	20,228	0	0	0	0	0	0	0
12	23	23,266	3,590	0	87	231	19,358	0	0	0	0	0	0	0
12	24	21,948	3,590	0	87	223	18,048	0	0	0	0	0	0	0
												14,694	**1,667**	**6,225**

Notes:
Combined Cycle Maximum Output: 21,079 MWh
CT/GT Maximum Output: 3,153 MWh
Steam Turbine Maximum Output: 1,104 MWh
Load Control Maximum Output: 1,882 MWh
Batteries can dispatch at maximum 469 MWh in one hour and 1,032 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	18,592	22	1,950
Loss of Load	2,713	4	1,622

"What If" Gen MW Unavailable
1,000
14

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

2027 Combined System Winter Peak Day - ("2010-like" Winter Scenario)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	16,013	3,590	0	87	224	12,112	0	0	0	0	0	0	0
9	2	15,600	3,590	0	87	224	11,699	0	0	0	0	0	0	0
9	3	15,590	3,590	0	87	225	11,688	0	0	0	0	0	0	0
9	4	15,897	3,590	0	87	221	11,999	0	0	0	0	0	0	0
9	5	16,547	3,590	0	87	227	12,643	0	0	0	0	0	0	0
9	6	17,753	3,590	0	87	233	13,843	0	0	0	0	0	0	0
9	7	19,582	3,590	0	87	234	15,671	0	0	0	0	0	0	0
9	8	21,987	3,590	93	87	221	17,996	0	0	0	0	0	0	0
9	9	24,583	3,590	1,918	87	225	18,763	0	0	0	0	0	0	0
9	10	26,296	3,590	3,777	87	232	18,610	0	0	0	0	0	0	0
9	11	27,399	3,590	4,790	87	238	18,694	0	0	0	0	0	0	0
9	12	27,757	3,590	5,264	87	248	18,568	0	0	0	0	0	0	0
9	13	27,943	3,590	5,336	87	254	18,676	0	0	0	0	0	0	0
9	14	27,956	3,590	5,270	87	254	18,756	0	0	0	0	0	0	0
9	15	28,041	3,590	4,983	87	244	19,137	0	0	0	0	0	0	0
9	16	28,206	3,590	4,397	87	234	19,898	0	0	0	0	0	0	0
9	17	28,642	3,590	2,642	87	217	21,089	1,017	0	0	0	0	0	0
9	18	29,705	3,590	458	87	196	21,089	3,138	1,026	0	121	121	0	0
9	19	30,888	3,590	7	87	195	21,089	3,138	1,026	0	1,756	1,756	0	806
9	20	31,040	3,590	0	87	199	21,089	3,138	1,026	0	1,911	1,911	0	961
9	21	30,870	3,590	0	87	213	21,089	3,138	1,026	0	1,727	1,727	0	777
9	22	30,344	3,590	0	87	227	21,089	3,138	1,026	0	1,187	1,187	0	237
9	23	29,494	3,590	0	87	230	21,089	3,138	1,026	0	334	334	0	0
9	24	28,708	3,590	0	87	222	21,089	3,138	582	0	0	0	0	0
10	1	28,277	3,590	0	87	224	21,089	3,138	149	0	0	0	0	0
10	2	28,080	3,590	0	87	224	21,089	3,090	0	0	0	0	0	0
10	3	28,131	3,590	0	87	225	21,089	3,138	2	0	0	0	0	0
10	4	28,438	3,590	0	87	221	21,089	3,138	313	0	0	0	0	0
10	5	28,820	3,590	0	87	227	21,089	3,138	688	0	0	0	0	0
10	6	29,462	3,590	0	87	233	21,089	3,138	1,026	0	299	299	0	0
10	7	30,148	3,590	0	87	234	21,089	3,138	1,026	94	890	890	0	0
10	8	31,308	3,590	93	87	221	21,089	3,138	1,026	469	1,595	1,595	0	645
10	9	32,426	3,590	1,918	87	225	21,089	3,138	1,026	469	884	884	0	0
10	10	32,622	3,590	3,777	87	232	21,089	3,138	709	0	0	0	0	0
10	11	32,257	3,590	4,790	87	238	21,089	2,463	0	0	0	0	0	0
10	12	31,217	3,590	5,264	87	248	21,089	939	0	0	0	0	0	0
10	13	29,921	3,590	5,336	87	254	20,654	0	0	0	0	0	0	0
10	14	28,569	3,590	5,270	87	254	19,463	0	0	(94)	0	0	0	0
10	15	27,382	3,590	4,983	87	244	18,947	0	0	(469)	0	0	0	0
10	16	26,676	3,590	4,397	87	234	18,837	0	0	(469)	0	0	0	0
10	17	26,975	3,590	2,642	87	217	20,439	0	0	0	0	0	0	0
10	18	28,468	3,590	458	87	196	21,089	3,048	0	0	0	0	0	0
10	19	30,634	3,590	7	87	195	21,089	3,138	1,026	0	1,502	1,502	0	552
10	20	31,148	3,590	0	87	199	21,089	3,138	1,026	0	2,019	1,950	69	1,069
10	21	31,347	3,590	0	87	213	21,089	3,138	1,026	0	2,204	1,950	254	1,254
10	22	30,877	3,590	0	87	227	21,089	3,138	1,026	0	1,720	1,720	0	770
10	23	29,771	3,590	0	87	230	21,089	3,138	1,026	0	611	611	0	0
10	24	28,669	3,590	0	87	222	21,089	3,138	543	0	0	0	0	0
11	1	27,983	3,590	0	87	224	21,089	2,993	0	0	0	0	0	0
11	2	27,959	3,590	0	87	224	21,089	2,969	0	0	0	0	0	0
11	3	28,156	3,590	0	87	225	21,089	3,138	27	0	0	0	0	0
11	4	28,513	3,590	0	87	221	21,089	3,138	388	0	0	0	0	0
11	5	29,192	3,590	0	87	227	21,089	3,138	1,026	0	35	35	0	0
11	6	30,280	3,590	0	87	233	21,089	3,138	1,026	94	1,024	1,024	0	74
11	7	32,352	3,590	0	87	234	21,089	3,138	1,026	469	2,718	1,950	768	1,768
11	8	33,285	3,590	93	87	221	21,089	3,138	1,026	469	3,572	1,950	1,622	2,622
11	9	32,162	3,590	1,918	87	225	21,089	3,138	1,026	0	1,089	1,089	0	139
11	10	30,874	3,590	3,777	87	232	21,089	2,099	0	0	0	0	0	0
11	11	29,286	3,590	4,790	87	238	20,581	0	0	0	0	0	0	0
11	12	27,400	3,590	5,264	87	248	18,211	0	0	0	0	0	0	0
11	13	25,547	3,590	5,336	87	254	16,374	0	0	-94	0	0	0	0
11	14	23,988	3,590	5,270	87	254	15,256	0	0	(469)	0	0	0	0
11	15	22,474	3,590	4,983	87	244	14,039	0	0	(469)	0	0	0	0
11	16	21,426	3,590	4,397	87	234	13,118	0	0	0	0	0	0	0
11	17	21,801	3,590	2,642	87	217	15,266	0	0	0	0	0	0	0
11	18	24,001	3,590	458	87	196	19,670	0	0	0	0	0	0	0
11	19	27,074	3,590	7	87	195	21,089	2,106	0	0	0	0	0	0
11	20	27,821	3,590	0	87	199	21,089	2,856	0	0	0	0	0	0
11	21	27,832	3,590	0	87	213	21,089	2,853	0	0	0	0	0	0
11	22	27,329	3,590	0	87	227	21,089	2,336	0	0	0	0	0	0
11	23	26,143	3,590	0	87	230	21,089	1,147	0	0	0	0	0	0
11	24	25,091	3,590	0	87	222	21,089	103	0	0	0	0	0	0
12	1	24,481	3,590	0	87	224	20,580	0	0	0	0	0	0	0
12	2	24,538	3,590	0	87	224	20,637	0	0	0	0	0	0	0
12	3	24,877	3,590	0	87	225	20,975	0	0	0	0	0	0	0
12	4	25,349	3,590	0	87	221	21,089	362	0	0	0	0	0	0
12	5	26,062	3,590	0	87	227	21,089	1,069	0	0	0	0	0	0
12	6	27,501	3,590	0	87	233	21,089	2,502	0	0	0	0	0	0
12	7	29,799	3,590	0	87	234	21,089	3,138	1,026	469	166	166	0	0
12	8	30,690	3,590	93	87	221	21,089	3,138	1,026	469	977	977	0	27
12	9	29,498	3,590	1,918	87	225	21,089	2,589	0	0	0	0	0	0
12	10	27,489	3,590	3,777	87	232	19,803	0	0	0	0	0	0	0
12	11	25,627	3,590	4,790	87	238	16,922	0	0	0	0	0	0	0
12	12	24,051	3,590	5,264	87	248	14,862	0	0	0	0	0	0	0
12	13	22,608	3,590	5,336	87	254	13,341	0	0	0	0	0	0	0
12	14	21,051	3,590	5,270	87	254	11,850	0	0	0	0	0	0	0
12	15	19,692	3,590	4,983	87	244	10,788	0	0	0	0	0	0	0
12	16	18,993	3,590	4,397	87	234	10,685	0	0	0	0	0	0	0
12	17	19,359	3,590	2,642	87	217	12,824	0	0	0	0	0	0	0
12	18	21,385	3,590	458	87	196	17,054	0	0	0	0	0	0	0
12	19	24,092	3,590	7	87	195	20,213	0	0	0	0	0	0	0
12	20	24,781	3,590	0	87	199	20,905	0	0	0	0	0	0	0
12	21	24,833	3,590	0	87	213	20,943	0	0	0	0	0	0	0
12	22	24,371	3,590	0	87	227	20,466	0	0	0	0	0	0	0
12	23	23,495	3,590	0	87	230	19,588	0	0	0	0	0	0	0
12	24	22,164	3,590	0	87	222	18,265	0	0	0	0	0	0	0
												18,592	**2,713**	**8,920**

Notes:
Combined Cycle Maximum Output: 21,079 MWh
CT/GT Maximum Output: 3,153 MWh
Steam Turbine Maximum Output: 1,104 MWh
Load Control Maximum Output: 1,882 MWh
Batteries can dispatch at maximum 469 MWh in one hour and 1,032 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	19,022	21	1,984
Loss of Load	3,906	5	2,095

"What If" Gen MW Unavailable
1,000
14

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

2028 Combined System Winter Peak Day - ("2010-like" Winter Scenario)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	16,718	3,590	0	87	223	12,818	0	0	0	0	0	0	0
9	2	16,412	3,590	0	87	223	12,512	0	0	0	0	0	0	0
9	3	16,414	3,590	0	87	224	12,512	0	0	0	0	0	0	0
9	4	16,654	3,590	0	87	220	12,756	0	0	0	0	0	0	0
9	5	17,158	3,590	0	87	226	13,255	0	0	0	0	0	0	0
9	6	18,094	3,590	0	87	232	14,185	0	0	0	0	0	0	0
9	7	19,508	3,590	0	87	233	15,598	0	0	0	0	0	0	0
9	8	21,352	3,590	100	87	220	17,355	0	0	0	0	0	0	0
9	9	23,505	3,590	2,233	87	224	17,371	0	0	0	0	0	0	0
9	10	25,522	3,590	4,375	87	231	17,240	0	0	0	0	0	0	0
9	11	26,831	3,590	5,543	87	237	17,374	0	0	0	0	0	0	0
9	12	27,269	3,590	6,068	87	247	17,276	0	0	0	0	0	0	0
9	13	27,509	3,590	6,149	87	253	17,430	0	0	0	0	0	0	0
9	14	27,545	3,590	6,077	87	253	17,539	0	0	0	0	0	0	0
9	15	27,661	3,590	5,742	87	243	17,999	0	0	0	0	0	0	0
9	16	27,870	3,590	5,051	87	233	18,909	0	0	0	0	0	0	0
9	17	28,382	3,590	2,975	87	216	21,089	424	0	0	0	0	0	0
9	18	29,613	3,590	490	87	195	21,089	3,098	1,026	0	38	38	0	0
9	19	30,962	3,590	7	87	194	21,089	3,098	1,026	0	1,871	1,871	0	887
9	20	31,118	3,590	0	87	198	21,089	3,098	1,026	0	2,030	1,984	46	1,046
9	21	30,913	3,590	0	87	212	21,089	3,098	1,026	0	1,810	1,810	0	826
9	22	30,295	3,590	0	87	226	21,089	3,098	1,026	0	1,179	1,179	0	195
9	23	29,306	3,590	0	87	229	21,089	3,098	1,026	0	186	186	0	0
9	24	28,397	3,590	0	87	221	21,089	3,098	312	0	0	0	0	0
10	1	27,899	3,590	0	87	223	21,089	2,909	0	0	0	0	0	0
10	2	27,666	3,590	0	87	223	21,089	2,677	0	0	0	0	0	0
10	3	27,724	3,590	0	87	224	21,089	2,734	0	0	0	0	0	0
10	4	28,075	3,590	0	87	220	21,089	3,088	0	0	0	0	0	0
10	5	28,513	3,590	0	87	226	21,089	3,098	423	0	0	0	0	0
10	6	29,252	3,590	0	87	232	21,089	3,098	1,026	0	130	130	0	0
10	7	30,032	3,590	0	87	233	21,089	3,098	1,026	94	815	815	0	0
10	8	31,372	3,590	100	87	220	21,089	3,098	1,026	469	1,693	1,693	0	709
10	9	32,681	3,590	2,233	87	224	21,089	3,098	1,026	469	865	865	0	0
10	10	32,941	3,590	4,375	87	231	21,089	3,098	472	0	0	0	0	0
10	11	32,550	3,590	5,543	87	237	21,089	2,005	0	0	0	0	0	0
10	12	31,359	3,590	6,068	87	247	21,089	278	0	0	0	0	0	0
10	13	29,868	3,590	6,149	87	253	19,790	0	0	0	0	0	0	0
10	14	28,309	3,590	6,077	87	253	18,396	0	0	(94)	0	0	0	0
10	15	26,933	3,590	5,742	87	243	17,740	0	0	(469)	0	0	0	0
10	16	26,113	3,590	5,051	87	233	17,621	0	0	(469)	0	0	0	0
10	17	26,468	3,590	2,975	87	216	19,599	0	0	0	0	0	0	0
10	18	28,217	3,590	490	87	195	21,089	2,766	0	0	0	0	0	0
10	19	30,737	3,590	7	87	194	21,089	3,098	1,026	0	1,645	1,645	0	661
10	20	31,318	3,590	0	87	198	21,089	3,098	1,026	0	2,229	1,984	245	1,245
10	21	31,542	3,590	0	87	212	21,089	3,098	1,026	0	2,439	1,984	455	1,455
10	22	30,986	3,590	0	87	226	21,089	3,098	1,026	0	1,870	1,870	0	886
10	23	29,690	3,590	0	87	229	21,089	3,098	1,026	0	571	571	0	0
10	24	28,403	3,590	0	87	221	21,089	3,098	317	0	0	0	0	0
11	1	27,604	3,590	0	87	223	21,089	2,615	0	0	0	0	0	0
11	2	27,575	3,590	0	87	223	21,089	2,586	0	0	0	0	0	0
11	3	27,801	3,590	0	87	224	21,089	2,811	0	0	0	0	0	0
11	4	28,215	3,590	0	87	220	21,089	3,098	131	0	0	0	0	0
11	5	29,007	3,590	0	87	226	21,089	3,098	917	0	0	0	0	0
11	6	30,274	3,590	0	87	232	21,089	3,098	1,026	94	1,057	1,057	0	73
11	7	32,686	3,590	0	87	233	21,089	3,098	1,026	469	3,094	1,984	1,110	2,110
11	8	33,758	3,590	100	87	220	21,089	3,098	1,026	469	4,079	1,984	2,095	3,095
11	9	32,438	3,590	2,233	87	224	21,089	3,098	1,026	0	1,091	1,091	0	107
11	10	30,960	3,590	4,375	87	231	21,089	1,589	0	0	0	0	0	0
11	11	29,130	3,590	5,543	87	237	19,674	0	0	0	0	0	0	0
11	12	26,942	3,590	6,068	87	247	16,949	0	0	0	0	0	0	0
11	13	24,783	3,590	6,149	87	253	14,705	0	0	0	0	0	0	0
11	14	22,961	3,590	6,077	87	253	13,049	0	0	(94)	0	0	0	0
11	15	21,490	3,590	5,742	87	243	12,297	0	0	(469)	0	0	0	0
11	16	20,695	3,590	5,051	87	233	12,203	0	0	(469)	0	0	0	0
11	17	20,969	3,590	2,975	87	216	14,100	0	0	0	0	0	0	0
11	18	22,997	3,590	490	87	195	18,634	0	0	0	0	0	0	0
11	19	26,597	3,590	7	87	194	21,089	1,629	0	0	0	0	0	0
11	20	27,466	3,590	0	87	198	21,089	2,501	0	0	0	0	0	0
11	21	27,476	3,590	0	87	212	21,089	2,498	0	0	0	0	0	0
11	22	26,882	3,590	0	87	226	21,089	1,889	0	0	0	0	0	0
11	23	25,487	3,590	0	87	229	21,089	491	0	0	0	0	0	0
11	24	24,251	3,590	0	87	221	20,353	0	0	0	0	0	0	0
12	1	23,538	3,590	0	87	223	19,638	0	0	0	0	0	0	0
12	2	23,605	3,590	0	87	223	19,705	0	0	0	0	0	0	0
12	3	24,005	3,590	0	87	224	20,103	0	0	0	0	0	0	0
12	4	24,558	3,590	0	87	220	20,661	0	0	0	0	0	0	0
12	5	25,397	3,590	0	87	226	21,089	405	0	0	0	0	0	0
12	6	27,089	3,590	0	87	232	21,089	2,090	0	0	0	0	0	0
12	7	29,790	3,590	0	87	233	21,089	3,098	1,026	469	197	197	0	0
12	8	30,831	3,590	100	87	220	21,089	3,098	1,026	469	1,152	1,152	0	168
12	9	29,418	3,590	2,233	87	224	21,089	2,195	0	0	0	0	0	0
12	10	27,060	3,590	4,375	87	231	18,778	0	0	0	0	0	0	0
12	11	24,885	3,590	5,543	87	237	15,429	0	0	0	0	0	0	0
12	12	23,047	3,590	6,068	87	247	13,054	0	0	0	0	0	0	0
12	13	21,573	3,590	6,149	87	253	11,494	0	0	0	0	0	0	0
12	14	20,394	3,590	6,077	87	253	10,387	0	0	0	0	0	0	0
12	15	19,369	3,590	5,742	87	243	9,707	0	0	0	0	0	0	0
12	16	18,843	3,590	5,051	87	233	9,882	0	0	0	0	0	0	0
12	17	19,114	3,590	2,975	87	216	12,245	0	0	0	0	0	0	0
12	18	20,628	3,590	490	87	195	16,266	0	0	0	0	0	0	0
12	19	23,116	3,590	7	87	194	19,238	0	0	0	0	0	0	0
12	20	23,921	3,590	0	87	198	20,046	0	0	0	0	0	0	0
12	21	23,984	3,590	0	87	212	20,095	0	0	0	0	0	0	0
12	22	23,443	3,590	0	87	226	19,540	0	0	0	0	0	0	0
12	23	22,417	3,590	0	87	229	18,510	0	0	0	0	0	0	0
12	24	21,218	3,590	0	87	221	17,320	0	0	0	0	0	0	0
												19,022	**3,906**	**10,510**

Notes:
Combined Cycle Maximum Output: 21,079 MWh
CT/GT Maximum Output: 3,153 MWh
Steam Turbine Maximum Output: 1,104 MWh
Load Control Maximum Output: 1,882 MWh
Batteries can dispatch at maximum 469 MWh in one hour and 1,032 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	26,846	27	2,018
Loss of Load	6,962	11	2,243

"What If" Gen MW Unavailable
1,000
18

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
									1,982	769				

2029 Combined System Winter Peak Day - ("2010-like" Winter Scenario)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	16,469	3,590	0	87	223	12,569	0	0	0	0	0	0	0
9	2	16,043	3,590	0	87	223	12,143	0	0	0	0	0	0	0
9	3	16,032	3,590	0	87	224	12,132	0	0	0	0	0	0	0
9	4	16,348	3,590	0	87	220	12,451	0	0	0	0	0	0	0
9	5	17,016	3,590	0	87	226	13,113	0	0	0	0	0	0	0
9	6	18,256	3,590	0	87	232	14,348	0	0	0	0	0	0	0
9	7	20,137	3,590	0	87	233	16,228	0	0	0	0	0	0	0
9	8	22,611	3,590	106	87	220	18,608	0	0	0	0	0	0	0
9	9	25,283	3,590	2,533	87	223	18,849	0	0	0	0	0	0	0
9	10	27,048	3,590	4,963	87	230	18,178	0	0	0	0	0	0	0
9	11	28,185	3,590	6,290	87	236	17,981	0	0	0	0	0	0	0
9	12	28,555	3,590	6,869	87	246	17,763	0	0	0	0	0	0	0
9	13	28,748	3,590	6,958	87	252	17,862	0	0	0	0	0	0	0
9	14	28,764	3,590	6,880	87	252	17,955	0	0	0	0	0	0	0
9	15	28,853	3,590	6,497	87	242	18,436	0	0	0	0	0	0	0
9	16	29,024	3,590	5,702	87	232	19,413	0	0	0	0	0	0	0
9	17	29,473	3,590	3,321	87	215	21,089	1,170	0	0	0	0	0	0
9	18	30,566	3,590	532	87	195	21,089	3,098	1,026	0	949	949	0	0
9	19	31,781	3,590	7	87	194	21,089	3,098	1,026	0	2,690	2,018	672	1,672
9	20	31,934	3,590	0	87	198	21,089	3,098	1,026	0	2,847	2,018	829	1,829
9	21	31,759	3,590	0	87	212	21,089	3,098	1,026	0	2,658	2,018	640	1,640
9	22	31,217	3,590	0	87	226	21,089	3,098	1,026	0	2,102	2,018	84	1,084
9	23	30,343	3,590	0	87	229	21,089	3,098	1,026	0	1,224	1,224	0	206
9	24	29,535	3,590	0	87	221	21,089	3,098	1,026	0	424	424	0	0
10	1	29,092	3,590	0	87	223	21,089	3,098	1,005	0	0	0	0	0
10	2	28,889	3,590	0	87	223	21,089	3,098	803	0	0	0	0	0
10	3	28,941	3,590	0	87	224	21,089	3,098	854	0	0	0	0	0
10	4	29,257	3,590	0	87	220	21,089	3,098	1,026	0	147	147	0	0
10	5	29,648	3,590	0	87	226	21,089	3,098	1,026	0	533	533	0	0
10	6	30,309	3,590	0	87	232	21,089	3,098	1,026	0	1,187	1,187	0	169
10	7	31,013	3,590	0	87	233	21,089	3,098	1,026	444	1,446	1,446	0	428
10	8	32,205	3,590	106	87	220	21,089	3,098	1,026	769	2,220	2,018	202	1,202
10	9	33,356	3,590	2,533	87	223	21,089	3,098	1,026	769	940	940	0	0
10	10	33,561	3,590	4,963	87	230	21,089	3,098	504	0	0	0	0	0
10	11	33,188	3,590	6,290	87	236	21,089	1,895	0	0	0	0	0	0
10	12	32,120	3,590	6,869	87	246	21,089	239	0	0	0	0	0	0
10	13	30,788	3,590	6,958	87	252	19,901	0	0	0	0	0	0	0
10	14	29,399	3,590	6,880	87	252	19,034	0	0	(444)	0	0	0	0
10	15	28,178	3,590	6,497	87	242	18,531	0	0	(769)	0	0	0	0
10	16	27,452	3,590	5,702	87	232	18,610	0	0	(769)	0	0	0	0
10	17	27,760	3,590	3,321	87	215	20,546	0	0	0	0	0	0	0
10	18	29,297	3,590	532	87	195	21,089	3,098	707	0	0	0	0	0
10	19	31,526	3,590	7	87	194	21,089	3,098	1,026	0	2,435	2,018	417	1,417
10	20	32,052	3,590	0	87	198	21,089	3,098	1,026	0	2,965	2,018	947	1,947
10	21	32,256	3,590	0	87	212	21,089	3,098	1,026	0	3,155	2,018	1,137	2,137
10	22	31,772	3,590	0	87	226	21,089	3,098	1,026	0	2,657	2,018	639	1,639
10	23	30,634	3,590	0	87	229	21,089	3,098	1,026	0	1,515	1,515	0	497
10	24	29,499	3,590	0	87	221	21,089	3,098	1,026	0	389	389	0	0
11	1	28,794	3,590	0	87	223	21,089	3,098	707	0	0	0	0	0
11	2	28,769	3,590	0	87	223	21,089	3,098	682	0	0	0	0	0
11	3	28,971	3,590	0	87	224	21,089	3,098	883	0	0	0	0	0
11	4	29,338	3,590	0	87	220	21,089	3,098	1,026	0	229	229	0	0
11	5	30,037	3,590	0	87	226	21,089	3,098	1,026	0	922	922	0	0
11	6	31,157	3,590	0	87	232	21,089	3,098	1,026	444	1,591	1,591	0	573
11	7	33,288	3,590	0	87	233	21,089	3,098	1,026	769	3,396	2,018	1,378	2,378
11	8	34,246	3,590	106	87	220	21,089	3,098	1,026	769	4,261	2,018	2,243	3,243
11	9	33,090	3,590	2,533	87	223	21,089	3,098	1,026	0	1,444	1,444	0	426
11	10	31,767	3,590	4,963	87	230	21,089	1,808	0	0	0	0	0	0
11	11	30,135	3,590	6,290	87	236	19,932	0	0	0	0	0	0	0
11	12	28,195	3,590	6,869	87	246	17,403	0	0	0	0	0	0	0
11	13	26,289	3,590	6,958	87	252	15,403	0	0	0	0	0	0	0
11	14	24,684	3,590	6,880	87	252	14,319	0	0	(444)	0	0	0	0
11	15	23,127	3,590	6,497	87	242	13,479	0	0	(769)	0	0	0	0
11	16	22,048	3,590	5,702	87	232	13,206	0	0	(769)	0	0	0	0
11	17	22,435	3,590	3,321	87	215	15,221	0	0	0	0	0	0	0
11	18	24,700	3,590	532	87	195	20,297	0	0	0	0	0	0	0
11	19	27,864	3,590	7	87	194	21,089	2,897	0	0	0	0	0	0
11	20	28,632	3,590	0	87	198	21,089	3,098	570	0	0	0	0	0
11	21	28,643	3,590	0	87	212	21,089	3,098	568	0	0	0	0	0
11	22	28,125	3,590	0	87	226	21,089	3,098	35	0	0	0	0	0
11	23	26,903	3,590	0	87	229	21,089	1,909	0	0	0	0	0	0
11	24	25,820	3,590	0	87	221	21,089	833	0	0	0	0	0	0
12	1	25,193	3,590	0	87	223	21,089	204	0	0	0	0	0	0
12	2	25,251	3,590	0	87	223	21,089	262	0	0	0	0	0	0
12	3	25,600	3,590	0	87	224	21,089	610	0	0	0	0	0	0
12	4	26,086	3,590	0	87	220	21,089	1,100	0	0	0	0	0	0
12	5	26,820	3,590	0	87	226	21,089	1,829	0	0	0	0	0	0
12	6	28,302	3,590	0	87	232	21,089	3,098	206	0	0	0	0	0
12	7	30,669	3,590	0	87	233	21,089	3,098	1,026	769	777	777	0	0
12	8	31,585	3,590	106	87	220	21,089	3,098	1,026	769	1,601	1,601	0	583
12	9	30,357	3,590	2,533	87	223	21,089	2,835	0	0	0	0	0	0
12	10	28,288	3,590	4,963	87	230	19,418	0	0	0	0	0	0	0
12	11	26,372	3,590	6,290	87	236	16,169	0	0	0	0	0	0	0
12	12	24,751	3,590	6,869	87	246	13,959	0	0	0	0	0	0	0
12	13	23,266	3,590	6,958	87	252	12,379	0	0	0	0	0	0	0
12	14	21,663	3,590	6,880	87	252	10,853	0	0	0	0	0	0	0
12	15	20,264	3,590	6,497	87	242	9,848	0	0	0	0	0	0	0
12	16	19,544	3,590	5,702	87	232	9,933	0	0	0	0	0	0	0
12	17	19,922	3,590	3,321	87	215	12,708	0	0	0	0	0	0	0
12	18	22,008	3,590	532	87	195	17,605	0	0	0	0	0	0	0
12	19	24,795	3,590	7	87	194	20,917	0	0	0	0	0	0	0
12	20	25,504	3,590	0	87	198	21,089	540	0	0	0	0	0	0
12	21	25,557	3,590	0	87	212	21,089	580	0	0	0	0	0	0
12	22	25,082	3,590	0	87	226	21,089	90	0	0	0	0	0	0
12	23	24,181	3,590	0	87	229	20,275	0	0	0	0	0	0	0
12	24	22,810	3,590	0	87	221	18,913	0	0	0	0	0	0	0
												26,846	**6,962**	**16,639**

Notes:
Combined Cycle Maximum Output: 21,079 MWh
CT/GT Maximum Output: 3,153 MWh
Steam Turbine Maximum Output: 1,104 MWh
Load Control Maximum Output: 1,882 MWh
Batteries can dispatch at maximum 469 MWh in one hour and 1,032 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	121,808	78	2,052
Loss of Load	431,379	74	14,663

"What If" Gen MW Unavailable
1,000
76

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

2030 Combined System Winter Peak Day - ("2010-like" Winter Scenario)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	22,681	3,590	0	87	222	18,782	0	0	0	0	0	0	0
9	2	22,098	3,590	0	87	222	18,199	0	0	0	0	0	0	0
9	3	22,086	3,590	0	87	223	18,186	0	0	0	0	0	0	0
9	4	22,521	3,590	0	87	219	18,625	0	0	0	0	0	0	0
9	5	23,442	3,590	0	87	225	19,540	0	0	0	0	0	0	0
9	6	25,152	3,590	0	87	231	21,089	155	0	0	0	0	0	0
9	7	27,743	3,590	0	87	232	21,089	2,745	0	0	0	0	0	0
9	8	31,147	3,590	111	87	219	21,089	3,095	1,026	0	1,930	1,930	0	752
9	9	34,817	3,590	2,792	87	223	21,089	3,095	1,026	0	2,915	2,052	863	1,737
9	10	37,237	3,590	5,480	87	229	21,089	3,095	1,026	0	2,640	2,052	588	1,462
9	11	38,791	3,590	6,953	87	235	21,089	3,095	1,026	0	2,715	2,052	663	1,537
9	12	39,292	3,590	7,597	87	245	21,089	3,095	1,026	0	2,562	2,052	510	1,384
9	13	39,549	3,590	7,698	87	251	21,089	3,095	1,026	0	2,713	2,052	661	1,535
9	14	39,561	3,590	7,616	87	251	21,089	3,095	1,026	0	2,807	2,052	755	1,630
9	15	39,677	3,590	7,194	87	242	21,089	3,095	1,026	0	3,354	2,052	1,302	2,177
9	16	39,906	3,590	6,315	87	232	21,089	3,095	1,026	0	4,471	2,052	2,419	3,294
9	17	40,521	3,590	3,656	87	215	21,089	3,095	1,026	0	7,762	2,052	5,710	6,585
9	18	42,028	3,590	577	87	194	21,089	3,095	1,026	0	12,369	2,052	10,317	11,192
9	19	43,711	3,590	7	87	193	21,089	3,095	1,026	0	14,624	2,052	12,572	13,446
9	20	43,931	3,590	0	87	197	21,089	3,095	1,026	1,169	13,678	2,052	11,626	12,500
9	21	43,693	3,590	0	87	211	21,089	3,095	1,026	0	14,595	2,052	12,543	13,417
9	22	42,950	3,590	0	87	225	21,089	3,095	1,026	0	13,837	2,052	11,785	12,660
9	23	41,747	3,590	0	87	228	21,089	3,095	1,026	0	12,631	2,052	10,579	11,454
9	24	40,631	3,590	0	87	220	21,089	3,095	1,026	0	11,524	2,052	9,472	10,346
10	1	40,021	3,590	0	87	222	21,089	3,095	1,026	0	10,912	2,052	8,860	9,734
10	2	39,743	3,590	0	87	222	21,089	3,095	1,026	0	10,634	2,052	8,582	9,456
10	3	39,815	3,590	0	87	223	21,089	3,095	1,026	0	10,705	2,052	8,653	9,527
10	4	40,252	3,590	0	87	219	21,089	3,095	1,026	0	11,146	2,052	9,094	9,968
10	5	40,794	3,590	0	87	225	21,089	3,095	1,026	0	11,681	2,052	9,629	10,504
10	6	41,706	3,590	0	87	231	21,089	3,095	1,026	0	12,588	2,052	10,536	11,410
10	7	42,682	3,590	0	87	232	21,089	3,095	1,026	0	13,563	2,052	11,511	12,385
10	8	44,326	3,590	111	87	219	21,089	3,095	1,026	269	14,840	2,052	12,788	13,663
10	9	45,907	3,590	2,792	87	223	21,089	3,095	1,026	0	14,005	2,052	11,953	12,827
10	10	46,177	3,590	5,480	87	229	21,089	3,095	1,026	0	11,580	2,052	9,528	10,402
10	11	45,649	3,590	6,953	87	235	21,089	3,095	1,026	0	9,573	2,052	7,521	8,395
10	12	44,173	3,590	7,597	87	245	21,089	3,095	1,026	0	7,443	2,052	5,391	6,265
10	13	42,332	3,590	7,698	87	251	21,089	3,095	1,026	0	5,496	2,052	3,444	4,318
10	14	40,415	3,590	7,616	87	251	21,089	3,095	1,026	0	3,661	2,052	1,609	2,483
10	15	38,733	3,590	7,194	87	242	21,089	3,095	1,026	0	2,410	2,052	358	1,232
10	16	37,733	3,590	6,315	87	232	21,089	3,095	1,026	0	2,299	2,052	247	1,121
10	17	38,153	3,590	3,656	87	215	21,089	3,095	1,026	0	5,395	2,052	3,343	4,217
10	18	40,264	3,590	577	87	194	21,089	3,095	1,026	0	10,606	2,052	8,554	9,428
10	19	43,332	3,590	7	87	193	21,089	3,095	1,026	0	14,244	2,052	12,192	13,066
10	20	44,063	3,590	0	87	197	21,089	3,095	1,026	0	14,979	2,052	12,927	13,801
10	21	44,347	3,590	0	87	211	21,089	3,095	1,026	0	15,248	2,052	13,196	14,071
10	22	43,684	3,590	0	87	225	21,089	3,095	1,026	0	14,572	2,052	12,520	13,394
10	23	42,121	3,590	0	87	228	21,089	3,095	1,026	0	13,006	2,052	10,954	11,829
10	24	40,562	3,590	0	87	220	21,089	3,095	1,026	0	11,454	2,052	9,402	10,277
11	1	39,591	3,590	0	87	222	21,089	3,095	1,026	0	10,482	2,052	8,430	9,304
11	2	39,557	3,590	0	87	222	21,089	3,095	1,026	0	10,447	2,052	8,395	9,270
11	3	39,837	3,590	0	87	223	21,089	3,095	1,026	0	10,726	2,052	8,674	9,549
11	4	40,342	3,590	0	87	219	21,089	3,095	1,026	0	11,236	2,052	9,184	10,058
11	5	41,304	3,590	0	87	225	21,089	3,095	1,026	0	12,192	2,052	10,140	11,014
11	6	42,845	3,590	0	87	231	21,089	3,095	1,026	0	13,726	2,052	11,674	12,549
11	7	45,776	3,590	0	87	232	21,089	3,095	1,026	1,169	15,488	2,052	13,436	14,310
11	8	47,101	3,590	111	87	219	21,089	3,095	1,026	1,169	16,715	2,052	14,663	15,537
11	9	45,516	3,590	2,792	87	223	21,089	3,095	1,026	0	13,613	2,052	11,561	12,436
11	10	43,687	3,590	5,480	87	229	21,089	3,095	1,026	0	9,090	2,052	7,038	7,912
11	11	41,433	3,590	6,953	87	235	21,089	3,095	1,026	0	5,357	2,052	3,305	4,179
11	12	38,761	3,590	7,597	87	245	21,089	3,095	1,026	0	2,031	2,031	0	853
11	13	36,139	3,590	7,698	87	251	21,089	3,095	329	0	0	0	0	0
11	14	33,933	3,590	7,616	87	251	21,089	1,301	216	(216)	0	0	0	0
11	15	31,794	3,590	7,194	87	242	20,681	143	1,026	(1,169)	0	0	0	0
11	16	30,312	3,590	6,315	87	232	20,088	143	1,026	(1,169)	0	0	0	0
11	17	30,840	3,590	3,656	87	215	21,089	2,346	1,026	(1,169)	0	0	0	0
11	18	33,948	3,590	577	87	194	21,089	3,095	1,026	0	4,289	2,052	2,237	3,112
11	19	38,291	3,590	7	87	193	21,089	3,095	1,026	0	9,204	2,052	7,152	8,026
11	20	39,347	3,590	0	87	197	21,089	3,095	1,026	0	10,263	2,052	8,211	9,085
11	21	39,365	3,590	0	87	211	21,089	3,095	1,026	0	10,266	2,052	8,214	9,089
11	22	38,655	3,590	0	87	225	21,089	3,095	1,026	0	9,542	2,052	7,490	8,365
11	23	36,980	3,590	0	87	228	21,089	3,095	1,026	0	7,865	2,052	5,813	6,687
11	24	35,493	3,590	0	87	220	21,089	3,095	1,026	0	6,386	2,052	4,334	5,208
12	1	34,632	3,590	0	87	222	21,089	3,095	1,026	0	5,522	2,052	3,470	4,345
12	2	34,711	3,590	0	87	222	21,089	3,095	1,026	0	5,602	2,052	3,550	4,424
12	3	35,190	3,590	0	87	223	21,089	3,095	1,026	0	6,079	2,052	4,027	4,902
12	4	35,857	3,590	0	87	219	21,089	3,095	1,026	0	6,751	2,052	4,699	5,573
12	5	36,864	3,590	0	87	225	21,089	3,095	1,026	0	7,751	2,052	5,699	6,574
12	6	38,896	3,590	0	87	231	21,089	3,095	1,026	0	9,778	2,052	7,726	8,600
12	7	42,142	3,590	0	87	232	21,089	3,095	1,026	0	13,022	2,052	10,970	11,845
12	8	43,402	3,590	111	87	219	21,089	3,095	1,026	0	14,185	2,052	12,133	13,007
12	9	41,721	3,590	2,792	87	223	21,089	3,095	1,026	0	9,819	2,052	7,767	8,642
12	10	38,883	3,590	5,480	87	229	21,089	3,095	1,026	0	4,286	2,052	2,234	3,108
12	11	36,249	3,590	6,953	87	235	21,089	3,095	1,026	0	173	173	0	0
12	12	34,020	3,590	7,597	87	245	21,089	1,412	0	0	0	0	0	0
12	13	31,980	3,590	7,698	87	251	20,354	0	0	0	0	0	0	0
12	14	29,778	3,590	7,616	87	251	18,234	0	0	0	0	0	0	0
12	15	27,858	3,590	7,194	87	242	16,746	0	0	0	0	0	0	0
12	16	26,870	3,590	6,315	87	232	16,646	0	0	0	0	0	0	0
12	17	27,387	3,590	3,656	87	215	19,839	0	0	0	0	0	0	0
12	18	30,247	3,590	577	87	194	21,089	3,095	1,026	0	589	589	0	0
12	19	34,072	3,590	7	87	193	21,089	3,095	1,026	0	4,985	2,052	2,933	3,807
12	20	35,046	3,590	0	87	197	21,089	3,095	1,026	0	5,962	2,052	3,910	4,784
12	21	35,119	3,590	0	87	211	21,089	3,095	1,026	0	6,021	2,052	3,969	4,843
12	22	34,466	3,590	0	87	225	21,089	3,095	1,026	0	5,353	2,052	3,301	4,176
12	23	33,229	3,590	0	87	228	21,089	3,095	1,026	0	4,114	2,052	2,062	2,936
12	24	31,349	3,590	0	87	220	21,089	3,095	1,026	0	2,242	2,052	190	1,064
												121,808	**431,379**	**482,947**

Notes:
Combined Cycle Maximum Output: 21,089 MWh
CT/GT Maximum Output: 3,095 MWh
Steam Turbine Maximum Output: 1,026 MWh
Load Control Maximum Output: 2,052 MWh in one hour
Batteries can dispatch at maximum 1,169 MWh in one hour and 3,723 MWh total (Assumed to start fully charged)
Nuclear, Solar, DSM, and Purchases are dispatched at full, then CC's, then CTs, then STs, then Batteries, then Load Control cover remaining load

* Red font indicates hours additional LC will be implemented

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Load Control & Loss of Load Summary
("1989-Like Winter" - w/ and w/o Manatee 1&2)

Year	Scenario	Load Control # of Hours	Load Control (MWh)	Loss of Load # of Hours	Loss of Load (MWh)	Maximum Loss of Load (MW)	% of Load Unserved	Loss of Load # of Hours w/ 1,000 MW Out
2022	FPL - w/o Manatee 1&2	53	82,567	33	56,948	4,182	2.4%	47
	FPL - w/ Manatee 1&2	38	47,398	14	15,425	2,540	0.6%	27
	Difference	(15)	(35,169)	(19)	(41,522)	(1,642)	-1.7%	(20)
	Gulf Stand-Alone	0	0	0	0	0	0.0%	0
2022	FPL - w/o Manatee 1&2 & w/ Gulf Excess Capacity*	29	47,398	13	11,772	2,625	0.5%	23
	Difference From w/o Excess Capacity	(24)	(35,169)	(20)	(45,175)	(1,556)	-1.9%	(24)
	FPL - w/ Manatee 1&2 & w/ Gulf Excess Capacity*	25	17,727	2	1,007	983	0.0%	10
	Difference From w/o Excess Capacity	(13)	(29,670)	(12)	(14,419)	(1,556)	(0)	(17)

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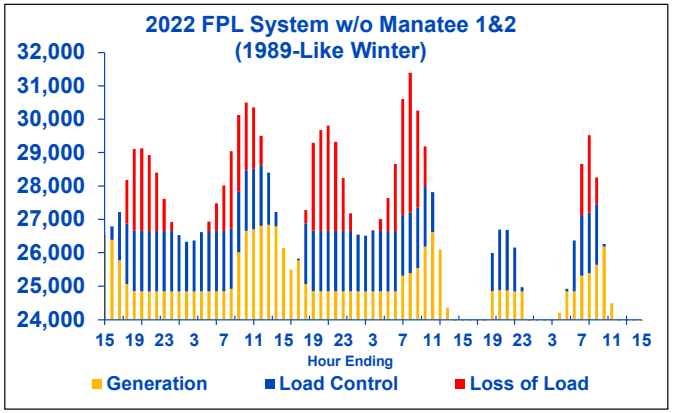

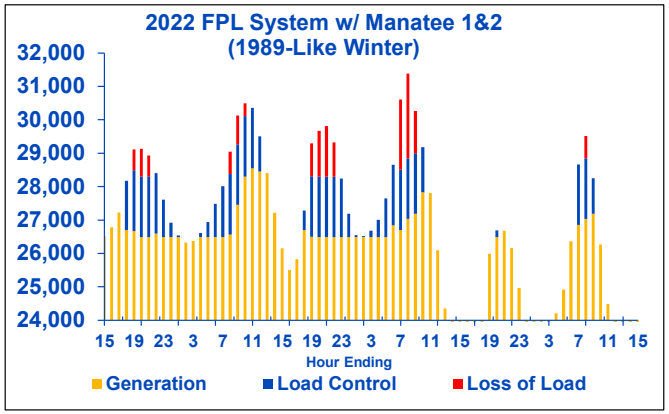

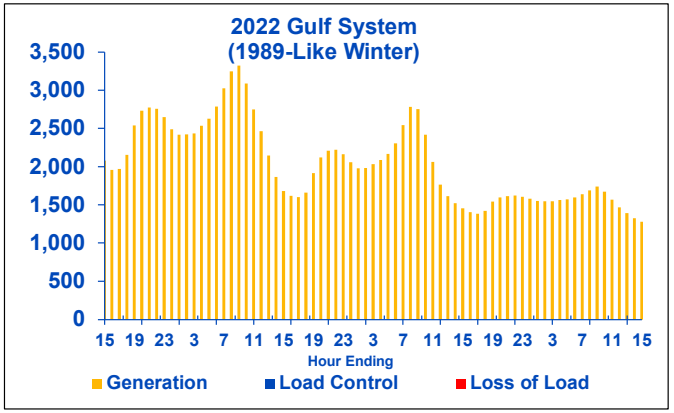

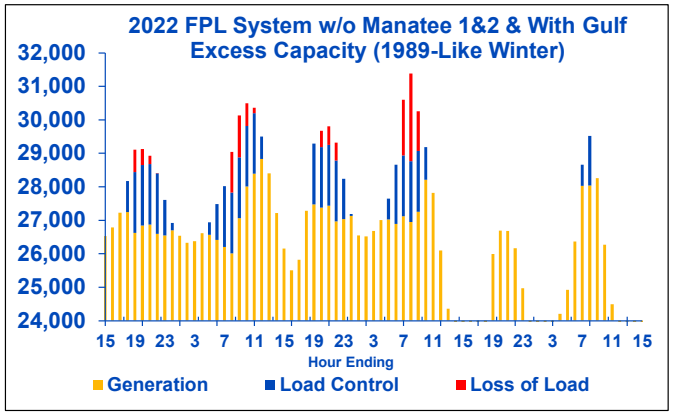

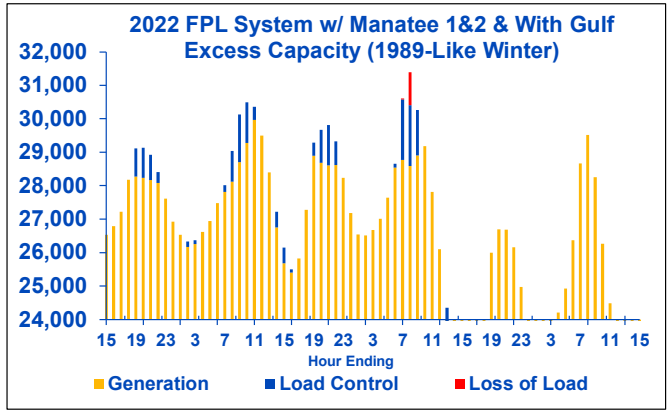

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1989-Like Winter

	2022 FPL System						2022 FPL System w/ Gulf Excess Capacity						2022 Gulf System			
		W/o Manatee 1&2			W/ Manatee 1&2			W/o Manatee 1&2			W/ Manatee 1&2			--		
Hour	Load Forecast	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Served Before Load Control	Load Control	Loss of Load	Load Forecast	Load Served Before Load Control	Load Control	Loss of Load
1	14,659	14,659	0	0	14,659	0	0	14,659	0	0	14,659	0	0	1,585	1,585	0	0
2	14,232	14,232	0	0	14,232	0	0	14,232	0	0	14,232	0	0	1,590	1,590	0	0
3	14,187	14,187	0	0	14,187	0	0	14,187	0	0	14,187	0	0	1,622	1,622	0	0
4	14,455	14,455	0	0	14,455	0	0	14,455	0	0	14,455	0	0	1,662	1,662	0	0
5	15,036	15,036	0	0	15,036	0	0	15,036	0	0	15,036	0	0	1,750	1,750	0	0
6	16,121	16,121	0	0	16,121	0	0	16,121	0	0	16,121	0	0	1,958	1,958	0	0
7	17,782	17,782	0	0	17,782	0	0	17,782	0	0	17,782	0	0	2,250	2,250	0	0
8	20,025	20,025	0	0	20,025	0	0	20,025	0	0	20,025	0	0	2,548	2,548	0	0
9	22,536	22,536	0	0	22,536	0	0	22,536	0	0	22,536	0	0	2,743	2,743	0	0
10	24,267	24,267	0	0	24,267	0	0	24,267	0	0	24,267	0	0	2,768	2,768	0	0
11	25,444	25,444	0	0	25,444	0	0	25,444	0	0	25,444	0	0	2,693	2,693	0	0
12	25,901	25,901	0	0	25,901	0	0	25,901	0	0	25,901	0	0	2,563	2,563	0	0
13	26,214	26,214	0	0	26,214	0	0	26,214	0	0	26,214	0	0	2,387	2,387	0	0
14	26,353	26,353	0	0	26,353	0	0	26,353	0	0	26,353	0	0	2,208	2,208	0	0
15	26,530	26,530	0	0	26,530	0	0	26,530	0	0	26,530	0	0	2,079	2,079	0	0
16	26,785	26,383	402	0	26,785	0	0	26,785	0	0	26,785	0	0	1,956	1,956	0	0
17	27,221	25,773	1,448	0	27,221	0	0	27,221	0	0	27,221	0	0	1,968	1,968	0	0
18	28,175	25,061	1,812	1,302	26,703	1,472	0	27,242	933	0	28,175	0	0	2,154	2,154	0	0
19	29,110	24,855	1,812	2,443	26,674	1,812	624	26,626	1,812	673	28,268	842	0	2,541	2,541	0	0
20	29,130	24,848	1,812	2,471	26,490	1,812	829	26,838	1,812	480	28,234	896	0	2,732	2,732	0	0
21	28,927	24,848	1,812	2,267	26,490	1,812	625	26,871	1,812	244	28,163	764	0	2,776	2,776	0	0
22	28,404	24,848	1,812	1,745	26,593	1,812	0	26,592	1,812	0	28,078	326	0	2,755	2,755	0	0
23	27,612	24,848	1,812	952	26,490	1,122	0	26,546	1,066	0	27,612	0	0	2,649	2,649	0	0
24	26,921	24,848	1,812	261	26,490	431	0	26,696	225	0	26,921	0	0	2,490	2,490	0	0
1	26,534	24,848	1,686	0	26,490	44	0	26,534	0	0	26,534	0	0	2,416	2,416	0	0
2	26,330	24,848	1,482	0	26,330	0	0	26,330	0	0	26,169	160	0	2,421	2,421	0	0
3	26,371	24,848	1,523	0	26,371	0	0	26,371	0	0	26,252	119	0	2,436	2,436	0	0
4	26,615	24,848	1,767	0	26,490	125	0	26,615	0	0	26,615	0	0	2,535	2,535	0	0
5	26,938	24,848	1,812	278	26,490	448	0	26,563	375	0	26,938	0	0	2,629	2,629	0	0
6	27,483	24,848	1,812	823	26,490	993	0	26,411	1,072	0	27,483	0	0	2,787	2,787	0	0
7	28,016	24,848	1,812	1,356	26,490	1,526	0	26,204	1,812	0	27,817	199	0	3,024	3,024	0	0
8	29,040	24,923	1,812	2,305	26,565	1,812	663	26,012	1,812	1,217	28,123	918	0	3,249	3,249	0	0
9	30,129	26,014	1,812	2,303	27,457	1,812	860	27,063	1,812	1,254	28,705	1,424	0	3,323	3,323	0	0
10	30,495	26,658	1,812	2,025	28,300	1,812	383	28,005	1,812	679	29,271	1,223	0	3,088	3,088	0	0
11	30,359	26,706	1,812	1,841	28,547	1,812	0	28,388	1,812	159	29,966	393	0	2,750	2,750	0	0
12	29,500	26,808	1,812	880	28,450	1,050	0	28,831	669	0	29,500	0	0	2,464	2,464	0	0
13	28,400	26,837	1,563	0	28,400	0	0	28,400	0	0	28,400	0	0	2,147	2,147	0	0
14	27,220	26,786	434	0	27,220	0	0	27,220	0	0	26,751	469	0	1,863	1,863	0	0
15	26,150	26,150	0	0	26,150	0	0	26,150	0	0	25,681	469	0	1,680	1,680	0	0
16	25,500	25,500	0	0	25,500	0	0	25,500	0	0	25,407	94	0	1,617	1,617	0	0
17	25,823	25,773	50	0	25,823	0	0	25,823	0	0	25,823	0	0	1,601	1,601	0	0
18	27,282	25,061	1,812	409	26,703	579	0	27,282	0	0	27,282	0	0	1,659	1,659	0	0
19	29,290	24,855	1,812	2,623	26,497	1,812	981	27,478	1,812	0	28,892	398	0	1,917	1,917	0	0
20	29,670	24,848	1,812	3,010	26,490	1,812	1,368	27,377	1,812	481	28,685	985	0	2,121	2,121	0	0
21	29,811	24,848	1,812	3,151	26,490	1,812	1,509	27,438	1,812	562	28,611	1,200	0	2,209	2,209	0	0
22	29,323	24,848	1,812	2,663	26,490	1,812	1,021	26,970	1,812	541	28,612	711	0	2,222	2,222	0	0
23	28,236	24,848	1,812	1,577	26,490	1,746	0	27,032	1,205	0	28,236	0	0	2,163	2,163	0	0
24	27,185	24,848	1,812	526	26,490	695	0	27,129	57	0	27,185	0	0	2,058	2,058	0	0
1	26,543	24,848	1,695	0	26,490	53	0	26,543	0	0	26,543	0	0	1,976	1,976	0	0
2	26,515	24,848	1,667	0	26,490	25	0	26,515	0	0	26,515	0	0	1,980	1,980	0	0
3	26,679	24,848	1,812	19	26,490	189	0	26,679	0	0	26,679	0	0	2,034	2,034	0	0
4	27,006	24,848	1,812	346	26,490	516	0	27,006	0	0	27,006	0	0	2,087	2,087	0	0
5	27,644	24,848	1,812	984	26,490	1,154	0	27,027	617	0	27,644	0	0	2,165	2,165	0	0
6	28,657	24,848	1,812	1,997	26,845	1,812	0	26,894	1,763	0	28,536	121	0	2,303	2,303	0	0
7	30,601	25,317	1,812	3,472	26,698	1,812	2,092	27,124	1,812	1,665	28,766	1,812	23	2,543	2,543	0	0
8	31,386	25,392	1,812	4,182	27,034	1,812	2,540	26,949	1,812	2,625	28,591	1,812	983	2,781	2,781	0	0
9	30,259	25,545	1,812	2,903	27,187	1,812	1,261	27,256	1,812	1,191	28,898	1,361	0	2,755	2,755	0	0
10	29,184	26,189	1,812	1,182	27,831	1,352	0	28,207	976	0	29,184	0	0	2,416	2,416	0	0
11	27,814	26,613	1,201	0	27,814	0	0	27,814	0	0	27,814	0	0	2,060	2,060	0	0
12	26,097	26,097	0	0	26,097	0	0	26,097	0	0	26,097	0	0	1,764	1,764	0	0
13	24,354	24,354	0	0	24,354	0	0	24,354	0	0	23,885	469	0	1,613	1,613	0	0
14	22,864	22,864	0	0	22,864	0	0	22,864	0	0	22,395	469	0	1,522	1,522	0	0
15	21,398	21,398	0	0	21,398	0	0	21,398	0	0	21,304	94	0	1,452	1,452	0	0
16	20,384	20,384	0	0	20,384	0	0	20,384	0	0	20,384	0	0	1,403	1,403	0	0
17	20,791	20,791	0	0	20,791	0	0	20,791	0	0	20,791	0	0	1,381	1,381	0	0
18	22,989	22,989	0	0	22,989	0	0	22,989	0	0	22,989	0	0	1,422	1,422	0	0
19	25,992	24,855	1,137	0	25,992	0	0	25,992	0	0	25,992	0	0	1,541	1,541	0	0
20	26,691	24,879	1,812	0	26,490	200	0	26,691	0	0	26,691	0	0	1,597	1,597	0	0
21	26,684	24,873	1,812	0	26,684	0	0	26,684	0	0	26,684	0	0	1,613	1,613	0	0
22	26,162	24,848	1,314	0	26,162	0	0	26,162	0	0	26,162	0	0	1,621	1,621	0	0
23	24,969	24,848	121	0	24,969	0	0	24,969	0	0	24,969	0	0	1,606	1,606	0	0
24	23,927	23,927	0	0	23,927	0	0	23,927	0	0	23,927	0	0	1,578	1,578	0	0
1	23,336	23,336	0	0	23,336	0	0	23,336	0	0	23,336	0	0	1,550	1,550	0	0
2	23,397	23,397	0	0	23,397	0	0	23,397	0	0	23,397	0	0	1,547	1,547	0	0
3	23,742	23,742	0	0	23,742	0	0	23,742	0	0	23,742	0	0	1,548	1,548	0	0
4	24,205	24,205	0	0	24,205	0	0	24,205	0	0	24,205	0	0	1,565	1,565	0	0
5	24,923	24,848	75	0	24,923	0	0	24,923	0	0	24,923	0	0	1,573	1,573	0	0
6	26,365	24,848	1,517	0	26,365	0	0	26,365	0	0	26,365	0	0	1,597	1,597	0	0
7	28,661	25,317	1,812	1,532	26,850	1,812	0	28,028	633	0	28,661	0	0	1,639	1,639	0	0
8	29,516	25,392	1,812	2,312	27,034	1,812	670	28,042	1,474	0	29,516	0	0	1,688	1,688	0	0
9	28,255	25,639	1,812	804	27,187	1,068	0	28,255	0	0	28,255	0	0	1,740	1,740	0	0
10	26,267	26,189	77	0	26,267	0	0	26,267	0	0	26,267	0	0	1,673	1,673	0	0
11	24,486	24,486	0	0	24,486	0	0	24,486	0	0	24,486	0	0	1,567	1,567	0	0
12	22,989	22,989	0	0	22,989	0	0	22,989	0	0	22,989	0	0	1,468	1,468	0	0
13	21,601	21,601	0	0	21,601	0	0	21,601	0	0	21,601	0	0	1,393	1,393	0	0
14	20,088	20,088	0	0	20,088	0	0	20,088	0	0	20,088	0	0	1,324	1,324	0	0
15	18,754	18,754	0	0	18,754	0	0	18,754	0	0	18,754	0	0	1,278	1,278	0	0
16	18,064	18,064	0	0	18,064	0	0	18,064	0	0	18,064	0	0	1,257	1,257	0	0
17	18,444	18,444	0	0	18,444	0	0	18,444	0	0	18,444	0	0	1,252	1,252	0	0
18	20,487	20,487	0	0	20,487	0	0	20,487	0	0	20,487	0	0	1,273	1,273	0	0
19	23,155	23,155	0	0	23,155	0	0	23,155	0	0	23,155	0	0	1,357	1,357	0	0
20	23,820	23,820	0	0	23,820	0	0	23,820	0	0	23,820	0	0	1,391	1,391	0	0
21	23,882	23,882	0	0	23,882	0	0	23,882	0	0	23,882	0	0	1,382	1,382	0	0
22	23,432	23,432	0	0	23,432	0	0	23,432	0	0	23,432	0	0	1,363	1,363	0	0
23	22,570	22,570	0	0	22,570	0	0	22,570	0	0	22,570	0	0	1,335	1,335	0	0
24	21,243	21,243	0	0	21,243	0	0	21,243	0	0	21,243	0	0	1,308	1,308	0	0

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	82,567	53	1,812
Loss of Load	56,948	33	4,182

"What If" Gen MW Unavailable
1,000
47

2022 FPL System Winter Peak Day Without Manatee 1&2 - (1989-Like Winter)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	14,659	3,590	0	20	114	10,936	0	0	0	0	0	0	0
9	2	14,232	3,590	0	20	114	10,508	0	0	0	0	0	0	0
9	3	14,187	3,590	0	20	114	10,464	0	0	0	0	0	0	0
9	4	14,455	3,590	0	20	114	10,732	0	0	0	0	0	0	0
9	5	15,036	3,590	0	20	114	11,313	0	0	0	0	0	0	0
9	6	16,121	3,590	0	20	114	12,398	0	0	0	0	0	0	0
9	7	17,782	3,590	0	20	114	14,059	0	0	0	0	0	0	0
9	8	20,025	3,590	75	20	114	16,227	0	0	0	0	0	0	0
9	9	22,536	3,590	697	20	114	18,116	0	0	0	0	0	0	0
9	10	24,267	3,590	1,341	20	114	18,979	223	0	0	0	0	0	0
9	11	25,444	3,590	1,765	20	114	18,979	977	0	0	0	0	0	0
9	12	25,901	3,590	1,960	20	114	18,979	1,239	0	0	0	0	0	0
9	13	26,214	3,590	1,989	20	114	18,979	1,523	0	0	0	0	0	0
9	14	26,353	3,590	1,938	20	114	18,979	1,713	0	0	0	0	0	0
9	15	26,530	3,590	1,803	20	114	18,979	2,025	0	0	0	0	0	0
9	16	26,785	3,590	1,535	20	114	18,979	2,146	0	0	402	402	0	0
9	17	27,221	3,590	925	20	114	18,979	2,146	0	0	1,448	1,448	0	637
9	18	28,175	3,590	213	20	114	18,979	2,146	0	0	3,114	1,812	1,302	2,302
9	19	29,110	3,590	7	20	114	18,979	2,146	0	0	4,255	1,812	2,443	3,443
9	20	29,130	3,590	0	20	114	18,979	2,146	0	0	4,282	1,812	2,471	3,471
9	21	28,927	3,590	0	20	114	18,979	2,146	0	0	4,079	1,812	2,267	3,267
9	22	28,404	3,590	0	20	114	18,979	2,146	0	0	3,556	1,812	1,745	2,745
9	23	27,612	3,590	0	20	114	18,979	2,146	0	0	2,764	1,812	952	1,952
9	24	26,921	3,590	0	20	114	18,979	2,146	0	0	2,073	1,812	261	1,261
10	1	26,534	3,590	0	20	114	18,979	2,146	0	0	1,686	1,686	0	875
10	2	26,330	3,590	0	20	114	18,979	2,146	0	0	1,482	1,482	0	670
10	3	26,371	3,590	0	20	114	18,979	2,146	0	0	1,523	1,523	0	711
10	4	26,615	3,590	0	20	114	18,979	2,146	0	0	1,767	1,767	0	955
10	5	26,938	3,590	0	20	114	18,979	2,146	0	0	2,090	1,812	278	1,278
10	6	27,483	3,590	0	20	114	18,979	2,146	0	0	2,635	1,812	823	1,823
10	7	28,016	3,590	0	20	114	18,979	2,146	0	0	3,168	1,812	1,356	2,356
10	8	29,040	3,590	75	20	114	18,979	2,146	0	0	4,117	1,812	2,305	3,305
10	9	30,129	3,590	697	20	114	18,979	2,146	0	469	4,115	1,812	2,303	3,303
10	10	30,495	3,590	1,341	20	114	18,979	2,146	0	469	3,836	1,812	2,025	3,025
10	11	30,359	3,590	1,765	20	114	18,979	2,146	0	94	3,653	1,812	1,841	2,841
10	12	29,500	3,590	1,960	20	114	18,979	2,146	0	0	2,692	1,812	880	1,880
10	13	28,400	3,590	1,989	20	114	18,979	2,146	0	0	1,563	1,563	0	751
10	14	27,220	3,590	1,938	20	114	18,979	2,146	0	0	434	434	0	0
10	15	26,150	3,590	1,803	20	114	18,979	2,114	0	(469)	0	0	0	0
10	16	25,500	3,590	1,535	20	114	18,979	1,732	0	(469)	0	0	0	0
10	17	25,823	3,590	925	20	114	18,979	2,146	0	0	50	50	0	0
10	18	27,282	3,590	213	20	114	18,979	2,146	0	0	2,221	1,812	409	1,409
10	19	29,290	3,590	7	20	114	18,979	2,146	0	0	4,434	1,812	2,623	3,623
10	20	29,670	3,590	0	20	114	18,979	2,146	0	0	4,822	1,812	3,010	4,010
10	21	29,811	3,590	0	20	114	18,979	2,146	0	0	4,963	1,812	3,151	4,151
10	22	29,323	3,590	0	20	114	18,979	2,146	0	0	4,475	1,812	2,663	3,663
10	23	28,236	3,590	0	20	114	18,979	2,146	0	0	3,388	1,812	1,577	2,577
10	24	27,185	3,590	0	20	114	18,979	2,146	0	0	2,337	1,812	526	1,526
11	1	26,543	3,590	0	20	114	18,979	2,146	0	0	1,695	1,695	0	883
11	2	26,515	3,590	0	20	114	18,979	2,146	0	0	1,667	1,667	0	856
11	3	26,679	3,590	0	20	114	18,979	2,146	0	0	1,831	1,812	19	1,019
11	4	27,006	3,590	0	20	114	18,979	2,146	0	0	2,158	1,812	346	1,346
11	5	27,644	3,590	0	20	114	18,979	2,146	0	0	2,796	1,812	984	1,984
11	6	28,657	3,590	0	20	114	18,979	2,146	0	0	3,809	1,812	1,997	2,997
11	7	30,601	3,590	0	20	114	18,979	2,146	0	469	5,284	1,812	3,472	4,472
11	8	31,386	3,590	75	20	114	18,979	2,146	0	469	5,993	1,812	4,182	5,182
11	9	30,259	3,590	697	20	114	18,979	2,146	0	0	4,714	1,812	2,903	3,903
11	10	29,184	3,590	1,341	20	114	18,979	2,146	0	0	2,994	1,812	1,182	2,182
11	11	27,814	3,590	1,765	20	114	18,979	2,146	0	0	1,201	1,201	0	390
11	12	26,097	3,590	1,960	20	114	18,979	1,435	0	0	0	0	0	0
11	13	24,354	3,590	1,989	20	114	18,642	469	0	(469)	0	0	0	0
11	14	22,864	3,590	1,938	20	114	17,203	469	0	(469)	0	0	0	0
11	15	21,398	3,590	1,803	20	114	15,871	94	0	(94)	0	0	0	0
11	16	20,384	3,590	1,535	20	114	15,126	0	0	0	0	0	0	0
11	17	20,791	3,590	925	20	114	16,143	0	0	0	0	0	0	0
11	18	22,989	3,590	213	20	114	18,979	74	0	0	0	0	0	0
11	19	25,992	3,590	7	20	114	18,979	2,146	0	0	1,137	1,137	0	325
11	20	26,691	3,590	0	20	114	18,979	2,146	0	31	1,812	1,812	0	1,000
11	21	26,684	3,590	0	20	114	18,979	2,146	0	24	1,812	1,812	0	1,000
11	22	26,162	3,590	0	20	114	18,979	2,146	0	0	1,314	1,314	0	502
11	23	24,969	3,590	0	20	114	18,979	2,146	0	0	121	121	0	0
11	24	23,927	3,590	0	20	114	18,979	1,225	0	0	0	0	0	0
12	1	23,336	3,590	0	20	114	18,979	665	0	(31)	0	0	0	0
12	2	23,397	3,590	0	20	114	18,979	719	0	(24)	0	0	0	0
12	3	23,742	3,590	0	20	114	18,979	1,040	0	0	0	0	0	0
12	4	24,205	3,590	0	20	114	18,979	1,503	0	0	0	0	0	0
12	5	24,923	3,590	0	20	114	18,979	2,146	0	0	75	75	0	0
12	6	26,365	3,590	0	20	114	18,979	2,146	0	0	1,517	1,517	0	705
12	7	28,661	3,590	0	20	114	18,979	2,146	0	469	3,344	1,812	1,532	2,532
12	8	29,516	3,590	75	20	114	18,979	2,146	0	469	4,124	1,812	2,312	3,312
12	9	28,255	3,590	697	20	114	18,979	2,146	0	94	2,616	1,812	804	1,804
12	10	26,267	3,590	1,341	20	114	18,979	2,146	0	0	77	77	0	0
12	11	24,486	3,590	1,765	20	114	18,979	20	0	0	0	0	0	0
12	12	22,989	3,590	1,960	20	114	17,306	0	0	0	0	0	0	0
12	13	21,601	3,590	1,989	20	114	15,889	0	0	0	0	0	0	0
12	14	20,088	3,590	1,938	20	114	14,427	0	0	0	0	0	0	0
12	15	18,754	3,590	1,803	20	114	13,228	0	0	0	0	0	0	0
12	16	18,064	3,590	1,535	20	114	12,806	0	0	0	0	0	0	0
12	17	18,444	3,590	925	20	114	13,796	0	0	0	0	0	0	0
12	18	20,487	3,590	213	20	114	16,551	0	0	0	0	0	0	0
12	19	23,155	3,590	7	20	114	18,979	446	0	0	0	0	0	0
12	20	23,820	3,590	0	20	114	18,979	1,118	0	0	0	0	0	0
12	21	23,882	3,590	0	20	114	18,979	1,180	0	0	0	0	0	0
12	22	23,432	3,590	0	20	114	18,979	730	0	0	0	0	0	0
12	23	22,570	3,590	0	20	114	18,847	0	0	0	0	0	0	0
12	24	21,243	3,590	0	20	114	17,520	0	0	0	0	0	0	0
		2,414,998										**82,567**	**56,948**	**100,208**

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	47,398	38	1,812
Loss of Load	15,425	14	2,540

"What If" Gen MW Unavailable
1,000
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2022 FPL System Winter Peak Day With Manatee 1&2 - (1989-Like Winter)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	14,659	3,590	0	20	114	10,936	0	0	0	0	0	0	0
9	2	14,232	3,590	0	20	114	10,508	0	0	0	0	0	0	0
9	3	14,187	3,590	0	20	114	10,464	0	0	0	0	0	0	0
9	4	14,455	3,590	0	20	114	10,732	0	0	0	0	0	0	0
9	5	15,036	3,590	0	20	114	11,313	0	0	0	0	0	0	0
9	6	16,121	3,590	0	20	114	12,398	0	0	0	0	0	0	0
9	7	17,782	3,590	0	20	114	14,059	0	0	0	0	0	0	0
9	8	20,025	3,590	75	20	114	16,227	0	0	0	0	0	0	0
9	9	22,536	3,590	697	20	114	18,116	0	0	0	0	0	0	0
9	10	24,267	3,590	1,341	20	114	18,979	223	0	0	0	0	0	0
9	11	25,444	3,590	1,765	20	114	18,979	977	0	0	0	0	0	0
9	12	25,901	3,590	1,960	20	114	18,979	1,239	0	0	0	0	0	0
9	13	26,214	3,590	1,989	20	114	18,979	1,523	0	0	0	0	0	0
9	14	26,353	3,590	1,938	20	114	18,979	1,713	0	0	0	0	0	0
9	15	26,530	3,590	1,803	20	114	18,979	2,025	0	0	0	0	0	0
9	16	26,785	3,590	1,535	20	114	18,979	2,548	0	0	0	0	0	0
9	17	27,221	3,590	925	20	114	18,979	3,594	0	0	0	0	0	0
9	18	28,175	3,590	213	20	114	18,979	3,788	0	0	1,472	1,472	0	660
9	19	29,110	3,590	7	20	114	18,979	3,788	0	177	2,436	1,812	624	1,624
9	20	29,130	3,590	0	20	114	18,979	3,788	0	0	2,640	1,812	829	1,829
9	21	28,927	3,590	0	20	114	18,979	3,788	0	0	2,437	1,812	625	1,625
9	22	28,404	3,590	0	20	114	18,979	3,788	0	103	1,812	1,812	0	1,000
9	23	27,612	3,590	0	20	114	18,979	3,788	0	0	1,122	1,122	0	310
9	24	26,921	3,590	0	20	114	18,979	3,788	0	0	431	431	0	0
10	1	26,534	3,590	0	20	114	18,979	3,788	0	0	44	44	0	0
10	2	26,330	3,590	0	20	114	18,979	3,788	0	(160)	0	0	0	0
10	3	26,371	3,590	0	20	114	18,979	3,788	0	(119)	0	0	0	0
10	4	26,615	3,590	0	20	114	18,979	3,788	0	0	125	125	0	0
10	5	26,938	3,590	0	20	114	18,979	3,788	0	0	448	448	0	0
10	6	27,483	3,590	0	20	114	18,979	3,788	0	0	993	993	0	181
10	7	28,016	3,590	0	20	114	18,979	3,788	0	0	1,526	1,526	0	714
10	8	29,040	3,590	75	20	114	18,979	3,788	0	0	2,475	1,812	663	1,663
10	9	30,129	3,590	697	20	114	18,979	3,788	0	270	2,672	1,812	860	1,860
10	10	30,495	3,590	1,341	20	114	18,979	3,788	0	469	2,194	1,812	383	1,383
10	11	30,359	3,590	1,765	20	114	18,979	3,788	0	293	1,812	1,812	0	1,000
10	12	29,500	3,590	1,960	20	114	18,979	3,788	0	0	1,050	1,050	0	238
10	13	28,400	3,590	1,989	20	114	18,979	3,709	0	0	0	0	0	0
10	14	27,220	3,590	1,938	20	114	18,979	3,049	0	(469)	0	0	0	0
10	15	26,150	3,590	1,803	20	114	18,979	2,114	0	(469)	0	0	0	0
10	16	25,500	3,590	1,535	20	114	18,979	1,357	0	(94)	0	0	0	0
10	17	25,823	3,590	925	20	114	18,979	2,196	0	0	0	0	0	0
10	18	27,282	3,590	213	20	114	18,979	3,788	0	0	579	579	0	0
10	19	29,290	3,590	7	20	114	18,979	3,788	0	0	2,792	1,812	981	1,981
10	20	29,670	3,590	0	20	114	18,979	3,788	0	0	3,180	1,812	1,368	2,368
10	21	29,811	3,590	0	20	114	18,979	3,788	0	0	3,321	1,812	1,509	2,509
10	22	29,323	3,590	0	20	114	18,979	3,788	0	0	2,833	1,812	1,021	2,021
10	23	28,236	3,590	0	20	114	18,979	3,788	0	0	1,746	1,746	0	935
10	24	27,185	3,590	0	20	114	18,979	3,788	0	0	695	695	0	0
11	1	26,543	3,590	0	20	114	18,979	3,788	0	0	53	53	0	0
11	2	26,515	3,590	0	20	114	18,979	3,788	0	0	25	25	0	0
11	3	26,679	3,590	0	20	114	18,979	3,788	0	0	189	189	0	0
11	4	27,006	3,590	0	20	114	18,979	3,788	0	0	516	516	0	0
11	5	27,644	3,590	0	20	114	18,979	3,788	0	0	1,154	1,154	0	342
11	6	28,657	3,590	0	20	114	18,979	3,788	0	355	1,812	1,812	0	1,000
11	7	30,601	3,590	0	20	114	18,979	3,788	0	208	3,903	1,812	2,092	3,092
11	8	31,386	3,590	75	20	114	18,979	3,788	0	469	4,351	1,812	2,540	3,540
11	9	30,259	3,590	697	20	114	18,979	3,788	0	0	3,072	1,812	1,261	2,261
11	10	29,184	3,590	1,341	20	114	18,979	3,788	0	0	1,352	1,352	0	540
11	11	27,814	3,590	1,765	20	114	18,979	3,347	0	0	0	0	0	0
11	12	26,097	3,590	1,960	20	114	18,979	1,904	0	(469)	0	0	0	0
11	13	24,354	3,590	1,989	20	114	18,642	469	0	(469)	0	0	0	0
11	14	22,864	3,590	1,938	20	114	17,203	94	0	(94)	0	0	0	0
11	15	21,398	3,590	1,803	20	114	15,871	0	0	0	0	0	0	0
11	16	20,384	3,590	1,535	20	114	15,126	0	0	0	0	0	0	0
11	17	20,791	3,590	925	20	114	16,143	0	0	0	0	0	0	0
11	18	22,989	3,590	213	20	114	18,979	74	0	0	0	0	0	0
11	19	25,992	3,590	7	20	114	18,979	3,283	0	0	0	0	0	0
11	20	26,691	3,590	0	20	114	18,979	3,788	0	0	200	200	0	0
11	21	26,684	3,590	0	20	114	18,979	3,788	0	194	0	0	0	0
11	22	26,162	3,590	0	20	114	18,979	3,460	0	0	0	0	0	0
11	23	24,969	3,590	0	20	114	18,979	2,267	0	0	0	0	0	0
11	24	23,927	3,590	0	20	114	18,979	1,225	0	0	0	0	0	0
12	1	23,336	3,590	0	20	114	18,979	634	0	0	0	0	0	0
12	2	23,397	3,590	0	20	114	18,979	695	0	0	0	0	0	0
12	3	23,742	3,590	0	20	114	18,979	1,040	0	0	0	0	0	0
12	4	24,205	3,590	0	20	114	18,979	1,503	0	0	0	0	0	0
12	5	24,923	3,590	0	20	114	18,979	2,221	0	0	0	0	0	0
12	6	26,365	3,590	0	20	114	18,979	3,663	0	0	0	0	0	0
12	7	28,661	3,590	0	20	114	18,979	3,788	0	359	1,812	1,812	0	1,000
12	8	29,516	3,590	75	20	114	18,979	3,788	0	469	2,482	1,812	670	1,670
12	9	28,255	3,590	697	20	114	18,979	3,788	0	0	1,068	1,068	0	256
12	10	26,267	3,590	1,341	20	114	18,979	2,223	0	0	0	0	0	0
12	11	24,486	3,590	1,765	20	114	18,979	20	0	0	0	0	0	0
12	12	22,989	3,590	1,960	20	114	17,306	0	0	0	0	0	0	0
12	13	21,601	3,590	1,989	20	114	15,889	0	0	0	0	0	0	0
12	14	20,088	3,590	1,938	20	114	14,427	0	0	0	0	0	0	0
12	15	18,754	3,590	1,803	20	114	13,228	0	0	0	0	0	0	0
12	16	18,064	3,590	1,535	20	114	12,806	0	0	0	0	0	0	0
12	17	18,444	3,590	925	20	114	13,796	0	0	0	0	0	0	0
12	18	20,487	3,590	213	20	114	16,551	0	0	0	0	0	0	0
12	19	23,155	3,590	7	20	114	18,979	446	0	0	0	0	0	0
12	20	23,820	3,590	0	20	114	18,979	1,118	0	0	0	0	0	0
12	21	23,882	3,590	0	20	114	18,979	1,180	0	0	0	0	0	0
12	22	23,432	3,590	0	20	114	18,979	730	0	0	0	0	0	0
12	23	22,570	3,590	0	20	114	18,847	0	0	0	0	0	0	0
12	24	21,243	3,590	0	20	114	17,520	0	0	0	0	0	0	0
		2,414,998										**47,398**	**15,425**	**37,603**

= Must Run
= Dispatchable
= Load Control/Loss of Load

Load Control	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)	"What If" Gen MW Unavailable
Loss of Load	40,052	29	1,812	1,000
	11,772	13	2,625	23

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (11) (12) (13) (14) (15)

2022 FPL System Winter Peak Day Without Manatee 1&2 & With Gulf Excess Capacity - (1989-Like Winter)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Gulf Excess Capacity	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	14,659	3,590	0	20	114	10,936	0	0	0	0	0	0	0	0
9	2	14,232	3,590	0	20	114	10,508	0	0	0	0	0	0	0	0
9	3	14,187	3,590	0	20	114	10,464	0	0	0	0	0	0	0	0
9	4	14,455	3,590	0	20	114	10,732	0	0	0	0	0	0	0	0
9	5	15,036	3,590	0	20	114	11,313	0	0	0	0	0	0	0	0
9	6	16,121	3,590	0	20	114	12,398	0	0	0	0	0	0	0	0
9	7	17,782	3,590	0	20	114	14,059	0	0	0	0	0	0	0	0
9	8	20,025	3,590	75	20	114	16,227	0	0	0	0	0	0	0	0
9	9	22,536	3,590	697	20	114	18,116	0	0	0	0	0	0	0	0
9	10	24,267	3,590	1,341	20	114	18,979	223	0	0	0	0	0	0	0
9	11	25,444	3,590	1,765	20	114	18,979	977	0	0	0	0	0	0	0
9	12	25,901	3,590	1,960	20	114	18,979	1,239	0	0	0	0	0	0	0
9	13	26,214	3,590	1,989	20	114	18,979	1,523	0	0	0	0	0	0	0
9	14	26,353	3,590	1,938	20	114	18,979	1,713	0	0	0	0	0	0	0
9	15	26,530	3,590	1,803	20	114	18,979	2,025	0	0	0	0	0	0	0
9	16	26,785	3,590	1,535	20	114	18,979	2,146	0	402	0	0	0	0	0
9	17	27,221	3,590	925	20	114	18,979	2,146	0	1,448	0	0	0	0	0
9	18	28,175	3,590	213	20	114	18,979	2,146	0	2,181	0	933	933	0	122
9	19	29,110	3,590	7	20	114	18,979	2,146	0	1,771	0	2,484	1,812	673	1,673
9	20	29,130	3,590	0	20	114	18,979	2,146	0	1,584	407	2,292	1,812	480	1,480
9	21	28,927	3,590	0	20	114	18,979	2,146	0	1,554	469	2,056	1,812	244	1,244
9	22	28,404	3,590	0	20	114	18,979	2,146	0	1,588	156	1,812	1,812	0	1,000
9	23	27,612	3,590	0	20	114	18,979	2,146	0	1,698	0	1,066	1,066	0	255
9	24	26,921	3,590	0	20	114	18,979	2,146	0	1,848	0	225	225	0	0
10	1	26,534	3,590	0	20	114	18,979	2,146	0	1,925	(238)	0	0	0	0
10	2	26,330	3,590	0	20	114	18,979	2,146	0	1,919	(437)	0	0	0	0
10	3	26,371	3,590	0	20	114	18,979	2,146	0	1,879	(356)	0	0	0	0
10	4	26,615	3,590	0	20	114	18,979	2,146	0	1,767	0	0	0	0	0
10	5	26,938	3,590	0	20	114	18,979	2,146	0	1,715	0	375	375	0	0
10	6	27,483	3,590	0	20	114	18,979	2,146	0	1,562	0	1,072	1,072	0	260
10	7	28,016	3,590	0	20	114	18,979	2,146	0	1,327	29	1,812	1,812	0	1,000
10	8	29,040	3,590	75	20	114	18,979	2,146	0	1,088	0	3,029	1,812	1,217	2,217
10	9	30,129	3,590	697	20	114	18,979	2,146	0	1,049	469	3,066	1,812	1,254	2,254
10	10	30,495	3,590	1,341	20	114	18,979	2,146	0	1,346	469	2,490	1,812	679	1,679
10	11	30,359	3,590	1,765	20	114	18,979	2,146	0	1,712	64	1,971	1,812	159	1,159
10	12	29,500	3,590	1,960	20	114	18,979	2,146	0	2,023	0	669	669	0	0
10	13	28,400	3,590	1,989	20	114	18,979	2,146	0	1,563	0	0	0	0	0
10	14	27,220	3,590	1,938	20	114	18,979	2,146	0	434	0	0	0	0	0
10	15	26,150	3,590	1,803	20	114	18,979	2,114	0	0	(469)	0	0	0	0
10	16	25,500	3,590	1,535	20	114	18,979	1,732	0	0	(469)	0	0	0	0
10	17	25,823	3,590	925	20	114	18,979	2,146	0	144	(94)	0	0	0	0
10	18	27,282	3,590	213	20	114	18,979	2,146	0	2,221	0	0	0	0	0
10	19	29,290	3,590	7	20	114	18,979	2,146	0	2,395	228	1,812	1,812	0	1,000
10	20	29,670	3,590	0	20	114	18,979	2,146	0	2,194	335	2,292	1,812	481	1,481
10	21	29,811	3,590	0	20	114	18,979	2,146	0	2,121	469	2,373	1,812	562	1,562
10	22	29,323	3,590	0	20	114	18,979	2,146	0	2,122	0	2,353	1,812	541	1,541
10	23	28,236	3,590	0	20	114	18,979	2,146	0	2,184	0	1,205	1,205	0	393
10	24	27,185	3,590	0	20	114	18,979	2,146	0	2,281	0	57	57	0	0
11	1	26,543	3,590	0	20	114	18,979	2,146	0	2,164	(469)	0	0	0	0
11	2	26,515	3,590	0	20	114	18,979	2,146	0	2,136	(469)	0	0	0	0
11	3	26,679	3,590	0	20	114	18,979	2,146	0	1,925	(94)	0	0	0	0
11	4	27,006	3,590	0	20	114	18,979	2,146	0	2,158	0	0	0	0	0
11	5	27,644	3,590	0	20	114	18,979	2,146	0	2,178	0	617	617	0	0
11	6	28,657	3,590	0	20	114	18,979	2,146	0	2,046	0	1,763	1,763	0	951
11	7	30,601	3,590	0	20	114	18,979	2,146	0	1,807	469	3,477	1,812	1,665	2,665
11	8	31,386	3,590	75	20	114	18,979	2,146	0	1,556	469	4,437	1,812	2,625	3,625
11	9	30,259	3,590	697	20	114	18,979	2,146	0	1,618	94	3,003	1,812	1,191	2,191
11	10	29,184	3,590	1,341	20	114	18,979	2,146	0	2,018	0	976	976	0	165
11	11	27,814	3,590	1,765	20	114	18,979	2,146	0	1,201	0	0	0	0	0
11	12	26,097	3,590	1,960	20	114	18,979	1,435	0	0	0	0	0	0	0
11	13	24,354	3,590	1,989	20	114	18,642	469	0	0	(469)	0	0	0	0
11	14	22,864	3,590	1,938	20	114	17,203	469	0	0	(469)	0	0	0	0
11	15	21,398	3,590	1,803	20	114	15,871	94	0	0	(94)	0	0	0	0
11	16	20,384	3,590	1,535	20	114	15,126	0	0	0	0	0	0	0	0
11	17	20,791	3,590	925	20	114	16,143	0	0	0	0	0	0	0	0
11	18	22,989	3,590	213	20	114	18,979	74	0	0	0	0	0	0	0
11	19	25,992	3,590	7	20	114	18,979	2,146	0	1,137	0	0	0	0	0
11	20	26,691	3,590	0	20	114	18,979	2,146	0	1,842	0	0	0	0	0
11	21	26,684	3,590	0	20	114	18,979	2,146	0	1,836	0	0	0	0	0
11	22	26,162	3,590	0	20	114	18,979	2,146	0	1,314	0	0	0	0	0
11	23	24,969	3,590	0	20	114	18,979	2,146	0	121	0	0	0	0	0
11	24	23,927	3,590	0	20	114	18,979	1,225	0	0	0	0	0	0	0
12	1	23,336	3,590	0	20	114	18,979	634	0	0	0	0	0	0	0
12	2	23,397	3,590	0	20	114	18,979	695	0	0	0	0	0	0	0
12	3	23,742	3,590	0	20	114	18,979	1,040	0	0	0	0	0	0	0
12	4	24,205	3,590	0	20	114	18,979	1,503	0	0	0	0	0	0	0
12	5	24,923	3,590	0	20	114	18,979	2,146	0	75	0	0	0	0	0
12	6	26,365	3,590	0	20	114	18,979	2,146	0	1,517	0	0	0	0	0
12	7	28,661	3,590	0	20	114	18,979	2,146	0	2,711	469	633	633	0	0
12	8	29,516	3,590	75	20	114	18,979	2,146	0	2,650	469	1,474	1,474	0	662
12	9	28,255	3,590	697	20	114	18,979	2,146	0	2,616	94	0	0	0	0
12	10	26,267	3,590	1,341	20	114	18,979	2,146	0	77	0	0	0	0	0
12	11	24,486	3,590	1,765	20	114	18,979	20	0	0	0	0	0	0	0
12	12	22,989	3,590	1,960	20	114	17,306	0	0	0	0	0	0	0	0
12	13	21,601	3,590	1,989	20	114	15,889	0	0	0	0	0	0	0	0
12	14	20,088	3,590	1,938	20	114	14,427	0	0	0	0	0	0	0	0
12	15	18,754	3,590	1,803	20	114	13,228	0	0	0	0	0	0	0	0
12	16	18,064	3,590	1,535	20	114	12,806	0	0	0	0	0	0	0	0
12	17	18,444	3,590	925	20	114	13,796	0	0	0	0	0	0	0	0
12	18	20,487	3,590	213	20	114	16,551	0	0	0	0	0	0	0	0
12	19	23,155	3,590	7	20	114	18,979	446	0	0	0	0	0	0	0
12	20	23,820	3,590	0	20	114	18,979	1,118	0	0	0	0	0	0	0
12	21	23,882	3,590	0	20	114	18,979	1,180	0	0	0	0	0	0	0
12	22	23,432	3,590	0	20	114	18,979	730	0	0	0	0	0	0	0
12	23	22,570	3,590	0	20	114	18,847	0	0	0	0	0	0	0	0
12	24	21,243	3,590	0	20	114	17,520	0	0	0	0	0	0	0	0
		2,414,998											**40,052**	**11,772**	**30,580**

= Must Run
= Dispatchable
= Load Control/Loss of Load

Load Control	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)	"What If" Gen MW Unavailable
Loss of Load	17,727	25	1,812	1,000
	1,007	2	983	10

2022 FPL System Winter Peak Day With Manatee 1&2 and Gulf Excess Capacity - (1989-Like Winter)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Gulf Excess Capacity	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*
9	1	14,659	3,590	0	20	114	10,936	0	0	0	0	0	0	0	0
9	2	14,232	3,590	0	20	114	10,508	0	0	0	0	0	0	0	0
9	3	14,187	3,590	0	20	114	10,464	0	0	0	0	0	0	0	0
9	4	14,455	3,590	0	20	114	10,732	0	0	0	0	0	0	0	0
9	5	15,036	3,590	0	20	114	11,313	0	0	0	0	0	0	0	0
9	6	16,121	3,590	0	20	114	12,398	0	0	0	0	0	0	0	0
9	7	17,782	3,590	0	20	114	14,059	0	0	0	0	0	0	0	0
9	8	20,025	3,590	75	20	114	16,227	0	0	0	0	0	0	0	0
9	9	22,536	3,590	697	20	114	18,116	0	0	0	0	0	0	0	0
9	10	24,267	3,590	1,341	20	114	18,979	223	0	0	0	0	0	0	0
9	11	25,444	3,590	1,765	20	114	18,979	977	0	0	0	0	0	0	0
9	12	25,901	3,590	1,960	20	114	18,979	1,239	0	0	0	0	0	0	0
9	13	26,214	3,590	1,989	20	114	18,979	1,523	0	0	0	0	0	0	0
9	14	26,353	3,590	1,938	20	114	18,979	1,713	0	0	0	0	0	0	0
9	15	26,530	3,590	1,803	20	114	18,979	2,025	0	0	0	0	0	0	0
9	16	26,785	3,590	1,535	20	114	18,979	2,548	0	0	0	0	0	0	0
9	17	27,221	3,590	925	20	114	18,979	3,594	0	0	0	0	0	0	0
9	18	28,175	3,590	213	20	114	18,979	3,788	0	1,472	0	0	0	0	0
9	19	29,110	3,590	7	20	114	18,979	3,788	0	1,771	0	842	842	0	31
9	20	29,130	3,590	0	20	114	18,979	3,788	0	1,584	160	896	896	0	85
9	21	28,927	3,590	0	20	114	18,979	3,788	0	1,554	119	764	764	0	0
9	22	28,404	3,590	0	20	114	18,979	3,788	0	1,588	0	326	326	0	0
9	23	27,612	3,590	0	20	114	18,979	3,788	0	1,122	0	0	0	0	0
9	24	26,921	3,590	0	20	114	18,979	3,788	0	431	0	0	0	0	0
10	1	26,534	3,590	0	20	114	18,979	3,788	0	44	0	0	0	0	0
10	2	26,330	3,590	0	20	114	18,979	3,628	0	0	(160)	160	160	0	0
10	3	26,371	3,590	0	20	114	18,979	3,669	0	0	(119)	119	119	0	0
10	4	26,615	3,590	0	20	114	18,979	3,788	0	125	0	0	0	0	0
10	5	26,938	3,590	0	20	114	18,979	3,788	0	448	0	0	0	0	0
10	6	27,483	3,590	0	20	114	18,979	3,788	0	993	0	0	0	0	0
10	7	28,016	3,590	0	20	114	18,979	3,788	0	1,327	0	199	199	0	0
10	8	29,040	3,590	75	20	114	18,979	3,788	0	1,088	469	918	918	0	106
10	9	30,129	3,590	697	20	114	18,979	3,788	0	1,049	469	1,424	1,424	0	612
10	10	30,495	3,590	1,341	20	114	18,979	3,788	0	1,346	94	1,223	1,223	0	412
10	11	30,359	3,590	1,765	20	114	18,979	3,788	0	1,712	0	393	393	0	0
10	12	29,500	3,590	1,960	20	114	18,979	3,788	0	1,050	0	0	0	0	0
10	13	28,400	3,590	1,989	20	114	18,979	3,709	0	0	0	0	0	0	0
10	14	27,220	3,590	1,938	20	114	18,979	2,580	0	0	(469)	469	469	0	0
10	15	26,150	3,590	1,803	20	114	18,979	1,645	0	0	(469)	469	469	0	0
10	16	25,500	3,590	1,535	20	114	18,979	1,263	0	0	(94)	94	94	0	0
10	17	25,823	3,590	925	20	114	18,979	2,196	0	0	0	0	0	0	0
10	18	27,282	3,590	213	20	114	18,979	3,788	0	579	0	0	0	0	0
10	19	29,290	3,590	7	20	114	18,979	3,788	0	2,395	0	398	398	0	0
10	20	29,670	3,590	0	20	114	18,979	3,788	0	2,194	0	985	985	0	174
10	21	29,811	3,590	0	20	114	18,979	3,788	0	2,121	0	1,200	1,200	0	389
10	22	29,323	3,590	0	20	114	18,979	3,788	0	2,122	0	711	711	0	0
10	23	28,236	3,590	0	20	114	18,979	3,788	0	1,746	0	0	0	0	0
10	24	27,185	3,590	0	20	114	18,979	3,788	0	695	0	0	0	0	0
11	1	26,543	3,590	0	20	114	18,979	3,788	0	53	0	0	0	0	0
11	2	26,515	3,590	0	20	114	18,979	3,788	0	25	0	0	0	0	0
11	3	26,679	3,590	0	20	114	18,979	3,788	0	189	0	0	0	0	0
11	4	27,006	3,590	0	20	114	18,979	3,788	0	516	0	0	0	0	0
11	5	27,644	3,590	0	20	114	18,979	3,788	0	1,154	0	0	0	0	0
11	6	28,657	3,590	0	20	114	18,979	3,788	0	2,046	0	121	121	0	0
11	7	30,601	3,590	0	20	114	18,979	3,788	0	1,807	469	1,835	1,812	23	1,023
11	8	31,386	3,590	75	20	114	18,979	3,788	0	1,556	469	2,795	1,812	983	1,983
11	9	30,259	3,590	697	20	114	18,979	3,788	0	1,618	94	1,361	1,361	0	549
11	10	29,184	3,590	1,341	20	114	18,979	3,788	0	1,352	0	0	0	0	0
11	11	27,814	3,590	1,765	20	114	18,979	3,347	0	0	0	0	0	0	0
11	12	26,097	3,590	1,960	20	114	18,979	1,435	0	0	0	0	0	0	0
11	13	24,354	3,590	1,989	20	114	18,642	0	0	0	(469)	469	469	0	0
11	14	22,864	3,590	1,938	20	114	17,203	0	0	0	(469)	469	469	0	0
11	15	21,398	3,590	1,803	20	114	15,871	0	0	0	(94)	94	94	0	0
11	16	20,384	3,590	1,535	20	114	15,126	0	0	0	0	0	0	0	0
11	17	20,791	3,590	925	20	114	16,143	0	0	0	0	0	0	0	0
11	18	22,989	3,590	213	20	114	18,979	74	0	0	0	0	0	0	0
11	19	25,992	3,590	7	20	114	18,979	3,283	0	0	0	0	0	0	0
11	20	26,691	3,590	0	20	114	18,979	3,788	0	200	0	0	0	0	0
11	21	26,684	3,590	0	20	114	18,979	3,788	0	194	0	0	0	0	0
11	22	26,162	3,590	0	20	114	18,979	3,460	0	0	0	0	0	0	0
11	23	24,969	3,590	0	20	114	18,979	2,267	0	0	0	0	0	0	0
11	24	23,927	3,590	0	20	114	18,979	1,225	0	0	0	0	0	0	0
12	1	23,336	3,590	0	20	114	18,979	634	0	0	0	0	0	0	0
12	2	23,397	3,590	0	20	114	18,979	695	0	0	0	0	0	0	0
12	3	23,742	3,590	0	20	114	18,979	1,040	0	0	0	0	0	0	0
12	4	24,205	3,590	0	20	114	18,979	1,503	0	0	0	0	0	0	0
12	5	24,923	3,590	0	20	114	18,979	2,221	0	0	0	0	0	0	0
12	6	26,365	3,590	0	20	114	18,979	3,663	0	0	0	0	0	0	0
12	7	28,661	3,590	0	20	114	18,979	3,788	0	2,171	0	0	0	0	0
12	8	29,516	3,590	75	20	114	18,979	3,788	0	2,650	301	0	0	0	0
12	9	28,255	3,590	697	20	114	18,979	3,788	0	1,068	0	0	0	0	0
12	10	26,267	3,590	1,341	20	114	18,979	2,223	0	0	0	0	0	0	0
12	11	24,486	3,590	1,765	20	114	18,979	20	0	0	0	0	0	0	0
12	12	22,989	3,590	1,960	20	114	17,306	0	0	0	0	0	0	0	0
12	13	21,601	3,590	1,989	20	114	15,889	0	0	0	0	0	0	0	0
12	14	20,088	3,590	1,938	20	114	14,427	0	0	0	0	0	0	0	0
12	15	18,754	3,590	1,803	20	114	13,228	0	0	0	0	0	0	0	0
12	16	18,064	3,590	1,535	20	114	12,806	0	0	0	0	0	0	0	0
12	17	18,444	3,590	925	20	114	13,796	0	0	0	0	0	0	0	0
12	18	20,487	3,590	213	20	114	16,551	0	0	0	0	0	0	0	0
12	19	23,155	3,590	7	20	114	18,979	446	0	0	0	0	0	0	0
12	20	23,820	3,590	0	20	114	18,979	1,118	0	0	0	0	0	0	0
12	21	23,882	3,590	0	20	114	18,979	1,180	0	0	0	0	0	0	0
12	22	23,432	3,590	0	20	114	18,979	730	0	0	0	0	0	0	0
12	23	22,570	3,590	0	20	114	18,847	0	0	0	0	0	0	0	0
12	24	21,243	3,590	0	20	114	17,520	0	0	0	0	0	0	0	0
		2,414,998											**17,727**	**1,007**	**5,363**

= Must Run
= Dispatchable
= Load Control/Loss of Load

	Generation (MWh)	Operating Hours (Hrs.)	Maximum Output (MWh)
Load Control	0	0	0
Loss of Load	0	0	0

"What If" Gen MW Unavailable
1,000
0

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)

2022 Gulf System Winter Peak Day - (1989-Like Winter)

Day	Hour Ending	Load (MWh)	Nuclear (MWh)	Solar (MWh)	Conservation (MWh)	Purchases (MWh)	Combined Cycle (MWh)	CT/GT (MWh)	Steam Turbine (MWh)	Storage (MWh)	Loss of Load w/o LC (MWh)	Load Control (MWh)	Loss of Load w/ LC (MWh)	Loss of Load w/ LC and with 1,000 MW of gen out (MWh)*	Excess Capacity
9	1	1,585	0	0	6	112	1,467	0	0	0	0	0	0	0	2,755
9	2	1,590	0	0	6	112	1,472	0	0	0	0	0	0	0	2,750
9	3	1,622	0	0	6	113	1,502	0	0	0	0	0	0	0	2,720
9	4	1,662	0	0	6	109	1,531	15	0	0	0	0	0	0	2,676
9	5	1,750	0	0	6	115	1,531	98	0	0	0	0	0	0	2,593
9	6	1,958	0	0	6	121	1,531	300	0	0	0	0	0	0	2,391
9	7	2,250	0	0	6	122	1,531	590	0	0	0	0	0	0	2,101
9	8	2,548	0	0	6	109	1,531	901	0	0	0	0	0	0	1,790
9	9	2,743	0	31	6	113	1,531	1,007	54	0	0	0	0	0	1,630
9	10	2,768	0	85	6	120	1,531	1,007	18	0	0	0	0	0	1,666
9	11	2,693	0	107	6	126	1,531	922	0	0	0	0	0	0	1,769
9	12	2,563	0	122	6	137	1,531	767	0	0	0	0	0	0	1,924
9	13	2,387	0	127	6	143	1,531	580	0	0	0	0	0	0	2,111
9	14	2,208	0	128	6	143	1,531	401	0	0	0	0	0	0	2,290
9	15	2,079	0	124	6	133	1,531	285	0	0	0	0	0	0	2,406
9	16	1,956	0	115	6	123	1,531	181	0	0	0	0	0	0	2,510
9	17	1,968	0	87	6	106	1,531	238	0	0	0	0	0	0	2,453
9	18	2,154	0	22	6	84	1,531	510	0	0	0	0	0	0	2,181
9	19	2,541	0	0	6	83	1,531	920	0	0	0	0	0	0	1,771
9	20	2,732	0	0	6	87	1,531	1,007	100	0	0	0	0	0	1,584
9	21	2,776	0	0	6	101	1,531	1,007	130	0	0	0	0	0	1,554
9	22	2,755	0	0	6	115	1,531	1,007	96	0	0	0	0	0	1,588
9	23	2,649	0	0	6	118	1,531	993	0	0	0	0	0	0	1,698
9	24	2,490	0	0	6	110	1,531	843	0	0	0	0	0	0	1,848
10	1	2,416	0	0	6	112	1,531	766	0	0	0	0	0	0	1,925
10	2	2,421	0	0	6	112	1,531	772	0	0	0	0	0	0	1,919
10	3	2,436	0	0	6	113	1,531	786	0	0	0	0	0	0	1,905
10	4	2,535	0	0	6	109	1,531	888	0	0	0	0	0	0	1,803
10	5	2,629	0	0	6	115	1,531	976	0	0	0	0	0	0	1,715
10	6	2,787	0	0	6	121	1,531	1,007	122	0	0	0	0	0	1,562
10	7	3,024	0	0	6	122	1,531	1,007	357	0	0	0	0	0	1,327
10	8	3,249	0	0	6	109	1,531	1,007	596	0	0	0	0	0	1,088
10	9	3,323	0	31	6	113	1,531	1,007	635	0	0	0	0	0	1,049
10	10	3,088	0	85	6	120	1,531	1,007	338	0	0	0	0	0	1,346
10	11	2,750	0	107	6	126	1,531	979	0	0	0	0	0	0	1,712
10	12	2,464	0	122	6	137	1,531	668	0	0	0	0	0	0	2,023
10	13	2,147	0	127	6	143	1,531	340	0	0	0	0	0	0	2,351
10	14	1,863	0	128	6	143	1,531	56	0	0	0	0	0	0	2,635
10	15	1,680	0	124	6	133	1,417	0	0	0	0	0	0	0	2,805
10	16	1,617	0	115	6	123	1,373	0	0	0	0	0	0	0	2,849
10	17	1,601	0	87	6	106	1,402	0	0	0	0	0	0	0	2,820
10	18	1,659	0	22	6	84	1,531	15	0	0	0	0	0	0	2,676
10	19	1,917	0	0	6	83	1,531	296	0	0	0	0	0	0	2,395
10	20	2,121	0	0	6	87	1,531	497	0	0	0	0	0	0	2,194
10	21	2,209	0	0	6	101	1,531	570	0	0	0	0	0	0	2,121
10	22	2,222	0	0	6	115	1,531	569	0	0	0	0	0	0	2,122
10	23	2,163	0	0	6	118	1,531	507	0	0	0	0	0	0	2,184
10	24	2,058	0	0	6	110	1,531	410	0	0	0	0	0	0	2,281
11	1	1,976	0	0	6	112	1,531	327	0	0	0	0	0	0	2,364
11	2	1,980	0	0	6	112	1,531	331	0	0	0	0	0	0	2,360
11	3	2,034	0	0	6	113	1,531	383	0	0	0	0	0	0	2,308
11	4	2,087	0	0	6	109	1,531	440	0	0	0	0	0	0	2,251
11	5	2,165	0	0	6	115	1,531	513	0	0	0	0	0	0	2,178
11	6	2,303	0	0	6	121	1,531	645	0	0	0	0	0	0	2,046
11	7	2,543	0	0	6	122	1,531	884	0	0	0	0	0	0	1,807
11	8	2,781	0	0	6	109	1,531	1,007	128	0	0	0	0	0	1,556
11	9	2,755	0	31	6	113	1,531	1,007	66	0	0	0	0	0	1,618
11	10	2,416	0	85	6	120	1,531	673	0	0	0	0	0	0	2,018
11	11	2,060	0	107	6	126	1,531	289	0	0	0	0	0	0	2,402
11	12	1,764	0	122	6	137	1,499	0	0	0	0	0	0	0	2,723
11	13	1,613	0	127	6	143	1,337	0	0	0	0	0	0	0	2,885
11	14	1,522	0	128	6	143	1,245	0	0	0	0	0	0	0	2,977
11	15	1,452	0	124	6	133	1,189	0	0	0	0	0	0	0	3,033
11	16	1,403	0	115	6	123	1,158	0	0	0	0	0	0	0	3,064
11	17	1,381	0	87	6	106	1,182	0	0	0	0	0	0	0	3,040
11	18	1,422	0	22	6	84	1,309	0	0	0	0	0	0	0	2,913
11	19	1,541	0	0	6	83	1,451	0	0	0	0	0	0	0	2,771
11	20	1,597	0	0	6	87	1,504	0	0	0	0	0	0	0	2,718
11	21	1,613	0	0	6	101	1,506	0	0	0	0	0	0	0	2,716
11	22	1,621	0	0	6	115	1,500	0	0	0	0	0	0	0	2,722
11	23	1,606	0	0	6	118	1,481	0	0	0	0	0	0	0	2,741
11	24	1,578	0	0	6	110	1,462	0	0	0	0	0	0	0	2,760
12	1	1,550	0	0	6	112	1,432	0	0	0	0	0	0	0	2,790
12	2	1,547	0	0	6	112	1,429	0	0	0	0	0	0	0	2,793
12	3	1,548	0	0	6	113	1,429	0	0	0	0	0	0	0	2,793
12	4	1,565	0	0	6	109	1,449	0	0	0	0	0	0	0	2,773
12	5	1,573	0	0	6	115	1,452	0	0	0	0	0	0	0	2,770
12	6	1,597	0	0	6	121	1,469	0	0	0	0	0	0	0	2,753
12	7	1,639	0	0	6	122	1,511	0	0	0	0	0	0	0	2,711
12	8	1,688	0	0	6	109	1,531	41	0	0	0	0	0	0	2,650
12	9	1,740	0	31	6	113	1,531	59	0	0	0	0	0	0	2,632
12	10	1,673	0	85	6	120	1,462	0	0	0	0	0	0	0	2,760
12	11	1,567	0	107	6	126	1,327	0	0	0	0	0	0	0	2,895
12	12	1,468	0	122	6	137	1,203	0	0	0	0	0	0	0	3,019
12	13	1,393	0	127	6	143	1,116	0	0	0	0	0	0	0	3,106
12	14	1,324	0	128	6	143	1,048	0	0	0	0	0	0	0	3,174
12	15	1,278	0	124	6	133	1,015	0	0	0	0	0	0	0	3,207
12	16	1,257	0	115	6	123	1,013	0	0	0	0	0	0	0	3,209
12	17	1,252	0	87	6	106	1,053	0	0	0	0	0	0	0	3,169
12	18	1,273	0	22	6	84	1,160	0	0	0	0	0	0	0	3,062
12	19	1,357	0	0	6	83	1,267	0	0	0	0	0	0	0	2,955
12	20	1,391	0	0	6	87	1,297	0	0	0	0	0	0	0	2,925
12	21	1,382	0	0	6	101	1,275	0	0	0	0	0	0	0	2,947
12	22	1,363	0	0	6	115	1,242	0	0	0	0	0	0	0	2,980
12	23	1,335	0	0	6	118	1,211	0	0	0	0	0	0	0	3,011
12	24	1,308	0	0	6	110	1,192	0	0	0	0	0	0	0	3,030
		191,083										**0**	**0**	**0**	

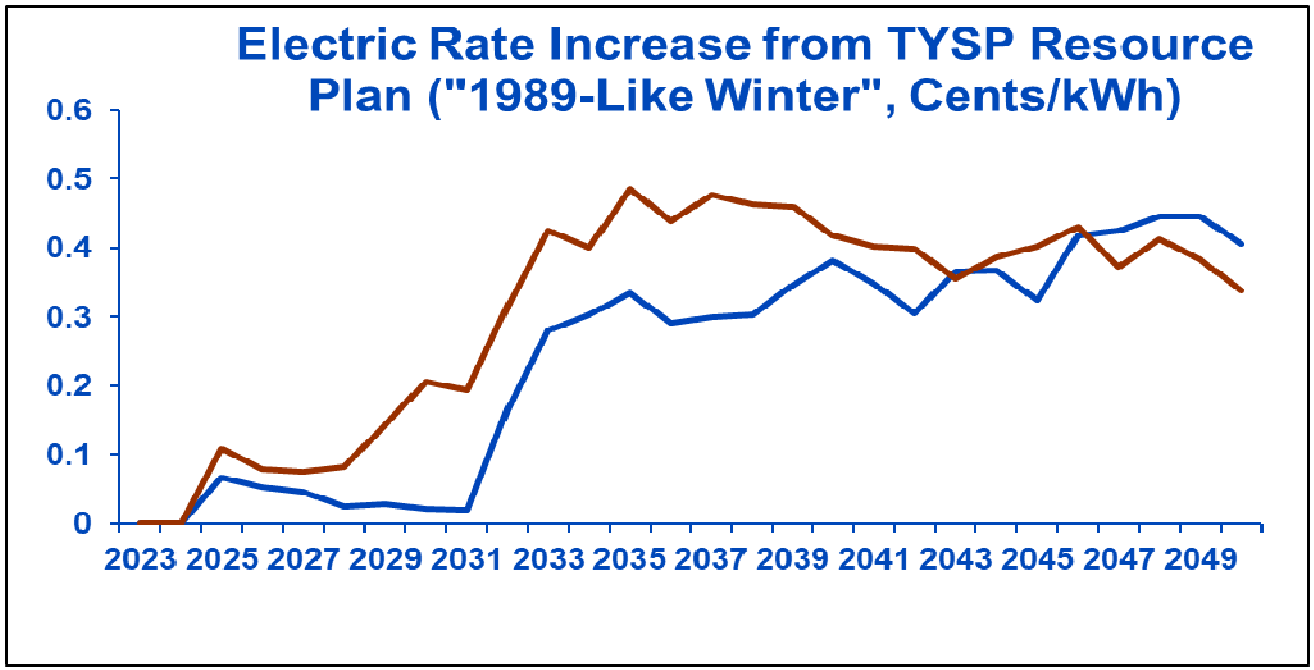
Summary: "1989-Like" Winter Load Forecast Sensitivity

	2021 TYSP	1989-Like Winter (Solar+Storage)*	1989-Like Winter w/ 3,700 MW Addl. Storage Locked in**
Total Cumulative Nameplate Solar (MW):	11,657	8,677	9,720
Total Storage Additions (MW, 2023-2030):	700	2,550	4,400
Total CT Additions (MW, 2023-2030):	0	0	0
Total CC Additions (MW, 2023-2030):	0	0	0
Total Filler Additions (MW, 2031-on):	22,440	22,440	23,100
CPVRR ($M, 7.52%, 2020-2068):	81,942	87,811	88,807
CPVRR Difference From TYSP ($M)	**--**	**5,869**	**6,865**

Notes:

* - This scenario locked in the 2021 TYSP additions thru 2025, with the exception of Manatee 1&2 continuing until 2030 for winter capacity only, a 1989-Like Winter forecast was used 2025-on, the only new resources that could be added were a solar+storage option that has to be 1 MW of solar for every 1 MW of storage, no winter reserve requirement was used and a 20% summer reserve requirement was used

** - Using the 1989-like Winter forecast, and the 2021 TYSP resource additions locked in thru 2025 with the exception of Manatee 1&2 continuing until 2030, 3,700 MW of additional storage (on top of the 300 and 400 MW of storage in 2029 and 2030 from the TYSP) were locked in, and only solar was allowed to be selected before 2030, no winter reserve requirement was used



1) Electric rates are calculated by annual rev reqs divided by NEL. The rev reqs include all incremental fixed and variable costs for new generation and associated transmission, plus system fuel and carbon compliance costs. Not included are rev reqs not impacted by the new resource options (such as existing generation, transmission, and distribution; buildings & staff, etc.)

CPVRR Summary (7.52%, 2020-2068)

Scenario	Generation Capital ($M)	FOM & Capital Replacement ($M)	Transmission Capital ($M)	**Total Fixed Costs ($M)**	Fuel ($M)	Start-up ($M)	VOM ($M)	Emissions ($M)	**Total Variable Costs ($M)**	**Total System Costs ($M)**
2021 TYSP[1]	$12,277	$2,088	$1,566	**$15,931**	$42,925	$1,964	$5,430	$15,692	**$66,011**	**$81,942**
1989-Like Winter[2] (Solar+Storage)	$13,130	$2,686	$1,039	**$16,855**	$46,451	$1,739	$5,762	$17,005	**$70,956**	**$87,811**
1989-Like Winter[3] (3,700 MW Storage)	$14,785	$3,001	$1,193	**$18,980**	$45,906	$1,485	$5,655	$16,782	**$69,828**	**$88,807**
Difference[2-1]	$853	$598	($527)	**$924**	$3,526	($226)	$332	$1,312	**$4,945**	**$5,869**
Difference[3-1]	$2,508	$913	($373)	**$3,049**	$2,981	($480)	$226	$1,089	**$3,816**	**$6,865**

2021 TYSP Sensitivity: 1989-Like Winter Load Forecast											
Common to all Plans Retirements / Additions	Year	2021 TYSP (Base Case)	Reserve Margin (%)		1989-Like Winter (Solar + Storage)	Reserve Margin (%)			1989-Like Winter (3,700 MW Storage)	Reserve Margin (%)		
			Summer	Winter		Summer	Winter			Summer	Winter	
OUC PPA (100 MW), 1,043 MW Solar Indiantown PPA (330 MW)	2021	Manatee 1&2 (1,642 MW)	24.2	46.1	--	24.2	46.1		--	24.2	46.1	
Manatee Battery (469 MW) +54 MW GE Upgrades, Scherer 4 (634 MW), 850 MW NFRC Line, Crist 4x0 CT (938 MW) , 596 MW Solar	2022	--	25.5	40.7	--	25.5	48.5		--	25.5	48.5	
Shell PPA (885 MW), +92 MW GE Upgrades, 745 MW Solar	2023	--	21.6	44.0	--	21.6	51.6		--	21.6	51.6	
Daniel 1&2 (502 MW), +196 MW GE Upgrades, 894 MW Solar	2024	--	20.0	35.8	--	20.0	43.2		--	24.6	43.2	
+77 MW GE Upgrades Crist 4 (75 MW) , Pea Ridge (12 MW) 894 MW Solar	2025	--	20.1	34.0	--	20.1	-9.2		6 x 100 MW Battery	22.3	-7.5	
+6 MW GE Upgrades	2026	969 MW Solar	20.0	32.2	6 x 75 MW Solar 6 x 75 MW Battery	20.2	-9.1		4 x 100 MW Battery 373 MW Solar	23.0	-7.5	
Crist 5 (75 MW)	2027	969 MW Solar	20.0	30.6	5 x 75 MW Solar 5 x 75 MW Battery	20.1	-9.1		4 x 100 MW Battery 373 MW Solar	23.6	-7.4	
Lansing Smith A (32 MW)	2028	1,192 MW Solar	20.0	28.6	6 x 75 MW Solar 6 x 75 MW Battery	20.1	-9.2		7 x 100 MW Battery 447 MW Solar	25.2	-6.9	
--	2029	1,192 MW Solar 3 x 100 MW Battery	20.0	28.0	8 x 75 MW Solar 8 x 75 MW Battery	20.1	-8.8		11 x 100 MW Battery 1,192 MW Solar	28.7	-5.1	
Perdido 1&2 (3 MW)	2030	1,192 MW Solar 4 x 100 MW Battery	20.0	27.8	9 x 75 MW Solar 9 x 75 MW Battery	20.1	-7.0	Difference	12 x 100 MW Battery 1,192 MW Solar	31.6	-1.9	Difference
Total Cumulative Nameplate Solar (MW):		**11,657**			**8,677**			**(2,980)**	**9,720**			**(1,937)**
Total Storage Additions (MW, 2023-2030):		**700**			**2,550**			**1,850**	**4,400**			**3,700**
Total CT Additions (MW, 2023-2030):		**0**			**0**			**0**	**0**			**0**
Total CC Additions (MW, 2023-2030):		**0**			**0**			**0**	**0**			**0**
Total Filler Additions (MW, 2031-on):		**22,440**			**22,440**			**0**	**23,100**			**660**
CPVRR ($M, 7.52%, 2020-2068):		**81,942**			**87,811**			**5,869**	**88,807**			**6,865**

WACC = 7.52% (FPL 2020 WACC)

Florida Power & Light Company
Docket No. 20220000-OT
Ten-Year Site Plan
Staff's Third Data Request
Request No. 2
Attachment 23 of 24
Tab 1 of 7

2021 Winter Analysis Info for June OpComm 6 10 2021

Winter Peak Unit Upgrade Schedule

Year	Incremental (MW)	Cumulative (MW)
2022	291	291
2023	193	484
2024	227	711
2025	79	790

Note: No costs were provided for the upgrades, therefore no costs were included in any of the CPVRRs

Annual Peak Demand for 1989-Like Winters

Year	FPL Peak (MW)	Gulf Peak (MW)	Combined Peak (MW)
2022	31,386	3,323	34,167
2023	31,991	3,347	34,792
2024	32,600	3,370	35,420
2025	33,087	3,392	35,926
2026	33,567	3,413	36,423
2027	33,903	3,434	36,776
2028	34,401	3,458	37,295
2029	34,912	3,483	37,827
2030	35,431	3,504	38,364

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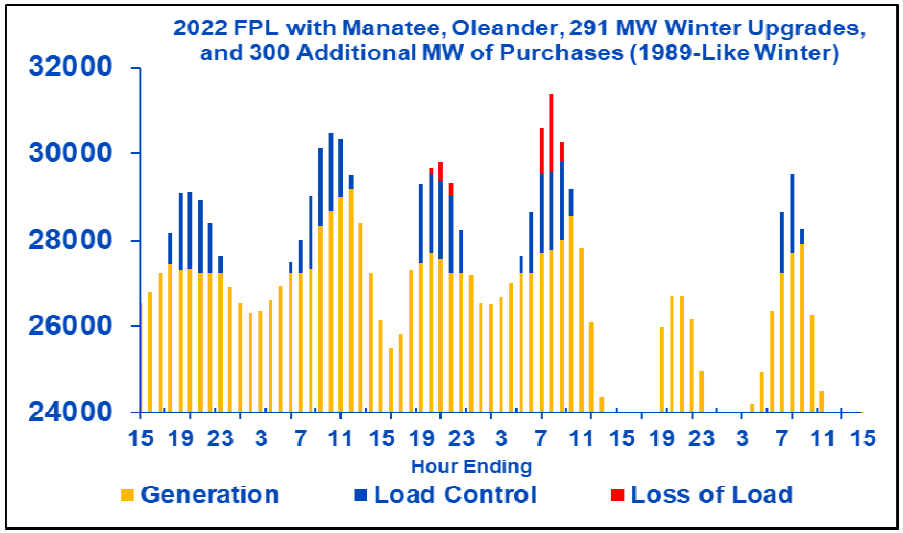
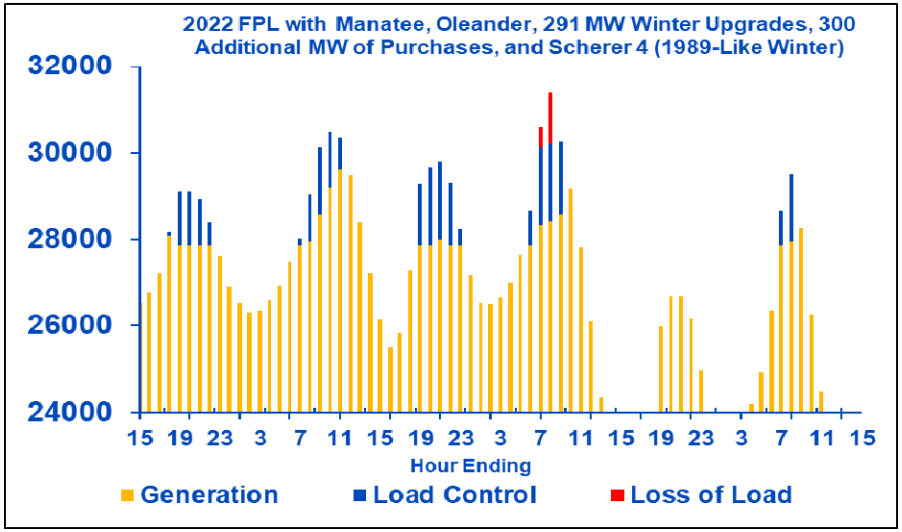


Loss of Load # of Hours	Loss of Load (MWh)	Maximum Loss of Load (MW)
6	4,197	1,799



Loss of Load # of Hours	Loss of Load (MWh)	Maximum Loss of Load (MW)
2	1,616	1,163

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2021 Winter Analysis Info for June OpComm 6 10 2021

		2022 FPL with Manatee and 291 MW Winter Upgrades			2022 FPL with Manatee, 291 MW Winter Upgrades, and Oleander			2022 FPL with Manatee, 291 MW Winter Upgrades, Oleander, and 300 Additional MW of Purchases			2022 FPL with Manatee, 291 MW Winter Upgrades, Oleander, 300 Additional MW of Purchases, and Scherer 4		
Date	Hour	Generation	Load Control	Loss of Load	Generation	Load Control	Loss of Load	Generation	Load Control	Loss of Load	Generation	Load Control	Loss of Load
1/9/2022	1	14,659	0	0	14,659	0	0	14,659	0	0	14,659	0	0
1/9/2022	2	14,232	0	0	14,232	0	0	14,232	0	0	14,232	0	0
1/9/2022	3	14,187	0	0	14,187	0	0	14,187	0	0	14,187	0	0
1/9/2022	4	14,455	0	0	14,455	0	0	14,455	0	0	14,455	0	0
1/9/2022	5	15,036	0	0	15,036	0	0	15,036	0	0	15,036	0	0
1/9/2022	6	16,121	0	0	16,121	0	0	16,121	0	0	16,121	0	0
1/9/2022	7	17,782	0	0	17,782	0	0	17,782	0	0	17,782	0	0
1/9/2022	8	20,025	0	0	20,025	0	0	20,025	0	0	20,025	0	0
1/9/2022	9	22,536	0	0	22,536	0	0	22,536	0	0	22,536	0	0
1/9/2022	10	24,267	0	0	24,267	0	0	24,267	0	0	24,267	0	0
1/9/2022	11	25,444	0	0	25,444	0	0	25,444	0	0	25,444	0	0
1/9/2022	12	25,901	0	0	25,901	0	0	25,901	0	0	25,901	0	0
1/9/2022	13	26,214	0	0	26,214	0	0	26,214	0	0	26,214	0	0
1/9/2022	14	26,353	0	0	26,353	0	0	26,353	0	0	26,353	0	0
1/9/2022	15	26,530	0	0	26,530	0	0	26,530	0	0	26,530	0	0
1/9/2022	16	26,785	0	0	26,785	0	0	26,785	0	0	26,785	0	0
1/9/2022	17	27,221	0	0	27,221	0	0	27,221	0	0	27,221	0	0
1/9/2022	18	26,994	1,181	0	27,144	1,031	0	27,444	731	0	28,080	95	0
1/9/2022	19	27,257	1,812	41	27,299	1,812	0	27,299	1,812	0	27,874	1,236	0
1/9/2022	20	27,250	1,812	69	27,319	1,812	0	27,319	1,812	0	27,867	1,263	0
1/9/2022	21	26,875	1,812	240	27,115	1,812	0	27,231	1,696	0	27,867	1,060	0
1/9/2022	22	26,781	1,623	0	26,931	1,473	0	27,231	1,173	0	27,867	537	0
1/9/2022	23	26,781	831	0	26,931	681	0	27,231	381	0	27,612	0	0
1/9/2022	24	26,781	140	0	26,921	0	0	26,921	0	0	26,921	0	0
1/10/2022	1	26,534	0	0	26,534	0	0	26,534	0	0	26,534	0	0
1/10/2022	2	26,330	0	0	26,330	0	0	26,330	0	0	26,330	0	0
1/10/2022	3	26,371	0	0	26,371	0	0	26,371	0	0	26,371	0	0
1/10/2022	4	26,615	0	0	26,615	0	0	26,615	0	0	26,615	0	0
1/10/2022	5	26,781	157	0	26,931	7	0	26,938	0	0	26,938	0	0
1/10/2022	6	26,781	702	0	26,931	552	0	27,231	252	0	27,483	0	0
1/10/2022	7	26,781	1,235	0	26,931	1,085	0	27,231	785	0	27,867	149	0
1/10/2022	8	27,229	1,812	0	27,229	1,812	0	27,306	1,734	0	27,942	1,098	0
1/10/2022	9	27,947	1,812	370	28,097	1,812	220	28,317	1,812	0	28,564	1,565	0
1/10/2022	10	28,313	1,812	370	28,613	1,812	70	28,683	1,812	0	29,208	1,286	0
1/10/2022	11	28,546	1,812	2	28,696	1,663	0	28,996	1,363	0	29,632	727	0
1/10/2022	12	28,741	759	0	28,891	609	0	29,191	309	0	29,500	0	0
1/10/2022	13	28,400	0	0	28,400	0	0	28,400	0	0	28,400	0	0
1/10/2022	14	27,220	0	0	27,220	0	0	27,220	0	0	27,220	0	0
1/10/2022	15	26,150	0	0	26,150	0	0	26,150	0	0	26,150	0	0
1/10/2022	16	25,500	0	0	25,500	0	0	25,500	0	0	25,500	0	0
1/10/2022	17	25,823	0	0	25,823	0	0	25,823	0	0	25,823	0	0
1/10/2022	18	26,994	288	0	27,144	138	0	27,282	0	0	27,282	0	0
1/10/2022	19	27,257	1,812	221	27,407	1,812	71	27,478	1,812	0	27,874	1,415	0
1/10/2022	20	27,250	1,812	608	27,400	1,812	458	27,700	1,812	158	27,867	1,803	0
1/10/2022	21	26,875	1,812	1,124	27,025	1,812	974	27,554	1,812	445	27,999	1,812	0
1/10/2022	22	26,781	1,812	730	26,931	1,812	580	27,231	1,812	280	27,867	1,456	0
1/10/2022	23	26,781	1,455	0	26,931	1,305	0	27,231	1,005	0	27,867	369	0
1/10/2022	24	26,781	404	0	26,931	254	0	27,185	0	0	27,185	0	0
1/11/2022	1	26,543	0	0	26,543	0	0	26,543	0	0	26,543	0	0
1/11/2022	2	26,515	0	0	26,515	0	0	26,515	0	0	26,515	0	0
1/11/2022	3	26,679	0	0	26,679	0	0	26,679	0	0	26,679	0	0
1/11/2022	4	26,781	225	0	26,931	75	0	27,006	0	0	27,006	0	0
1/11/2022	5	26,781	863	0	26,931	713	0	27,231	413	0	27,644	0	0
1/11/2022	6	26,845	1,812	0	26,931	1,726	0	27,231	1,426	0	27,867	790	0
1/11/2022	7	27,250	1,812	1,539	27,400	1,812	1,389	27,700	1,812	1,089	28,336	1,812	453
1/11/2022	8	26,929	1,812	2,645	27,475	1,812	2,099	27,775	1,812	1,799	28,411	1,812	1,163
1/11/2022	9	27,478	1,812	970	27,722	1,812	726	28,022	1,812	426	28,564	1,695	0
1/11/2022	10	28,122	1,061	0	28,272	911	0	28,572	611	0	29,184	0	0
1/11/2022	11	27,814	0	0	27,814	0	0	27,814	0	0	27,814	0	0
1/11/2022	12	26,097	0	0	26,097	0	0	26,097	0	0	26,097	0	0
1/11/2022	13	24,354	0	0	24,354	0	0	24,354	0	0	24,354	0	0
1/11/2022	14	22,864	0	0	22,864	0	0	22,864	0	0	22,864	0	0
1/11/2022	15	21,398	0	0	21,398	0	0	21,398	0	0	21,398	0	0
1/11/2022	16	20,384	0	0	20,384	0	0	20,384	0	0	20,384	0	0
1/11/2022	17	20,791	0	0	20,791	0	0	20,791	0	0	20,791	0	0
1/11/2022	18	22,989	0	0	22,989	0	0	22,989	0	0	22,989	0	0
1/11/2022	19	25,992	0	0	25,992	0	0	25,992	0	0	25,992	0	0
1/11/2022	20	26,691	0	0	26,691	0	0	26,691	0	0	26,691	0	0
1/11/2022	21	26,684	0	0	26,684	0	0	26,684	0	0	26,684	0	0
1/11/2022	22	26,162	0	0	26,162	0	0	26,162	0	0	26,162	0	0
1/11/2022	23	24,969	0	0	24,969	0	0	24,969	0	0	24,969	0	0
1/11/2022	24	23,927	0	0	23,927	0	0	23,927	0	0	23,927	0	0
1/12/2022	1	23,336	0	0	23,336	0	0	23,336	0	0	23,336	0	0
1/12/2022	2	23,397	0	0	23,397	0	0	23,397	0	0	23,397	0	0
1/12/2022	3	23,742	0	0	23,742	0	0	23,742	0	0	23,742	0	0
1/12/2022	4	24,205	0	0	24,205	0	0	24,205	0	0	24,205	0	0
1/12/2022	5	24,923	0	0	24,923	0	0	24,923	0	0	24,923	0	0
1/12/2022	6	26,365	0	0	26,365	0	0	26,365	0	0	26,365	0	0
1/12/2022	7	26,850	1,812	0	26,931	1,730	0	27,231	1,430	0	27,867	794	0
1/12/2022	8	27,325	1,812	379	27,475	1,812	229	27,704	1,812	0	27,942	1,574	0
1/12/2022	9	27,478	777	0	27,628	627	0	27,928	327	0	28,255	0	0
1/12/2022	10	26,267	0	0	26,267	0	0	26,267	0	0	26,267	0	0
1/12/2022	11	24,486	0	0	24,486	0	0	24,486	0	0	24,486	0	0
1/12/2022	12	22,989	0	0	22,989	0	0	22,989	0	0	22,989	0	0
1/12/2022	13	21,601	0	0	21,601	0	0	21,601	0	0	21,601	0	0
1/12/2022	14	20,088	0	0	20,088	0	0	20,088	0	0	20,088	0	0
1/12/2022	15	18,754	0	0	18,754	0	0	18,754	0	0	18,754	0	0
1/12/2022	16	18,064	0	0	18,064	0	0	18,064	0	0	18,064	0	0
1/12/2022	17	18,444	0	0	18,444	0	0	18,444	0	0	18,444	0	0
1/12/2022	18	20,487	0	0	20,487	0	0	20,487	0	0	20,487	0	0
1/12/2022	19	23,155	0	0	23,155	0	0	23,155	0	0	23,155	0	0
1/12/2022	20	23,820	0	0	23,820	0	0	23,820	0	0	23,820	0	0
1/12/2022	21	23,882	0	0	23,882	0	0	23,882	0	0	23,882	0	0
1/12/2022	22	23,432	0	0	23,432	0	0	23,432	0	0	23,432	0	0
1/12/2022	23	22,570	0	0	22,570	0	0	22,570	0	0	22,570	0	0
1/12/2022	24	21,243	0	0	21,243	0	0	21,243	0	0	21,243	0	0
	Totals:	**2,363,191**	**42,498**	**9,308**	**2,368,239**	**39,943**	**6,816**	**2,375,426**	**35,375**	**4,197**	**2,389,035**	**24,347**	**1,616**

Combined System Summer Reserve Margin w/ and w/o Daniel 2

Year	Summer Peak Load (MW)	Firm DSM (MW)	Firm Summer Peak Load (MW)	Total Firm Capacity (MW)		Reserve Margin (%)		**MWs (Above)/Below 20% RM**	
				w/ Daniel 2	w/o Daniel 2	w/ Daniel 2	w/o Daniel 2	**w/ Daniel 2**	**w/o Daniel 2**
2022	27,277	1,886	25,392	31,870	31,619	25.5%	24.5%	**(1,400)**	**(1,149)**
2023	27,771	1,943	25,828	31,407	31,156	21.6%	20.6%	**(413)**	**(162)**
2024	28,278	2,006	26,272	--	31,543	--	20.1%	**--**	**(17)**
2025	28,675	2,050	26,625	--	31,993	--	20.2%	**--**	**(43)**
2026	29,051	2,084	26,967	--	32,378	--	20.1%	**--**	**(18)**
2027	29,340	2,118	27,221	--	32,679	--	20.1%	**--**	**(14)**
2028	29,721	2,152	27,568	--	33,107	--	20.1%	**--**	**(25)**
2029	30,233	2,186	28,047	--	33,676	--	20.1%	**--**	**(19)**
2030	30,832	2,221	28,612	--	34,348	--	20.0%	**--**	**(14)**

- Above assumes all of the 2021 TYSP resource additions thru 2030

2021 TYSP (Revised) (Production Cost w/ 1989-Like Winter Forecast)	2025	2026	2027	2028	2029	2030	Total/ Avg*
Storage Additions (MW):	0	0	0	0	300	400	**700**
CT Additions (MW):	0	0	0	0	0	0	**0**
Capital (Solar, Storage, & CTs) ($Millions):	837	909	911	1,125	1,311	1,369	**6,462**
Avg. Interruption Time (Hours/Eligible Customer):	0.50	0.50	0.50	0.52	0.73	0.89	**0.61***
Monthly Bill Impact ($/1,000kWh):	0.65	1.35	2.01	2.77	3.69	4.59	**2.51***

2021 TYSP Sensitivity: 1989-Like Winter Load Forecast										
Common to all Plans Retirements / Additions	Year	2021 TYSP (Revised) (Production Cost w/ 1989-Like Winter Forecast)	Reserve Margin (%)		Zero Loss of Load w/ CTs	Reserve Margin (%)		Zero Loss of Load w/ Storage	Reserve Margin (%)	
			Summer	Winter		Summer	Winter		Summer	Winter
OUC PPA (100 MW), 1,043 MW Solar Indiantown PPA (330 MW)	2021	Daniel 2 (251 MW)	23.2	49.1	Daniel 2 (251 MW)	23.2	49.1	Daniel 2 (251 MW)	23.2	49.1
Manatee Battery (469 MW) +54 MW GE Upgrades, Scherer 4 (634 MW), 850 MW NFRC Line, Crist 4x0 CT (938 MW) , 149 MW Solar	2022	+291 MW Winter Upgrades 447 MW Solar	24.5	51.8	+291 MW Winter Upgrades 447 MW Solar	24.5	51.8	+291 MW Winter Upgrades 447 MW Solar	24.5	51.8
Shell PPA (885 MW), +92 MW GE Upgrades	2023	+193 MW Winter Upgrades 745 MW Solar	20.6	55.8	+193 MW Winter Upgrades 745 MW Solar	20.6	55.8	+193 MW Winter Upgrades 745 MW Solar	20.6	55.8
Daniel 1 (251 MW), +196 MW GE Upgrades	2024	+227 MW Winter Upgrades 894 MW Solar	20.0	49.4	+227 MW Winter Upgrades 894 MW Solar	20.0	49.4	+227 MW Winter Upgrades 894 MW Solar	20.0	49.4
+77 MW GE Upgrades Crist 4 (75 MW) , Pea Ridge (12 MW)	2025	+79 MW Winter Upgrades 894 MW Solar	20.2	-5.7	+79 MW Winter Upgrades 894 MW Solar 3 x 3x0 CT (2,112 MW)	28.0	0.5	+79 MW Winter Upgrades 894 MW Solar 21 x 100 MW Battery	28.0	0.4
+6 MW GE Upgrades	2026	969 MW Solar	20.1	-6.9	1 x 3x0 CT (704 MW)	29.0	1.4	75 MW Solar 3 x 100 MW Battery	27.6	0.1
Crist 5 (75 MW)	2027	969 MW Solar	20.1	-8.0	--	27.4	0.2	373 MW Solar 6 x 100 MW Battery	29.0	0.6
Lansing Smith A (32 MW)	2028	1,192 MW Solar	20.1	-9.4	373 MW Solar 1 x 3x0 CT (704 MW)	28.9	0.7	373 MW Solar 6 x 100 MW Battery	30.0	0.8
--	2029	1,192 MW Solar 3 x 100 MW Battery	20.1	-9.8	373 MW Solar 1 x 3x0 CT (704 MW)	29.9	1.3	1,192 MW Solar 3 x 100 MW Battery	30.5	0.3
Perdido 1&2 (3 MW)	2030	1,192 MW Solar 4 x 100 MW Battery	20.0	-10.0	745 MW Solar 3x1 Martin CC (1,991 MW)	35.3	5.4	1,192 MW Solar 6 x 100 MW Battery	31.6	0.5
Total Cumulative Nameplate Solar (MW):		11,657			7,634			9,348		
Total Storage Additions (MW, 2023-2030):		700			0			4,500		
Total CT Additions (MW, 2023-2030):		0			4,224			0		
Total CC Additions (MW, 2023-2030):		0			1,991			0		
Total Filler Additions (MW, 2031-on):		22,440			21,120			23,760		
CPVRR ($M, 7.52%, 2020-2068):		85,911			86,956			88,216		
CPVRR Difference ($M):		--			1,045			2,305		

WACC = 7.52% (FPL 2020 WACC)

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Extreme Winter Load Forecast (Updated 2/21/2022, 42% Higher): Customer Outage Projections

of Customer Outages (30 minutes each) No Forced Outages

No BBB	2023	2024	2025	2026	2027	2028	2029	2030	2031
P50 Resource Plan *No near-term additions*	0	597,399	1,311,537	2,328,121	4,692,701	7,654,727	10,506,524	11,242,813	13,609,494
P50 Resource Plan *w/ near-term additions*	0	0	0	0	83,529	245,656	311,220	177,332	126,882
Extreme Winter Resource Plan	0	0	0	0	0	0	0	0	0

of Customer Outages (30 minutes each) 1,000 MW Forced Outages

No BBB	2023	2024	2025	2026	2027	2028	2029	2030	2031
P50 Resource Plan *No near-term additions*	100,349	2,240,496	6,931,369	9,008,281	12,058,759	15,886,237	20,452,246	22,424,013	25,970,741
P50 Resource Plan *w/ near-term additions*	0	0	276,604	370,319	651,656	988,219	1,111,220	1,029,646	1,826,224
Extreme Winter Resource Plan	0	0	276,604	370,319	411,656	428,219	259,395	177,332	165,124
Extreme Winter Resource Plan w/ Additional Batteries	0	0	0	0	0	0	0	0	0

Note: - No near-term additions includes: No Oleander or Hillabee PPAs, winter upgrades, or Manatee 1&2, Smith 3A, GCEC 4&5 continuing for winter only
- Extreme winter resource plan is w/ near term additions

Extreme Winter Load Forecast (Updated 2/21/2022, 42% Higher): Customer Outage Projections

of Customer Outages (30 minutes each) No Forced Outages

w/ BBB	2023	2024	2025	2026	2027	2028	2029	2030	2031
P50 Resource Plan *No near-term additions*	0	597,399	1,276,373	2,230,820	4,362,169	7,002,490	11,175,609	13,004,341	7,725,813
P50 Resource Plan *w/ near-term additions*	0	0	0	0	0	94,988	508,258	547,779	0
Extreme Winter Resource Plan	0	0	0	0	0	0	0	0	0

of Customer Outages (30 minutes each) 1,000 MW Forced Outages

w/ BBB	2023	2024	2025	2026	2027	2028	2029	2030	2031
P50 Resource Plan *No near-term additions*	100,349	2,240,496	6,486,878	8,301,881	10,865,981	14,213,016	20,196,544	23,438,426	18,678,224
P50 Resource Plan *w/ near-term additions*	0	0	276,604	321,195	556,966	837,551	1,960,682	2,877,449	249,775
Extreme Winter Resource Plan	0	0	276,604	321,195	501,581	542,092	532,725	492,173	0
Extreme Winter Resource Plan w/ Additional Batteries	0	0	0	0	0	0	0	0	0

Note: - No near-term additions includes: No Oleander or Hillabee PPAs, winter upgrades, or Manatee 1&2, Smith 3A, GCEC 4&5 continuing for winter only
- Extreme winter resource plan is w/ near term additions

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FPL (including Gulf) Private Solar Forecast, 2021

	Florida Cumulative Installations (MW$_{AC}$)			Growth by Year			FPL Share of FPL Total			FPL/Gulf Service Area Installations (MW$_{AC}$)			FPL/Gulf Private Solar Customers			New Systems	
	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Avg. System Size	
																Residential	Commercial
2015A			19														
2011A			24	7%	43%	30%											
2012A			44	73%	82%	69%											
2013A			69	57%	61%	60%											
2014A			91	48%	24%	31%	58%	31%	40%	17	19	37	2,797	804	3,601	6.3	23.8
2015A			125	62%	28%	38%	53%	31%	40%	25	24	50	3,825	890	4,716	8.1	26.6
2016A			160	53%	12%	28%	47%	30%	38%	34	28	61	5,002	915	5,917	7.3	28.7
2017A			228	78%	12%	42%	41%	33%	38%	54	52	96	7,442	957	8,399	8.0	33.3
2018A			341	79%	10%	50%	38%	33%	36%	89	52	124	11,356	1,016	12,372	9.1	34.4
2019A			540	78%	15%	58%	37%	33%	36%	156	40	195	18,070	1,104	19,174	9.8	35.8
2020A			853	67%	23%	58%	36%	31%	35%	254	47	302	27,576	1,187	28,761	10.3	36.3
2021F			1,255	52%	22%	47%	39%	30%	38%	418	56	474	42,788	1,295	44,083	11.0	50.0
2022F			1,753	43%	21%	40%	40%	32%	39%	607	73	680	60,039	1,626	61,665	11.0	50.0
2023F			2,384	38%	19%	36%	40%	32%	39%	841	86	928	81,505	1,904	83,409	11.0	50.0
2024F			2,902	22%	18%	22%	40%	32%	39%	1,028	102	1,130	98,677	2,213	100,890	11.0	50.0
2025F			3,466	20%	14%	19%	40%	32%	39%	1,234	117	1,351	117,567	2,507	120,074	11.0	50.0
2026F			4,102	19%	13%	18%	40%	32%	39%	1,468	132	1,600	139,066	2,809	141,875	11.0	50.0
2027F			4,756	16%	14%	16%	40%	32%	39%	1,752	150	1,903	160,587	3,185	163,772	11.0	50.0
2028F			5,519	15%	30%	16%	40%	32%	39%	1,954	195	2,149	183,667	4,074	187,741	11.0	50.0
2029F			6,352	14%	24%	15%	40%	32%	39%	2,226	241	2,468	208,641	4,997	213,638	11.0	50.0
2030F			7,379	14%	29%	16%	40%	32%	39%	2,550	311	2,861	238,441	6,397	244,838	11.0	50.0
2031F			8,199	10%	17%	11%	40%	32%	39%	2,812	364	3,175	262,421	7,449	269,871	11.0	50.0
2032F			8,858	8%	9%	8%	40%	32%	39%	3,032	397	3,429	282,692	8,119	290,812	11.0	50.0

	FPL New Installations (MW$_{AC}$)			FPL New Solar Customers			FPL Annual Solar Energy (MWh)			FPL Summer Peak Solar Capacity (MW)					FPL Winter Peak Solar Capacity (MW)					EIA End-Use Cons.	EIA End-Use Cons.	EIA Growth	EIA Growth
	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Peak Month	Peak Hour	Residential	Commercial	Total	Peak Month	Peak Hour	Residential	Commercial	Total	Residential	Commercial	Residential	Commercial
2015A																							
2011A																							
2012A																							
2013A																							
2014A	17	19	37	2,797	804	3,601	14,267	15,661	29,928	8	17	-	-	-	1	8	-	-	-				
2015A	8	5	13	1,651	86	1,117	33,478	32,973	66,451	8	17	-	-	-	1	8	-	-	-				
2016A	9	3	11	1,174	25	1,199	46,313	38,162	84,474	8	17	-	-	-	1	8	-	-	-				
2017A	20	6	25	2,440	42	2,482	68,070	44,446	112,515	8	17	-	-	-	1	8	-	-	-				
2018A	36	3	39	3,912	61	3,973	110,533	50,802	161,335	8	17	4	5	9	1	8	0	0	0				
2019A	66	5	71	6,716	86	6,802	180,001	56,439	245,440	8	17	9	8	17	1	8	1	1	2				
2020A	90.3	98.3	98	8	106	9,504	83	9,587	314,232	65,958	380,220	8	17	12	10	22	1	8	1	1	2		
2021F	165	8	173	15,303	189	15,322	513,576	78,186	591,763	8	17	4	5	9	1	8	2	1	3				
2022F	189	17	206	17,251	334	17,585	779,606	97,353	876,959	8	17	9	8	17	1	8	3	1	4				
2023F	234	14	248	21,466	275	21,741	1,099,473	120,030	1,219,503	8	17	12	10	22	1	8	4	2	6				
2024F	187	15	202	17,172	308	17,481	1,410,325	141,855	1,552,179	8	17	16	11	29	1	8	7	2	9	0.224746	0.16586		
2025F	206	15	220	18,890	294	19,184	1,701,826	164,180	1,866,006	8	17	30	13	42	1	8	12	2	14	0.25953	0.19446	15.5%	17.5%
2026F	234	15	249	21,409	302	21,801	2,028,067	186,189	2,214,277	8	17	51	14	65	1	8	21	2	23	0.28851	0.213751	11.6%	9.9%
2027F	234	19	253	21,521	376	21,897	2,372,951	211,386	2,584,337	8	17	94	17	101	1	8	29	3	32	0.315226	0.222128	8.9%	3.9%
2028F	251	44	296	23,079	889	23,968	2,730,019	260,065	2,990,083	8	17	139	20	159	1	8	40	4	43	0.341958	0.23104	8.5%	4.0%
2029F	274	46	320	25,174	923	26,098	3,115,756	326,186	3,443,942	8	17	211	25	236	1	8	48	4	53	0.364655	0.245749	6.6%	6.4%
2030F	322	70	392	29,600	1,400	31,003	3,554,709	416,699	3,971,407	8	17	299	31	330	1	8	58	5	63	0.389788	0.258031	6.9%	5.0%
2031F	261	53	314	23,981	1,052	25,033	3,975,862	507,540	4,483,402	8	17	324	37	361	1	8	68	6	74	0.417903	0.277772	7.2%	7.7%
2032F	221	34	254	20,271	670	20,941	4,319,043	569,907	4,888,950	8	17	407	48	455	1	8	79	7	86	0.446817	0.289913	6.9%	4.4%
												407	48	455	1	8	91	8	99	0.474686	0.304318	6.3%	5.0%
												621	54	675	1	8	103	11	114	0.507024	0.31456	6.8%	3.4%
												1,035	129	1,164	1	8	117	13	131	0.537006	0.326993	6.0%	4.8%
												1,122	144	1,265	1	8	129	16	145	0.566874	0.334586	5.5%	1.5%

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GULF Private Solar Forecast, beginning: 2021

	Florida Cumulative Installations (MW$_{AC}$)			Growth by Year			Gulf Share of FL Total			Gulf Service Area Installations (MWdc)			Gulf Private Solar Customers			New Systems		Gulf New Installations (MWdc)			Gulf New Solar Customers			Gulf Annual Solar Energy (MWh)			Gulf Summer Peak Solar Capacity (MW)					Gulf Winter Peak Solar Capacity (MW)					EIA End-Use Cons.	EIA End-Use Cons.	EIA Growth	EIA Growth
	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Avg. System Size		Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Peak Month	Peak Hour	Residential	Commercial	Total	Peak Month	Peak Hour	Residential	Commercial	Total	Residential	Commercial	Residential	Commercial
																Residential	Commercial																							
2015A	19																																						
2015A	24		7%	43%	30%																																		
2012A	44		73%	82%	69%																																		
2013A	69		57%	61%	60%																																		
2016A	91		48%	24%	31%	5%	0%	2%	2	4	2	267	100	367	5.8	2.5	2	0	2	267	100	367	1,204	191	1,396	7	18	0	0	0	1	8	0	0	0				
2015A	125		62%	28%	38%	5%	0%	2%	3	3	1	362	105	468	7.0	3.6	1	0	1	95	6	101	2,750	455	3,205	7	18	1	0	1	1	8	0	0	0				
2016A	160		53%	12%	28%	3%	1%	2%	3	3	3	396	110	506	9.6	4.8	0	0	0	34	4	38	3,432	657	4,089	7	18	1	0	1	1	8	0	0	0				
2017A	228		78%	12%	42%	4%	1%	3%	6	3	6	771	113	884	7.7	6.1	3	0	3	375	3	378	5,873	879	6,752	7	18	2	0	2	1	8	0	0	0				
2018A	341		79%	10%	50%	3%	1%	3%	9	3	8	1,050	117	1,167	9.6	6.7	3	0	3	279	4	283	9,854	1,053	10,908	7	18	3	0	3	1	8	0	0	0				
2019A	540		78%	15%	58%	4%	1%	3%	19	3	16	2,082	128	2,210	9.4	6.9	10	0	10	1,032	11	1,043	19,144	1,185	20,330	7	18	6	0	6	1	8	1	0	1				
2020A	853		67%	23%	58%	6%	2%	6%	47	4	47	4,838	131	4,969	9.7	318.1	27	2	28	2,754	5	2,759	46,174	2,476	48,650	7	18	14	1	15	1	8	1	0	1	0.224746	0.16586		
2021F	1,255		52%	22%	47%	10%	2%	9%	111	3	114	11,216	164	11,382	10.4	12.3	66	0	67	6,362	31	6,413	115,157	3,816	118,973	7	18	36	1	37	1	8	3	0	3	0.25953	0.19446	15.5%	17.5%
2022F	1,753		43%	21%	40%	8%	2%	8%	128	4	132	12,837	180	13,007	10.5	50.0	17	1	18	1,609	16	1,625	171,916	4,665	176,581	7	18	52	1	53	1	8	7	0	7	0.28951	0.213751	11.6%	9.9%
2023F	2,384		36%	19%	36%	8%	2%	8%	177	4	181	17,514	194	17,708	10.5	50.0	49	1	50	4,687	14	4,701	220,421	5,705	226,126	7	18	67	2	69	1	8	8	0	8	0.315226	0.222128	8.9%	3.9%
2024F	2,902		22%	18%	22%	8%	2%	8%	216	5	222	21,264	209	21,473	10.5	50.0	39	1	40	3,750	15	3,765	282,584	6,736	289,320	7	18	85	2	87	1	8	11	0	11	0.341958	0.23104	8.5%	4.0%
2025F	3,466		20%	14%	19%	8%	2%	8%	260	6	266	25,389	224	25,612	10.5	50.0	43	1	44	4,125	15	4,139	340,933	7,789	348,722	7	18	103	2	105	1	8	14	0	14	0.364655	0.245749	6.6%	6.4%
2026F	4,102		19%	13%	18%	8%	2%	8%	309	7	316	30,083	239	30,322	10.5	50.0	49	1	50	4,695	15	4,710	406,246	8,828	415,074	7	18	122	3	125	1	8	16	0	17	0.389788	0.258031	6.9%	5.0%
2027F	4,750		16%	14%	16%	8%	2%	8%	358	8	366	34,782	258	35,040	10.5	50.0	49	1	50	4,659	19	4,718	475,257	10,018	485,275	7	18	143	3	146	1	8	19	0	20	0.417905	0.277772	7.2%	7.7%
2028F	5,519		15%	30%	16%	8%	2%	8%	411	10	421	39,622	302	40,124	10.5	50.0	53	2	55	5,040	45	5,084	546,725	12,322	559,047	7	18	164	4	168	1	8	22	0	23	0.446817	0.289913	6.9%	4.4%
2029F	6,352		14%	24%	15%	8%	2%	8%	469	12	481	45,319	349	45,668	10.5	50.0	58	2	60	5,497	46	5,543	623,935	15,538	639,473	7	18	188	5	192	1	8	25	1	26	0.474486	0.304318	6.3%	5.0%
2030F	7,379		14%	29%	16%	8%	2%	7%	537	16	553	51,782	419	52,201	10.5	50.0	68	4	71	6,463	70	6,534	711,817	19,721	731,539	7	18	214	6	220	1	8	29	1	30	0.507024	0.31456	6.8%	3.4%
2031F	8,199		10%	17%	11%	8%	2%	7%	592	18	610	57,019	472	57,490	10.5	50.0	55	3	58	5,236	53	5,289	796,040	24,005	820,045	7	18	239	7	246	1	8	33	1	34	0.537506	0.326593	6.0%	4.8%
2032F	8,858		8%	9%	8%	8%	2%	7%	638	20	658	61,445	505	61,950	10.5	50.0	46	2	48	4,426	34	4,460	864,678	26,943	891,622	7	18	259	8	267	1	8	36	1	37	0.566874	0.334586	5.5%	1.5%

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FPL Private Solar Forecast, beginning: 2021

New Systems
Avg. System Size (kW)

	Florida Cumulative Installations (MW$_{AC}$)			Growth by Year			FPL Share of FPL Total			FPL Service Area Installations (MW$_{AC}$)			FPL Private Solar Customers			New Systems Avg. System Size (kW)		FPL New Installations (MW$_{AC}$)			FPL New Solar Customers			FPL Annual Solar Energy (MWh)			FPL Summer Peak Solar Capacity (MW)						FPL Winter Peak Solar Capacity (MW)						EIA End-Use Cons.	EIA End-Use Cons.	EIA Growth	EIA Growth
	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Residential	Commercial	Total	Residential	Commercial	Total	Residential	Commercial	Total	Peak Month	Peak Hour	Residential	Commercial	Total	Peak Month	Peak Hour	Residential	Commercial	Total	Residential	Commercial	Residential	Commercial
2010A			19																																					
2011A			24	7%	43%	30%																																			
2012A			44	73%	82%	69%																																			
2013A			69	57%	61%	60%																																			
2014A			91	48%	24%	31%	53%	31%	38%	16	19	35	2,530	704	3,234	6.3	26.8	16	19	35	2,530	704	3,234	-	-	-	8	17	-	-	-	1	8	-	-	-					
2015A			125	62%	28%	38%	49%	30%	37%	24	23	47	3,455	794	4,250	8.3	29.7	8	4	12	936	90	1,016	-	-	-	8	17	-	-	-	1	8	-	-	-					
2016A			160	53%	12%	28%	43%	30%	36%	32	26	58	4,606	805	5,411	7.3	31.9	8	2	11	1,140	21	1,161	-	-	-	8	17	-	-	-	1	8	-	-	-					
2017A			228	78%	12%	42%	37%	32%	35%	49	51	99	6,671	844	7,515	8.0	37.0	17	6	22	2,065	39	2,104	62,197	43,567	105,763	8	17	11	9	20	1	8	1	1	2					
2018A			341	79%	10%	50%	35%	32%	34%	81	34	116	10,304	961	11,265	9.0	38.0	33	3	36	3,633	57	3,690	100,679	49,749	150,428	8	17	27	12	39	1	8	2	1	3					
2019A			540	78%	15%	58%	33%	32%	33%	138	39	176	15,388	975	16,364	9.9	39.6	56	4	61	5,684	75	5,759	169,857	56,254	225,111	8	17	45	14	59	1	8	4	1	5					
2020A			853	67%	23%	58%	30%	30%	30%	209	47	255	22,735	1,054	23,792	10.6	64.2	72	7	78	6,750	75	6,825	268,057	63,513	331,570	8	17	70	16	86	1	8	6	2	8					
2021F			1,205	52%	22%	47%	31%	31%	29%	307	53	361	31,570	1,131	32,701	11.0	50.0	98	8	106	8,821	158	8,979	386,419	74,370	472,790	8	17	103	19	122	1	8	9	2	11	0.20953	0.19446	15.5%	17.5%
2022F			1,753	43%	21%	40%	31%	31%	31%	480	69	549	47,212	1,446	48,681	11.0	50.0	172	16	188	15,642	318	15,960	607,690	92,689	700,378	8	17	159	24	183	1	8	14	2	16	0.28851	0.213751	11.6%	9.9%
2023F			2,384	36%	19%	36%	31%	31%	31%	664	82	746	63,991	1,711	65,701	11.0	50.0	185	13	198	16,778	262	17,040	879,052	114,324	993,377	8	17	227	29	255	1	8	21	3	24	0.315226	0.222128	8.9%	3.9%
2024F			2,902	22%	18%	22%	31%	31%	31%	812	97	908	77,413	2,004	79,417	11.0	50.0	148	15	162	13,423	293	13,716	1,127,743	135,119	1,262,860	8	17	286	34	320	1	8	29	3	32	0.341958	0.23104	8.5%	4.0%
2025F			3,466	20%	14%	19%	31%	31%	31%	974	111	1,085	92,178	2,283	94,462	11.0	50.0	162	14	176	14,765	280	15,045	1,360,893	156,390	1,517,284	8	17	344	39	384	1	8	35	4	39	0.364655	0.245749	6.6%	6.4%
2026F			4,102	19%	13%	18%	31%	31%	31%	1,159	125	1,284	108,983	2,570	111,553	11.0	50.0	185	14	199	16,805	287	17,091	1,621,841	177,361	1,799,203	8	17	410	45	455	1	8	42	5	46	0.389788	0.258031	6.9%	5.0%
2027F			4,750	16%	14%	16%	31%	31%	31%	1,344	143	1,487	125,895	2,927	128,732	11.0	50.0	185	18	203	16,822	357	17,179	1,897,694	201,368	2,099,062	8	17	476	51	526	1	8	49	5	55	0.417903	0.277772	7.2%	7.7%
2028F			5,519	15%	30%	16%	31%	31%	31%	1,543	185	1,728	143,845	3,771	147,616	11.0	50.0	198	42	241	18,040	844	18,884	2,183,294	247,743	2,431,036	8	17	549	63	613	1	8	57	6	63	0.446817	0.289913	6.9%	4.4%
2029F			6,352	14%	24%	15%	31%	31%	31%	1,759	229	1,988	163,522	4,648	168,170	11.0	50.0	216	44	260	19,677	877	20,554	2,491,821	312,648	2,804,469	8	17	627	79	706	1	8	65	8	73	0.47486	0.304318	6.3%	5.0%
2030F			7,379	14%	29%	16%	31%	31%	31%	2,013	295	2,309	186,658	5,978	192,637	11.0	50.0	255	67	321	23,136	1,330	24,466	2,842,892	396,977	3,239,869	8	17	715	101	817	1	8	74	10	84	0.507024	0.31456	6.8%	3.4%
2031F			8,199	10%	17%	11%	31%	31%	31%	2,220	345	2,565	205,403	6,978	212,380	11.0	50.0	206	50	256	18,744	999	19,744	3,179,822	483,535	3,663,357	8	17	798	122	918	1	8	85	12	97	0.537306	0.326993	6.0%	4.8%
2032F			8,858	8%	9%	8%	31%	31%	31%	2,394	377	2,771	221,247	7,614	228,861	11.0	50.0	174	32	206	15,844	637	16,481	3,454,365	542,963	3,997,329	8	17	862	136	998	1	8	93	14	107	0.566874	0.334586	5.5%	1.5%

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						Ann. Degrade																														
						0.50%								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Date	Year	Month	Num Days	New Capacity (MWdc)	Cumulative Capacity (MWdc)	Monthly Degradation	Cumulative Capacity after Degradation (MWdc)	Energy per MWdc (MWh-ac)	Monthly Generation (MWh)	Hourly Gen. Ending 1:00	Hourly Gen. Ending 2:00	Hourly Gen. Ending 3:00	Hourly Gen. Ending 4:00	Hourly Gen. Ending 5:00	Hourly Gen. Ending 6:00	Hourly Gen. Ending 7:00	Hourly Gen. Ending 8:00	Hourly Gen. Ending 9:00	Hourly Gen. Ending 10:00	Hourly Gen. Ending 11:00	Hourly Gen. Ending 12:00	Hourly Gen. Ending 13:00	Hourly Gen. Ending 14:00	Hourly Gen. Ending 15:00	Hourly Gen. Ending 16:00	Hourly Gen. Ending 17:00	Hourly Gen. Ending 18:00	Hourly Gen. Ending 19:00	Hourly Gen. Ending 20:00	Hourly Gen. Ending 21:00	Hourly Gen. Ending 22:00	Hourly Gen. Ending 23:00	Hourly Gen. Ending 0:00	Monthly Generation (check)	check
1/31/2013	2013	1	31	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/28/2013	2013	2	28	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/31/2013	2013	3	31	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/30/2013	2013	4	30	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/31/2013	2013	5	31	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/30/2013	2013	6	30	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31/2013	2013	7	31	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/31/2013	2013	8	31	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9/30/2013	2013	9	30	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/31/2013	2013	10	31	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/30/2013	2013	11	30	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/31/2013	2013	12	31	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/31/2014	2014	1	31	3	3	-	3		338	-	-	-	-	-	-	-	0	1	1	1	2	2	1	1	1	1	0	-	-	-	-	-	-	-	338	-
2/28/2014	2014	2	28	3	6	(0.0)	6		673	-	-	-	-	-	-	0	0	1	2	3	3	3	3	3	2	1	0	-	-	-	-	-	-	-	673	-
3/31/2014	2014	3	31	3	9	(0.0)	9		1,341	-	-	-	-	-	-	-	0	1	3	4	5	6	6	6	5	4	3	1	-	-	-	-	-	-	1,341	-
4/30/2014	2014	4	30	3	12	(0.0)	12		1,778	-	-	-	-	-	-	0	0	2	4	6	7	8	8	7	6	5	3	1	0	-	-	-	-	-	1,778	-
5/31/2014	2014	5	31	3	15	(0.0)	15		2,270	-	-	-	-	-	-	0	1	3	5	7	9	9	10	9	8	6	4	2	0	-	-	-	-	-	2,270	-
6/30/2014	2014	6	30	3	18	(0.0)	18		2,369	-	-	-	-	-	-	0	1	3	6	8	9	11	10	9	8	7	4	2	0	-	-	-	-	-	2,369	-
7/31/2014	2014	7	31	3	21	(0.0)	21		2,956	-	-	-	-	-	-	0	1	4	7	9	11	12	12	12	10	9	6	3	1	-	-	-	-	-	2,956	-
8/31/2014	2014	8	31	3	24	(0.0)	24		3,167	-	-	-	-	-	-	0	1	4	7	10	12	13	13	12	11	9	6	3	0	-	-	-	-	-	3,167	-
9/30/2014	2014	9	30	3	27	(0.0)	27		3,410	-	-	-	-	-	-	-	1	4	9	12	14	15	15	14	12	10	6	2	0	-	-	-	-	-	3,410	-
10/31/2014	2014	10	31	3	31	(0.0)	30		3,892	-	-	-	-	-	-	-	0	4	10	13	16	18	18	16	14	10	5	1	-	-	-	-	-	-	3,892	-
11/30/2014	2014	11	30	3	34	(0.0)	33		3,829	-	-	-	-	-	-	0	4	9	14	17	19	18	18	14	10	5	-	-	-	-	-	-	-	-	3,829	-
12/31/2014	2014	12	31	3	37	(0.0)	37		3,907	-	-	-	-	-	-	-	2	8	14	17	19	19	18	14	10	5	-	-	-	-	-	-	-	-	3,907	-
1/31/2015	2015	1	31	1	38	(0.0)	38		4,159	-	-	-	-	-	-	-	2	7	13	17	19	19	18	17	12	7	1	-	-	-	-	-	-	-	4,159	-
2/28/2015	2015	2	28	1	39	(0.0)	39		4,261	-	-	-	-	-	-	0	2	8	15	19	21	22	22	18	14	9	3	-	-	-	-	-	-	-	4,261	-
3/31/2015	2015	3	31	1	40	(0.0)	40		5,820	-	-	-	-	-	-	-	0	5	11	19	23	25	25	26	22	17	11	4	-	-	-	-	-	-	5,820	-
4/30/2015	2015	4	30	1	41	(0.0)	41		5,943	-	-	-	-	-	-	0	1	6	15	20	24	26	26	24	22	17	11	4	0	-	-	-	-	-	5,943	-
5/31/2015	2015	5	31	1	42	(0.0)	42		6,233	-	-	-	-	-	-	0	2	8	15	20	24	26	27	25	21	17	11	5	1	-	-	-	-	-	6,233	-
6/30/2015	2015	6	30	1	43	(0.0)	43		5,558	-	-	-	-	-	-	0	2	8	14	19	22	25	23	21	19	16	10	5	1	-	-	-	-	-	5,558	-
7/31/2015	2015	7	31	1	44	(0.0)	44		6,092	-	-	-	-	-	-	0	2	7	14	19	23	25	25	24	21	18	12	6	1	-	-	-	-	-	6,092	-
8/31/2015	2015	8	31	1	45	(0.0)	45		5,851	-	-	-	-	-	-	0	1	7	13	18	22	25	25	23	21	17	12	5	1	-	-	-	-	-	5,851	-
9/30/2015	2015	9	30	1	46	(0.0)	46		5,733	-	-	-	-	-	-	-	1	7	15	21	24	25	25	24	21	16	9	3	0	-	-	-	-	-	5,733	-
10/31/2015	2015	10	31	1	47	(0.0)	47		6,025	-	-	-	-	-	-	-	0	7	15	21	25	28	28	25	22	16	7	1	-	-	-	-	-	-	6,025	-
11/30/2015	2015	11	30	1	48	(0.0)	48		5,509	-	-	-	-	-	-	0	6	13	20	24	27	26	26	21	15	7	-	-	-	-	-	-	-	-	5,509	-
12/31/2015	2015	12	31	1	50	(0.0)	49		5,267	-	-	-	-	-	-	-	3	11	18	22	26	26	24	20	13	7	-	-	-	-	-	-	-	-	5,267	-
1/31/2016	2016	1	31	1	50	(0.0)	50		5,549	-	-	-	-	-	-	-	2	10	18	23	26	26	24	23	16	10	2	-	-	-	-	-	-	-	5,549	-
2/29/2016	2016	2	29	1	51	(0.0)	51		5,630	-	-	-	-	-	-	0	3	10	19	24	27	28	27	23	18	11	4	-	-	-	-	-	-	-	5,630	-
3/31/2016	2016	3	31	1	52	(0.0)	52		7,618	-	-	-	-	-	-	-	0	6	15	25	30	33	33	33	29	22	14	5	-	-	-	-	-	-	7,618	-
4/30/2016	2016	4	30	1	53	(0.0)	53		7,709	-	-	-	-	-	-	0	2	8	19	27	32	34	34	32	28	22	14	6	0	-	-	-	-	-	7,709	-
5/31/2016	2016	5	31	1	54	(0.0)	54		8,016	-	-	-	-	-	-	0	3	11	19	26	30	33	34	32	27	22	14	6	1	-	-	-	-	-	8,016	-
6/30/2016	2016	6	30	1	55	(0.0)	55		7,088	-	-	-	-	-	-	0	3	10	18	24	28	32	29	27	25	20	13	6	1	-	-	-	-	-	7,088	-
7/31/2016	2016	7	31	1	56	(0.0)	56		7,708	-	-	-	-	-	-	0	2	9	17	24	29	32	32	31	27	22	15	7	2	-	-	-	-	-	7,708	-
8/31/2016	2016	8	31	1	57	(0.0)	57		7,346	-	-	-	-	-	-	0	1	9	16	23	28	31	31	28	26	21	15	6	1	-	-	-	-	-	7,346	-
9/30/2016	2016	9	30	1	58	(0.0)	57		7,146	-	-	-	-	-	-	-	1	9	19	26	30	31	31	30	26	20	12	3	0	-	-	-	-	-	7,146	-
10/31/2016	2016	10	31	1	59	(0.0)	58		7,457	-	-	-	-	-	-	-	1	8	18	26	30	35	34	31	27	19	9	1	-	-	-	-	-	-	7,457	-
11/30/2016	2016	11	30	1	60	(0.0)	59		6,773	-	-	-	-	-	-	0	7	16	24	30	34	32	32	25	18	8	-	-	-	-	-	-	-	-	6,773	-
12/31/2016	2016	12	31	1	61	(0.0)	60		6,434	-	-	-	-	-	-	-	4	14	22	27	32	31	29	24	16	8	-	-	-	-	-	-	-	-	6,434	-
1/31/2017	2017	1	31	2	63	(0.0)	62		6,882	-	-	-	-	-	-	-	3	12	22	29	32	32	30	29	20	12	2	-	-	-	-	-	-	-	6,882	-
2/28/2017	2017	2	28	2	65	(0.0)	64		7,083	-	-	-	-	-	-	0	4	13	25	31	35	36	36	31	24	15	5	-	-	-	-	-	-	-	7,083	-
3/31/2017	2017	3	31	2	67	(0.0)	66		9,720	-	-	-	-	-	-	-	0	8	19	31	38	42	42	43	37	28	18	7	-	-	-	-	-	-	9,720	-
4/30/2017	2017	4	30	2	69	(0.0)	68		9,970	-	-	-	-	-	-	0	2	11	25	34	41	44	43	41	36	29	18	7	0	-	-	-	-	-	9,970	-
5/31/2017	2017	5	31	2	71	(0.0)	71		10,505	-	-	-	-	-	-	0	4	14	25	34	40	43	45	42	36	28	19	8	1	-	-	-	-	-	10,505	-
6/30/2017	2017	6	30	2	73	(0.0)	73		9,403	-	-	-	-	-	-	0	4	13	24	32	38	42	39	35	33	27	17	8	2	-	-	-	-	-	9,403	-
7/31/2017	2017	7	31	2	75	(0.0)	75		10,337	-	-	-	-	-	-	0	3	13	23	32	39	43	43	41	36	30	20	9	2	-	-	-	-	-	10,337	-
8/31/2017	2017	8	31	2	77	(0.0)	77		9,970	-	-	-	-	-	-	0	2	12	22	31	38	42	42	39	35	29	20	8	1	-	-	-	-	-	9,970	-
9/30/2017	2017	9	30	2	80	(0.0)	79		9,798	-	-	-	-	-	-	-	2	13	26	36	41	43	43	41	35	28	16	5	0	-	-	-	-	-	9,798	-
10/31/2017	2017	10	31	2	82	(0.0)	81		10,331	-	-	-	-	-	-	-	1	12	26	36	42	49	48	43	37	27	12	2	-	-	-	-	-	-	10,331	-
11/30/2017	2017	11	30	2	84	(0.0)	83		9,457	-	-	-	-	-	-	0	10	23	34	41	47	45	44	35	25	12	-	-	-	-	-	-	-	-	9,457	-
12/31/2017	2017	12	31	2	86	(0.0)	85		9,059	-	-	-	-	-	-	-	6	20	31	38	45	44	41	34	22	11	-	-	-	-	-	-	-	-	9,059	-
1/31/2018	2018	1	31	3	89	(0.0)	88		9,728	-	-	-	-	-	-	-	4	17	31	41	45	45	43	41	28	17	3	-	-	-	-	-	-	-	9,728	-
2/28/2018	2018	2	28	3	92	(0.0)	91		10,036	-	-	-	-	-	-	0	5	18	35	44	50	51	51	43	33	21	6	-	-	-	-	-	-	-	10,036	-
3/31/2018	2018	3	31	3	96	(0.0)	95		13,819	-	-	-	-	-	-	-	0	11	27	45	54	60	60	61	52	40	26	10	-	-	-	-	-	-	-	13,819	-
4/30/2018	2018	4	30	3	99	(0.0)	98		14,219	-	-	-	-	-	-	0	3	16	36	49	58	62	62	58	52	41	26	11	1	-	-	-	-	-	14,219	-
5/31/2018	2018	5	31	3	102	(0.0)	101		15,028	-	-	-	-	-	-	0	6	20	36	48	57	62	64	60	51	40	27	11	2	-	-	-	-	-	15,028	-
6/30/2018	2018	6	30	3	105	(0.0)	104		13,480	-	-	-	-	-	-	0	6	19	34	47	54	60	56	51	47	38	25	12	2	-	-	-	-	-	13,480	-
7/31/2018	2018	7	31	3	108	(0.0)	107		14,843	-	-	-	-	-	-	0	5	18	33	46	55	62	61	59	51	43	29	13	3	-	-	-	-	-	14,843	-
8/31/2018	2018	8	31	3	112	(0.0)	110		14,348	-	-	-	-	-	-	0	3	17	32	45	54	61	61	56	51	42	28	12	1	-	-	-	-	-	14,348	-
9/30/2018	2018	9	30	3	115	(0.0)	114		14,123	-	-	-	-	-	-	-	3	18	37	52	59	61	61	60	51	40	23	7	0	-	-	-	-	-	14,123	-
10/31/2018	2018	10	31	3	118	(0.0)	117		14,916	-	-	-	-	-	-	-	1	17	37	52	61	70	69	62	53	39	18	3	-	-	-	-	-	-	-	14,916	-
11/30/2018	2018	11	30	3	121	(0.0)	120		13,675	-	-	-	-	-	-	0	14	33	49	60	68	64	64	51	36	17	-	-	-	-	-	-	-	-	13,675	-
12/31/2018	2018	12	31	3	124	(0.0)	123		13,121	-	-	-	-	-	-	-	8	29	45	56	65	64	60	49	32	16	-	-	-	-	-	-	-	-	13,121	-
1/31/2019	2019	1	31	6	130	(0.1)	129		14,218	-	-	-	-	-	-	-	6	25	45	60	66	66	63	59	41	24	4	-	-	-	-	-	-	-	14,218	-
2/28/2019	2019	2	28	6	136	(0.1)	135		14,790	-	-	-	-	-	-	0	8	26	52	65	74	76	75	64	49	31	10	-	-	-	-	-	-	-	14,790	-
3/31/2019	2019	3	31	6	142	(0.1)	141		20,532	-	-	-	-	-	-	-	1	16	41	66	80	89	89	90	78	60	38	14	-	-	-	-	-	-	-	20,532	-
4/30/2019	2019	4	30	6	148	(0.1)	146		21,290	-	-	-	-	-	-	0	5	24	54	73	87	93	93	87	77	61	39	16	1	-	-	-	-	-	21,290	-
5/31/2019	2019	5	31	6	154	(0.1)	152		22,678	-	-	-	-	-	-	0	8	31	55	73	86	93	96	91	77	61	40	17	3	-	-	-	-	-	22,678	-
6/30/2019	2019	6	30	6	160	(0.1)	158		20,476	-	-	-	-	-	-	0	9	29	52	71	82	91	84	77	71	58	38	18	4	-	-	-	-	-	20,476	-
7/31/2019	2019	7	31	6	166	(0.1)	164		22,663	-	-	-	-	-	-	0	7	28	51	70	85	94	94	90	78	65	44	20	4	-	-	-	-	-	22,663	-
8/31/2019	2019	8	31	6	172	(0.1)	170		22,053	-	-	-	-	-	-	0	5	27	50	69	83	93	93	85	78	64	43	18	2	-	-	-	-	-	22,053	-
9/30/2019	2019	9	30	6	177	(0.1)	175		21,813	-	-	-	-	-	-	-	4	28	57	80	91	95	95	92	78	61	35	10	0	-	-	-	-	-	21,813	-
10/31/2019	2019	10	31	6	183	(0.1)	181		23,158	-	-	-	-	-	-	-	2	27	58	80	95	109	107	96	82	60	28	4	-	-	-	-	-	-	23,158	-
11/30/2019	2019	11	30	6	189	(0.1)	187		21,280	-	-	-	-	-	-	0	23	51	76	93	106	100	99	80	55	26	-	-	-	-	-	-	-	-	21,280	-
12/31/2019	2019	12	31	6	195	(0.1)	193		20,489	-	-	-	-	-	-	-	13	45	71	87	102	99	93	76	50	25	-	-	-	-	-	-	-	-	20,489	-
1/31/2020	2020	1	31	9	204	(0.1)	202		22,167	-	-	-	-	-	-	-	9	39	71	93	103	103	97	92	64	37	6	-	-	-	-	-	-	-	22,167	-
2/29/2020	2020	2	29	9	213	(0.1)	210		22,983	-	-	-	-	-	-	0	12	40	78	98	111	114	112	95	73	45	14	-	-	-	-	-	-	-	22,983	-
3/31/2020	2020	3	31	9	222	(0.1)	219		31,897	-	-	-	-	-	-	-	1	26	64	103	125	139	139	139	120	92	59	21	-	-	-	-	-	-	-	31,897	-
4/30/2020	2020	4	30	9	231	(0.1)	228		33,077	-	-	-	-	-	-	0	8	38	84	114	136	145	144	136	120	94	60	24	1	-	-	-	-	-	33,077	-
5/31/2020	2020	5	31	9	239	(0.1)	237		35,290	-	-	-	-	-	-	1	14	49	86	113	134	145	150	141	119	94	62	26	4	-	-	-	-	-	35,290	-
6/30/2020	2020	6	30	9	248	(0.1)	246		31,831	-	-	-	-	-	-	1	14	45	80	110	127	142	131	120	110	90	58	27	5	-	-	-	-	-	31,831	-
7/31/2020	2020	7	31	9	257	(0.1)	254		35,097	-	-	-	-	-	-	1	12	45	80	109	131	145	145	139	121	101	67	31	6	-	-	-	-	-	35,097	-
8/31/2020	2020	8	31	9	266	(0.1)	263		34,212	-	-	-	-	-	-	0	8	43	78	109	130	144	145	133	120	98	66	27	3	-	-	-	-	-	34,212	-
9/30/2020	2020	9	30	9	275	(0.1)	272		33,758	-	-	-	-	-	-	-	8	45	90	124	141	147	147	143	120	94	53	15	0	-	-	-	-	-	33,758	-

10/31/2020	2020	10	31	9	284	(0.1)	281	35,826	-	-	-	-	-	-	-	4	42	90	125	147	169	165	148	126	91	42	6	-	-	-	-	-	35,826	-
11/30/2020	2020	11	30	9	293	(0.1)	289	32,699	-	-	-	-	-	-	1	36	80	119	144	162	154	151	122	84	38	-	-	-	-	-	-	-	32,699	-
12/31/2020	2020	12	31	9	302	(0.1)	298	31,383	-	-	-	-	-	-	-	21	69	110	134	155	151	143	117	76	36	-	-	-	-	-	-	-	31,383	-
1/31/2021	2021	1	31	14	316	(0.1)	312	34,072	-	-	-	-	-	-	-	14	61	109	144	159	159	150	140	97	56	9	-	-	-	-	-	-	34,072	-
2/28/2021	2021	2	28	14	330	(0.1)	327	35,296	-	-	-	-	-	-	0	20	66	125	157	177	181	177	151	115	71	21	-	-	-	-	-	-	35,296	-
3/31/2021	2021	3	31	14	345	(0.1)	341	49,224	-	-	-	-	-	-	-	3	42	101	160	193	215	215	214	184	141	89	32	-	-	-	-	-	49,224	-
4/30/2021	2021	4	30	14	359	(0.1)	355	51,281	-	-	-	-	-	-	0	14	61	132	178	210	224	223	210	184	144	91	36	2	-	-	-	-	51,281	-
5/31/2021	2021	5	31	14	374	(0.1)	369	55,078	-	-	-	-	-	-	1	24	79	137	178	209	227	233	218	185	145	95	39	5	-	-	-	-	55,078	-
6/30/2021	2021	6	30	14	388	(0.2)	384	49,760	-	-	-	-	-	-	2	24	72	126	173	199	221	205	188	171	139	89	41	8	-	-	-	-	49,760	-
7/31/2021	2021	7	31	14	402	(0.2)	398	54,706	-	-	-	-	-	-	1	20	72	127	170	205	226	226	215	188	155	102	47	10	-	-	-	-	54,706	-
8/31/2021	2021	8	31	14	417	(0.2)	412	53,625	-	-	-	-	-	-	0	15	69	125	173	204	224	227	209	187	151	101	41	4	-	-	-	-	53,625	-
9/30/2021	2021	9	30	14	431	(0.2)	426	52,860	-	-	-	-	-	-	-	14	74	142	195	221	230	230	223	186	144	81	22	0	-	-	-	-	52,860	-
10/31/2021	2021	10	31	14	446	(0.2)	441	56,202	-	-	-	-	-	-	-	8	69	144	197	233	266	259	231	195	140	63	8	-	-	-	-	-	56,202	-
11/30/2021	2021	11	30	14	460	(0.2)	455	50,911	-	-	-	-	-	-	2	58	129	187	225	253	239	232	189	127	56	-	-	-	-	-	-	-	50,911	-
12/31/2021	2021	12	31	14	474	(0.2)	469	48,749	-	-	-	-	-	-	-	34	110	172	209	240	234	222	182	117	53	-	-	-	-	-	-	-	48,749	-
1/31/2022	2022	1	31	17	492	(0.2)	486	52,559	-	-	-	-	-	-	-	23	97	171	224	246	245	230	215	148	83	13	-	-	-	-	-	-	52,559	-
2/28/2022	2022	2	28	17	509	(0.2)	503	53,872	-	-	-	-	-	-	0	31	103	192	241	270	277	270	230	173	105	30	-	-	-	-	-	-	53,872	-
3/31/2022	2022	3	31	17	526	(0.2)	520	74,723	-	-	-	-	-	-	-	5	66	155	243	293	327	327	323	278	212	133	47	-	-	-	-	-	74,723	-
4/30/2022	2022	4	30	17	543	(0.2)	537	77,357	-	-	-	-	-	-	0	22	93	200	269	318	338	336	317	277	217	136	53	3	-	-	-	-	77,357	-
5/31/2022	2022	5	31	17	560	(0.2)	554	82,553	-	-	-	-	-	-	2	37	120	206	268	313	340	349	327	277	217	142	59	8	-	-	-	-	82,553	-
6/30/2022	2022	6	30	17	577	(0.2)	571	74,003	-	-	-	-	-	-	3	37	108	187	258	296	328	305	279	254	207	132	61	12	-	-	-	-	74,003	-
7/31/2022	2022	7	31	17	594	(0.2)	588	80,789	-	-	-	-	-	-	2	30	106	187	252	302	334	334	318	278	229	151	69	14	-	-	-	-	80,789	-
8/31/2022	2022	8	31	17	612	(0.2)	604	78,627	-	-	-	-	-	-	0	22	100	183	252	299	329	333	306	275	222	149	60	6	-	-	-	-	78,627	-
9/30/2022	2022	9	30	17	629	(0.2)	621	77,057	-	-	-	-	-	-	-	19	107	207	284	323	335	335	325	272	211	119	33	0	-	-	-	-	77,057	-
10/31/2022	2022	10	31	17	646	(0.3)	638	81,428	-	-	-	-	-	-	-	10	99	207	284	336	385	375	335	284	205	93	12	-	-	-	-	-	81,428	-
11/30/2022	2022	11	30	17	663	(0.3)	655	73,656	-	-	-	-	-	-	3	82	184	269	325	366	346	337	274	186	83	-	-	-	-	-	-	-	73,656	-
12/31/2022	2022	12	31	17	680	(0.3)	672	70,336	-	-	-	-	-	-	-	47	157	247	301	347	339	321	262	169	80	-	-	-	-	-	-	-	70,336	-
1/31/2023	2023	1	31	21	701	(0.3)	692	75,253	-	-	-	-	-	-	-	32	137	243	319	352	351	330	309	213	122	20	-	-	-	-	-	-	75,253	-
2/28/2023	2023	2	28	21	721	(0.3)	713	76,780	-	-	-	-	-	-	0	44	145	273	342	384	395	386	328	249	152	44	-	-	-	-	-	-	76,780	-
3/31/2023	2023	3	31	21	742	(0.3)	733	105,717	-	-	-	-	-	-	-	7	91	217	343	415	462	463	458	395	302	190	67	-	-	-	-	-	105,717	-
4/30/2023	2023	4	30	21	763	(0.3)	753	108,745	-	-	-	-	-	-	1	30	129	280	377	446	475	472	446	391	306	193	76	4	-	-	-	-	108,745	-
5/31/2023	2023	5	31	21	783	(0.3)	774	115,320	-	-	-	-	-	-	3	50	165	287	373	438	475	488	457	387	304	200	83	11	-	-	-	-	115,320	-
6/30/2023	2023	6	30	21	804	(0.3)	794	102,944	-	-	-	-	-	-	3	50	149	260	358	412	457	425	388	354	288	185	86	16	-	-	-	-	102,944	-
7/31/2023	2023	7	31	21	824	(0.3)	814	112,035	-	-	-	-	-	-	2	41	146	258	349	419	463	464	441	385	319	210	97	20	-	-	-	-	112,035	-
8/31/2023	2023	8	31	21	845	(0.3)	835	108,546	-	-	-	-	-	-	1	29	138	252	348	412	455	460	422	380	308	206	84	9	-	-	-	-	108,546	-
9/30/2023	2023	9	30	21	866	(0.3)	855	106,026	-	-	-	-	-	-	-	26	147	284	391	444	461	461	447	374	291	164	45	0	-	-	-	-	106,026	-
10/31/2023	2023	10	31	21	886	(0.4)	875	111,652	-	-	-	-	-	-	-	14	135	284	390	461	528	514	460	390	281	128	17	-	-	-	-	-	111,652	-
11/30/2023	2023	11	30	21	907	(0.4)	895	100,677	-	-	-	-	-	-	4	112	251	368	445	500	473	461	374	254	114	-	-	-	-	-	-	-	100,677	-
12/31/2023	2023	12	31	21	928	(0.4)	916	95,807	-	-	-	-	-	-	-	64	214	336	410	473	461	437	356	231	108	-	-	-	-	-	-	-	95,807	-
1/31/2024	2024	1	31	17	944	(0.4)	932	101,291	-	-	-	-	-	-	-	43	184	327	429	473	473	444	416	287	164	27	-	-	-	-	-	-	101,291	-
2/29/2024	2024	2	29	17	961	(0.4)	949	102,168	-	-	-	-	-	-	0	56	186	350	440	494	507	496	422	320	196	57	-	-	-	-	-	-	102,168	-
3/31/2024	2024	3	31	17	978	(0.4)	965	139,162	-	-	-	-	-	-	-	9	120	285	452	546	609	609	603	520	397	250	89	-	-	-	-	-	139,162	-
4/30/2024	2024	4	30	17	995	(0.4)	982	141,673	-	-	-	-	-	-	1	39	168	365	492	581	619	615	581	509	398	251	98	5	-	-	-	-	141,673	-
5/31/2024	2024	5	31	17	1,012	(0.4)	998	148,764	-	-	-	-	-	-	4	64	213	370	482	565	613	629	590	500	392	257	107	15	-	-	-	-	148,764	-
6/30/2024	2024	6	30	17	1,029	(0.4)	1,014	131,536	-	-	-	-	-	-	4	64	191	333	458	526	584	543	496	452	369	236	110	21	-	-	-	-	131,536	-
7/31/2024	2024	7	31	17	1,046	(0.4)	1,031	141,838	-	-	-	-	-	-	3	52	185	327	441	530	587	587	559	488	403	266	122	25	-	-	-	-	141,838	-
8/31/2024	2024	8	31	17	1,063	(0.4)	1,047	136,226	-	-	-	-	-	-	1	37	173	316	437	518	570	577	529	476	386	258	105	11	-	-	-	-	136,226	-
9/30/2024	2024	9	30	17	1,079	(0.4)	1,064	131,942	-	-	-	-	-	-	-	33	183	354	486	553	573	573	556	465	363	204	56	0	-	-	-	-	131,942	-
10/31/2024	2024	10	31	17	1,096	(0.4)	1,080	137,821	-	-	-	-	-	-	-	17	167	351	481	569	652	635	568	482	347	157	21	-	-	-	-	-	137,821	-
11/30/2024	2024	11	30	17	1,113	(0.4)	1,097	123,301	-	-	-	-	-	-	4	138	308	451	544	613	579	565	458	312	139	-	-	-	-	-	-	-	123,301	-
12/31/2024	2024	12	31	17	1,130	(0.5)	1,113	116,457	-	-	-	-	-	-	-	78	260	409	498	575	561	531	433	280	132	-	-	-	-	-	-	-	116,457	-
1/31/2025	2025	1	31	18	1,148	(0.5)	1,131	122,893	-	-	-	-	-	-	-	53	224	397	521	574	574	539	505	348	198	33	-	-	-	-	-	-	122,893	-
2/28/2025	2025	2	28	18	1,167	(0.5)	1,149	123,728	-	-	-	-	-	-	0	70	234	440	552	619	636	622	529	401	245	71	-	-	-	-	-	-	123,728	-
3/31/2025	2025	3	31	18	1,185	(0.5)	1,167	168,235	-	-	-	-	-	-	-	11	145	345	546	660	736	736	729	629	480	303	107	-	-	-	-	-	168,235	-
4/30/2025	2025	4	30	18	1,204	(0.5)	1,185	170,982	-	-	-	-	-	-	1	47	203	441	593	702	747	742	702	614	480	303	119	6	-	-	-	-	170,982	-
5/31/2025	2025	5	31	18	1,222	(0.5)	1,202	179,249	-	-	-	-	-	-	5	77	257	446	580	681	738	758	710	602	472	310	129	18	-	-	-	-	179,249	-
6/30/2025	2025	6	30	18	1,240	(0.5)	1,220	158,237	-	-	-	-	-	-	5	77	230	400	550	633	702	653	597	544	443	284	132	25	-	-	-	-	158,237	-
7/31/2025	2025	7	31	18	1,259	(0.5)	1,238	170,361	-	-	-	-	-	-	4	62	222	392	530	637	705	705	671	586	484	319	147	30	-	-	-	-	170,361	-
8/31/2025	2025	8	31	18	1,277	(0.5)	1,256	163,379	-	-	-	-	-	-	1	44	208	379	524	621	684	692	635	571	463	310	126	13	-	-	-	-	163,379	-
9/30/2025	2025	9	30	18	1,295	(0.5)	1,274	158,008	-	-	-	-	-	-	-	39	219	423	582	662	687	686	666	557	434	244	67	0	-	-	-	-	158,008	-
10/31/2025	2025	10	31	18	1,314	(0.5)	1,292	164,815	-	-	-	-	-	-	-	21	200	420	575	681	779	759	679	576	414	188	25	-	-	-	-	-	164,815	-
11/30/2025	2025	11	30	18	1,332	(0.5)	1,310	147,240	-	-	-	-	-	-	5	164	368	538	650	732	691	674	547	372	166	-	-	-	-	-	-	-	147,240	-
12/31/2025	2025	12	31	18	1,351	(0.5)	1,327	138,878	-	-	-	-	-	-	-	93	310	488	594	685	668	633	517	334	157	-	-	-	-	-	-	-	138,878	-
1/31/2026	2026	1	31	21	1,371	(0.6)	1,348	146,431	-	-	-	-	-	-	-	63	266	473	620	684	683	642	602	415	236	39	-	-	-	-	-	-	146,431	-
2/28/2026	2026	2	28	21	1,392	(0.6)	1,368	147,303	-	-	-	-	-	-	0	84	278	523	657	737	758	740	630	477	292	85	-	-	-	-	-	-	147,303	-
3/31/2026	2026	3	31	21	1,413	(0.6)	1,388	200,136	-	-	-	-	-	-	-	13	173	410	650	785	875	876	867	748	572	360	127	-	-	-	-	-	200,136	-
4/30/2026	2026	4	30	21	1,434	(0.6)	1,408	203,253	-	-	-	-	-	-	1	55	242	524	705	834	888	882	834	730	571	360	141	7	-	-	-	-	203,253	-
5/31/2026	2026	5	31	21	1,454	(0.6)	1,428	212,929	-	-	-	-	-	-	5	92	305	529	690	808	877	900	844	715	561	368	153	21	-	-	-	-	212,929	-
6/30/2026	2026	6	30	21	1,475	(0.6)	1,449	187,833	-	-	-	-	-	-	6	91	273	475	653	751	834	775	708	645	526	337	156	30	-	-	-	-	187,833	-
7/31/2026	2026	7	31	21	1,496	(0.6)	1,469	202,075	-	-	-	-	-	-	4	74	264	466	629	756	836	836	796	695	574	379	174	36	-	-	-	-	202,075	-
8/31/2026	2026	8	31	21	1,517	(0.6)	1,489	193,666	-	-	-	-	-	-	1	53	246	449	621	736	811	820	753	677	549	367	150	15	-	-	-	-	193,666	-
9/30/2026	2026	9	30	21	1,537	(0.6)	1,509	187,171	-	-	-	-	-	-	-	46	259	502	689	784	813	813	789	660	514	289	80	0	-	-	-	-	187,171	-
10/31/2026	2026	10	31	21	1,558	(0.6)	1,529	195,110	-	-	-	-	-	-	-	25	236	497	681	806	923	899	803	682	490	223	29	-	-	-	-	-	195,110	-
11/30/2026	2026	11	30	21	1,579	(0.6)	1,549	174,183	-	-	-	-	-	-	6	194	435	637	769	866	818	798	647	440	196	-	-	-	-	-	-	-	174,183	-
12/31/2026	2026	12	31	21	1,600	(0.6)	1,569	164,187	-	-	-	-	-	-	-	110	366	577	703	810	790	748	611	395	185	-	-	-	-	-	-	-	164,187	-
1/31/2027	2027	1	31	21	1,621	(0.7)	1,590	172,744	-	-	-	-	-	-	-	74	314	557	732	807	806	758	710	489	279	46	-	-	-	-	-	-	172,744	-
2/28/2027	2027	2	28	21	1,642	(0.7)	1,610	173,403	-	-	-	-	-	-	0	99	327	616	773	868	892	871	741	562	344	100	-	-	-	-	-	-	173,403	-
3/31/2027	2027	3	31	21	1,663	(0.7)	1,631	235,122	-	-	-	-	-	-	-	15	203	482	763	922	1,028	1,029	1,019	878	671	423	150	-	-	-	-	-	235,122	-
4/30/2027	2027	4	30	21	1,684	(0.7)	1,651	238,313	-	-	-	-	-	-	1	65	283	614	827	978	1,041	1,034	978	856	669	422	165	9	-	-	-	-	238,313	-
5/31/2027	2027	5	31	21	1,705	(0.7)	1,672	249,181	-	-	-	-	-	-	6	108	357	620	807	946	1,026	1,053	987	837	656	431	179	25	-	-	-	-	249,181	-
6/30/2027	2027	6	30	21	1,726	(0.7)	1,692	219,397	-	-	-	-	-	-	7	107	318	555	763	877	974	905	827	754	615	394	183	35	-	-	-	-	219,397	-
7/31/2027	2027	7	31	21	1,747	(0.7)	1,712	235,593	-	-	-	-	-	-	5	87	308	543	733	881	974	975	928	810	670	442	203	41	-	-	-	-	235,593	-
8/31/2027	2027	8	31	21	1,769	(0.7)	1,733	225,389	-	-	-	-	-	-	1	61	286	523	723	856	944	955	876	788	639	427	174	18	-	-	-	-	225,389	-
9/30/2027	2027	9	30	21	1,790	(0.7)	1,753	217,447	-	-	-	-	-	-	-	54	301	583	801	911	945	945	916	767	597	336	92	0	-	-	-	-	217,447	-
10/31/2027	2027	10	31	21	1,811	(0.7)	1,774	226,284	-	-	-	-	-	-	-	29	274	576	790	935	1,070	1,042	932	791	569	258	34	-	-	-	-	-	226,284	-
11/30/2027	2027	11	30	21	1,832	(0.7)	1,794	201,674	-	-	-	-	-	-	7	225	504	737	891	1,002	947	924	749	509	227	-	-	-	-	-	-	-	201,674	-
12/31/2027	2027	12	31	21	1,853	(0.7)	1,814	189,791	-	-	-	-	-	-	-	127	424	667	812	937	913	865	706	457	214	-	-	-	-	-	-	-	189,791	-
1/31/2028	2028	1	31	25	1,878	(0.8)	1,838	199,716	-	-	-	-	-	-	-	86	364	645	846	933	932	876	820	566	322	53	-	-	-	-	-	-	199,716	-
2/29/2028	2028	2	29	25	1,902	(0.8)	1,862	200,511	-	-	-	-	-	-	0	110	366	688	863	969	996	972	828	627	384	111	-	-	-	-	-	-	200,511	-
3/31/2028	2028	3	31	25	1,927	(0.8)	1,886	271,917	-	-	-	-	-	-	-	18	235	557	883	1,067	1,189	1,190	1,178	1,016	776	489	173	-	-	-	-	-	271,917	-
4/30/2028	2028	4	30	25	1,952	(0.8)	1,910	275,642	-	-	-	-	-	-	1	75	328	710	957	1,131	1,204	1,196	1,131	990	774	488	191	10	-	-	-	-	275,642	-
5/31/2028	2028	5	31	25	1,976	(0.8)	1,934	288,239	-	-	-	-	-	-	7	124	413	717	933	1,094	1,187	1,219	1,142	968	759	498	207	29	-	-	-	-	288,239	-
6/30/2028	2028	6	30	25	2,001	(0.8)	1,958	253,817	-	-	-	-	-	-	8	123	368	642	883	1,015	1,127	1,047	957	872	711	456	211	40	-	-	-	-	253,817	-
7/31/2028	2028	7	31	25	2,025	(0.8)	1,981	272,600	-	-	-	-	-	-	6	100	356	628	848	1,019	1,127	1,128	1,074	938	775	511	235	48	-	-	-	-	272,600	-
8/31/2028	2028	8	31	25	2,050	(0.8)	2,005	260,811	-	-	-	-	-	-	1	71	331	605	836	991	1,092	1,105	1,014	912	739	494	202	21	-	-	-	-	260,811	-
9/30/2028	2028	9	30	25	2,075	(0.8)	2,029	251,659	-	-	-	-	-	-	-	62	348	674	927	1,054	1,094	1,093	1,061	888	692	389	107	0	-	-	-	-	251,659	-
10/31/2028	2028	10	31	25	2,099	(0.8)	2,053	261,912	-	-	-	-	-	-	-	33	317	667	914	1,082	1,238	1,206	1,079	915	659	299	39	-	-	-	-	-	261,912	-
11/30/2028	2028	11	30	25	2,124	(0.9)	2,077	233,488	-	-	-	-	-	-	9	261	583	853	1,031	1,160	1,096	1,069	867	590	263	-	-	-	-	-	-	-	233,488	-
12/31/2028	2028	12	31	25	2,149	(0.9)	2,100	219,771	-	-	-	-	-	-	-	147	490	772	940	1,085	1,058	1,001	818	529	249	-	-	-	-	-	-	-	219,771	-
1/31/2029	2029	1	31	27	2,175	(0.9)	2,126	231,052	-	-	-	-	-	-	-	99	420	745	979	1,080	1,078	1,014	949	655	373	61	-	-	-	-	-	-	231,052	-
2/28/2029	2029	2	28	27	2,202	(0.9)	2,152	231,788	-	-	-	-	-	-	0	132	437	823	1,033	1,160	1,192	1,164	991	751	460	133	-	-	-	-	-	-	231,788	-
3/31/2029	2029	3	31	27	2,229	(0.9)	2,178	314,049	-	-	-	-	-	-	-	20	271	643	1,019	1,232	1,374	1,374	1,361	1,173	897	565	200	-	-	-	-	-	314,049	-
4/30/2029	2029	4	30	27	2,255	(0.9)	2,204	318,074	-	-	-	-	-	-	2	87	378	819	1,104	1,305	1,390	1,381	1,305	1,143	894	564	221	12	-	-	-	-	318,074	-
5/31/2029	2029	5	31	27	2,282	(0.9)	2,229	332,317	-	-	-	-	-	-	8	143	476	826	1,076	1,262	1,369	1,405	1,317	1,116	875	575	239	33	-	-	-	-	332,317	-
6/30/2029	2029	6	30	27	2,309	(0.9)	2,255	292,407	-	-	-	-	-	-	9	142	424	739	1,017	1,169	1,298	1,206	1,102	1,004	819	525	244	47	-	-	-	-	292,407	-
7/31/2029	2029	7	31	27	2,336	(0.9)	2,281	313,834	-	-	-	-	-	-	7	115	409	723	976	1,174	1,298	1,299	1,236	1,080	892	589	270	55	-	-	-	-	313,834	-
8/31/2029	2029	8	31	27	2,362	(0.9)	2,307	300,021	-	-	-	-	-	-	2	81	381	695	961	1,140	1,256	1,271	1,166	1,049	850	569	232	24	-	-	-	-	300,021	-
9/30/2029	2029	9	30	27	2,389	(1.0)	2,332	289,297	-	-	-	-	-	-	-	71	400	775	1,066	1,212	1,257	1,257	1,219	1,021	795	447	123	0	-	-	-	-	289,297	-
10/31/2029	2029	10	31	27	2,416	(1.0)	2,358	300,871	-	-	-	-	-	-	-	38	364	766	1,050	1,243	1,422	1,386	1,239	1,052	757	344	45	-	-	-	-	-	300,871	-

11/30/2029	2029	11	30	27	2,442	(1.0)	2,384	268,069	-	-	-	-	-	-	10	299	669	979	1,184	1,332	1,259	1,228	996	678	302	-	-	-	-	-	-	-	268,069	-
12/31/2029	2029	12	31	27	2,469	(1.0)	2,410	252,162	-	-	-	-	-	-	-	169	562	886	1,079	1,245	1,214	1,149	938	607	285	-	-	-	-	-	-	-	252,162	-
1/31/2030	2030	1	31	33	2,502	(1.0)	2,441	265,325	-	-	-	-	-	-	-	114	483	856	1,124	1,240	1,238	1,164	1,090	752	429	70	-	-	-	-	-	-	265,325	-
2/28/2030	2030	2	28	33	2,534	(1.0)	2,473	266,407	-	-	-	-	-	-	0	151	502	946	1,188	1,333	1,370	1,338	1,139	863	529	154	-	-	-	-	-	-	266,407	-
3/31/2030	2030	3	31	33	2,567	(1.0)	2,505	361,225	-	-	-	-	-	-	-	23	312	740	1,172	1,417	1,580	1,581	1,566	1,350	1,032	650	230	-	-	-	-	-	361,225	-
4/30/2030	2030	4	30	33	2,600	(1.0)	2,536	366,123	-	-	-	-	-	-	2	99	435	943	1,271	1,502	1,600	1,589	1,502	1,315	1,029	649	255	13	-	-	-	-	366,123	-
5/31/2030	2030	5	31	33	2,633	(1.1)	2,568	382,772	-	-	-	-	-	-	10	165	548	951	1,239	1,453	1,576	1,618	1,517	1,286	1,008	662	275	38	-	-	-	-	382,772	-
6/30/2030	2030	6	30	33	2,665	(1.1)	2,600	337,055	-	-	-	-	-	-	11	163	489	852	1,172	1,348	1,496	1,391	1,271	1,158	944	606	281	54	-	-	-	-	337,055	-
7/31/2030	2030	7	31	33	2,698	(1.1)	2,631	362,051	-	-	-	-	-	-	8	132	472	834	1,126	1,354	1,498	1,498	1,426	1,246	1,030	679	312	64	-	-	-	-	362,051	-
8/31/2030	2030	8	31	33	2,731	(1.1)	2,663	346,333	-	-	-	-	-	-	2	94	439	802	1,110	1,316	1,450	1,467	1,346	1,211	982	657	268	28	-	-	-	-	346,333	-
9/30/2030	2030	9	30	33	2,763	(1.1)	2,694	334,202	-	-	-	-	-	-	-	82	462	895	1,231	1,400	1,452	1,452	1,409	1,179	919	517	142	0	-	-	-	-	334,202	-
10/31/2030	2030	10	31	33	2,796	(1.1)	2,726	347,805	-	-	-	-	-	-	-	43	420	885	1,214	1,436	1,644	1,602	1,433	1,216	875	398	52	-	-	-	-	-	347,805	-
11/30/2030	2030	11	30	33	2,829	(1.1)	2,757	310,151	-	-	-	-	-	-	11	346	774	1,133	1,369	1,541	1,456	1,421	1,152	785	350	-	-	-	-	-	-	-	310,151	-
12/31/2030	2030	12	31	33	2,861	(1.1)	2,789	291,959	-	-	-	-	-	-	-	195	651	1,025	1,249	1,441	1,406	1,330	1,086	703	331	-	-	-	-	-	-	-	291,959	-
1/31/2031	2031	1	31	26	2,888	(1.2)	2,814	305,908	-	-	-	-	-	-	-	131	556	987	1,296	1,429	1,428	1,342	1,257	867	495	81	-	-	-	-	-	-	305,908	-
2/28/2031	2031	2	28	26	2,914	(1.2)	2,839	305,927	-	-	-	-	-	-	0	173	576	1,086	1,364	1,531	1,573	1,537	1,309	992	608	177	-	-	-	-	-	-	305,927	-
3/31/2031	2031	3	31	26	2,940	(1.2)	2,864	413,130	-	-	-	-	-	-	-	27	356	846	1,341	1,620	1,807	1,808	1,791	1,544	1,180	744	264	-	-	-	-	-	413,130	-
4/30/2031	2031	4	30	26	2,966	(1.2)	2,889	417,076	-	-	-	-	-	-	2	113	495	1,074	1,447	1,711	1,823	1,811	1,712	1,499	1,172	739	290	15	-	-	-	-	417,076	-
5/31/2031	2031	5	31	26	2,992	(1.2)	2,914	434,342	-	-	-	-	-	-	11	187	621	1,079	1,406	1,649	1,789	1,837	1,722	1,459	1,144	752	313	43	-	-	-	-	434,342	-
6/30/2031	2031	6	30	26	3,018	(1.2)	2,939	381,044	-	-	-	-	-	-	12	184	552	963	1,325	1,524	1,692	1,572	1,437	1,309	1,068	685	318	61	-	-	-	-	381,044	-
7/31/2031	2031	7	31	26	3,044	(1.2)	2,964	407,843	-	-	-	-	-	-	9	149	531	939	1,269	1,525	1,687	1,688	1,607	1,404	1,160	766	352	72	-	-	-	-	407,843	-
8/31/2031	2031	8	31	26	3,071	(1.2)	2,989	388,720	-	-	-	-	-	-	2	105	493	900	1,245	1,477	1,628	1,647	1,511	1,360	1,102	738	301	31	-	-	-	-	388,720	-
9/30/2031	2031	9	30	26	3,097	(1.2)	3,014	373,807	-	-	-	-	-	-	-	92	516	1,001	1,377	1,565	1,624	1,624	1,576	1,319	1,028	578	160	0	-	-	-	-	373,807	-
10/31/2031	2031	10	31	26	3,123	(1.3)	3,038	387,688	-	-	-	-	-	-	-	48	468	986	1,353	1,601	1,833	1,786	1,597	1,356	976	444	58	-	-	-	-	-	387,688	-
11/30/2031	2031	11	30	26	3,149	(1.3)	3,063	344,593	-	-	-	-	-	-	12	384	859	1,258	1,521	1,713	1,618	1,579	1,281	872	390	-	-	-	-	-	-	-	344,593	-
12/31/2031	2031	12	31	26	3,175	(1.3)	3,088	323,324	-	-	-	-	-	-	-	216	721	1,135	1,383	1,596	1,557	1,473	1,203	779	367	-	-	-	-	-	-	-	323,324	-
1/31/2032	2032	1	31	21	3,196	(1.3)	3,108	337,916	-	-	-	-	-	-	-	145	614	1,090	1,431	1,578	1,577	1,483	1,389	958	547	90	-	-	-	-	-	-	337,916	-
2/29/2032	2032	2	29	21	3,218	(1.3)	3,128	337,116	-	-	-	-	-	-	0	184	613	1,156	1,451	1,629	1,674	1,635	1,392	1,055	647	188	-	-	-	-	-	-	337,116	-
3/31/2032	2032	3	31	21	3,239	(1.3)	3,148	454,127	-	-	-	-	-	-	-	29	392	929	1,474	1,781	1,986	1,987	1,969	1,697	1,298	818	290	-	-	-	-	-	454,127	-
4/30/2032	2032	4	30	21	3,260	(1.3)	3,168	457,357	-	-	-	-	-	-	2	124	542	1,178	1,587	1,876	1,999	1,986	1,877	1,643	1,286	811	318	17	-	-	-	-	457,357	-
5/31/2032	2032	5	31	21	3,281	(1.3)	3,188	475,152	-	-	-	-	-	-	12	204	680	1,180	1,538	1,804	1,957	2,009	1,884	1,596	1,252	823	342	47	-	-	-	-	475,152	-
6/30/2032	2032	6	30	21	3,302	(1.3)	3,207	415,884	-	-	-	-	-	-	13	201	603	1,051	1,446	1,663	1,846	1,716	1,568	1,429	1,166	748	347	66	-	-	-	-	415,884	-
7/31/2032	2032	7	31	21	3,324	(1.3)	3,227	444,134	-	-	-	-	-	-	9	162	579	1,022	1,381	1,661	1,837	1,838	1,750	1,528	1,263	834	383	79	-	-	-	-	444,134	-
8/31/2032	2032	8	31	21	3,345	(1.3)	3,247	422,350	-	-	-	-	-	-	2	114	536	978	1,353	1,605	1,769	1,789	1,641	1,477	1,198	802	327	34	-	-	-	-	422,350	-
9/30/2032	2032	9	30	21	3,366	(1.3)	3,267	405,256	-	-	-	-	-	-	-	99	560	1,085	1,493	1,697	1,761	1,760	1,708	1,430	1,115	627	173	0	-	-	-	-	405,256	-
10/31/2032	2032	10	31	21	3,387	(1.4)	3,287	419,389	-	-	-	-	-	-	-	52	507	1,067	1,464	1,732	1,983	1,932	1,728	1,467	1,055	480	63	-	-	-	-	-	419,389	-
11/30/2032	2032	11	30	21	3,408	(1.4)	3,307	371,982	-	-	-	-	-	-	13	414	928	1,358	1,642	1,849	1,747	1,705	1,382	941	421	-	-	-	-	-	-	-	371,982	-
12/31/2032	2032	12	31	21	3,429	(1.4)	3,327	348,287	-	-	-	-	-	-	-	233	776	1,223	1,490	1,719	1,677	1,587	1,296	839	395	-	-	-	-	-	-	-	348,287	-
1/31/2033	2033	1	31	-	3,429	(1.4)	3,325	361,521	-	-	-	-	-	-	-	155	657	1,166	1,531	1,689	1,687	1,586	1,486	1,025	585	96	-	-	-	-	-	-	361,521	-
2/28/2033	2033	2	28	-	3,429	(1.4)	3,324	358,223	-	-	-	-	-	-	0	203	675	1,272	1,597	1,793	1,842	1,800	1,532	1,162	712	207	-	-	-	-	-	-	358,223	-
3/31/2033	2033	3	31	-	3,429	(1.4)	3,322	479,306	-	-	-	-	-	-	-	31	413	981	1,555	1,880	2,096	2,097	2,078	1,792	1,370	863	306	-	-	-	-	-	479,306	-
4/30/2033	2033	4	30	-	3,429	(1.4)	3,321	479,483	-	-	-	-	-	-	2	130	568	1,234	1,664	1,967	2,095	2,082	1,968	1,723	1,348	850	334	17	-	-	-	-	479,483	-
5/31/2033	2033	5	31	-	3,429	(1.4)	3,320	494,822	-	-	-	-	-	-	12	212	708	1,229	1,602	1,879	2,038	2,092	1,962	1,662	1,304	857	356	49	-	-	-	-	494,822	-
6/30/2033	2033	6	30	-	3,429	(1.4)	3,318	430,240	-	-	-	-	-	-	13	208	623	1,088	1,496	1,720	1,910	1,775	1,622	1,478	1,206	774	359	69	-	-	-	-	430,240	-
7/31/2033	2033	7	31	-	3,429	(1.4)	3,317	456,451	-	-	-	-	-	-	10	167	595	1,051	1,420	1,707	1,888	1,889	1,799	1,571	1,298	857	394	81	-	-	-	-	456,451	-
8/31/2033	2033	8	31	-	3,429	(1.4)	3,315	431,228	-	-	-	-	-	-	2	116	547	999	1,381	1,638	1,806	1,827	1,676	1,508	1,223	819	334	34	-	-	-	-	431,228	-
9/30/2033	2033	9	30	-	3,429	(1.4)	3,314	411,092	-	-	-	-	-	-	-	101	568	1,101	1,514	1,722	1,786	1,786	1,733	1,451	1,131	636	175	0	-	-	-	-	411,092	-
10/31/2033	2033	10	31	-	3,429	(1.4)	3,313	422,686	-	-	-	-	-	-	-	52	511	1,075	1,475	1,745	1,998	1,947	1,741	1,478	1,064	484	64	-	-	-	-	-	422,686	-
11/30/2033	2033	11	30	-	3,429	(1.4)	3,311	372,504	-	-	-	-	-	-	13	415	929	1,360	1,644	1,851	1,749	1,707	1,384	943	421	-	-	-	-	-	-	-	372,504	-
12/31/2033	2033	12	31	-	3,429	(1.4)	3,310	346,554	-	-	-	-	-	-	-	232	773	1,217	1,483	1,711	1,669	1,579	1,289	835	393	-	-	-	-	-	-	-	346,554	-
1/31/2034	2034	1	31	-	3,429	(1.4)	3,309	359,722	-	-	-	-	-	-	-	154	654	1,160	1,523	1,680	1,679	1,578	1,479	1,020	582	96	-	-	-	-	-	-	359,722	-
2/28/2034	2034	2	28	-	3,429	(1.4)	3,307	356,440	-	-	-	-	-	-	0	202	671	1,266	1,589	1,784	1,833	1,791	1,525	1,156	708	206	-	-	-	-	-	-	356,440	-
3/31/2034	2034	3	31	-	3,429	(1.4)	3,306	476,921	-	-	-	-	-	-	-	31	411	976	1,548	1,870	2,086	2,087	2,067	1,783	1,363	859	305	-	-	-	-	-	476,921	-
4/30/2034	2034	4	30	-	3,429	(1.4)	3,304	477,097	-	-	-	-	-	-	2	129	565	1,228	1,655	1,957	2,085	2,071	1,958	1,714	1,341	846	332	17	-	-	-	-	477,097	-
5/31/2034	2034	5	31	-	3,429	(1.4)	3,303	492,360	-	-	-	-	-	-	12	211	704	1,223	1,594	1,869	2,028	2,082	1,952	1,654	1,297	853	355	49	-	-	-	-	492,360	-
6/30/2034	2034	6	30	-	3,429	(1.4)	3,302	428,098	-	-	-	-	-	-	13	207	620	1,082	1,489	1,712	1,901	1,766	1,614	1,471	1,200	770	357	68	-	-	-	-	428,098	-
7/31/2034	2034	7	31	-	3,429	(1.4)	3,300	454,179	-	-	-	-	-	-	10	166	592	1,045	1,413	1,699	1,879	1,880	1,790	1,563	1,292	853	392	80	-	-	-	-	454,179	-
8/31/2034	2034	8	31	-	3,429	(1.4)	3,299	429,082	-	-	-	-	-	-	2	116	544	994	1,374	1,630	1,797	1,818	1,667	1,501	1,217	815	333	34	-	-	-	-	429,082	-
9/30/2034	2034	9	30	-	3,429	(1.4)	3,298	409,046	-	-	-	-	-	-	-	100	565	1,095	1,506	1,713	1,777	1,777	1,724	1,444	1,125	633	175	0	-	-	-	-	409,046	-
10/31/2034	2034	10	31	-	3,429	(1.4)	3,296	420,582	-	-	-	-	-	-	-	52	508	1,070	1,468	1,737	1,988	1,937	1,733	1,471	1,059	481	63	-	-	-	-	-	420,582	-
11/30/2034	2034	11	30	-	3,429	(1.4)	3,295	370,650	-	-	-	-	-	-	13	413	924	1,353	1,636	1,842	1,740	1,699	1,377	938	419	-	-	-	-	-	-	-	370,650	-
12/31/2034	2034	12	31	-	3,429	(1.4)	3,293	344,829	-	-	-	-	-	-	-	231	769	1,211	1,475	1,702	1,660	1,571	1,283	831	391	-	-	-	-	-	-	-	344,829	-
1/31/2035	2035	1	31	-	3,429	(1.4)	3,292	357,931	-	-	-	-	-	-	-	153	650	1,154	1,516	1,672	1,670	1,570	1,471	1,015	579	95	-	-	-	-	-	-	357,931	-
2/28/2035	2035	2	28	-	3,429	(1.4)	3,291	354,666	-	-	-	-	-	-	0	201	668	1,259	1,581	1,775	1,824	1,782	1,517	1,150	705	205	-	-	-	-	-	-	354,666	-
3/31/2035	2035	3	31	-	3,429	(1.4)	3,289	474,547	-	-	-	-	-	-	-	30	409	971	1,540	1,861	2,075	2,076	2,057	1,774	1,356	855	303	-	-	-	-	-	474,547	-
4/30/2035	2035	4	30	-	3,429	(1.4)	3,288	474,722	-	-	-	-	-	-	2	128	563	1,222	1,647	1,948	2,075	2,061	1,948	1,706	1,335	842	330	17	-	-	-	-	474,722	-
5/31/2035	2035	5	31	-	3,429	(1.4)	3,287	489,909	-	-	-	-	-	-	12	210	701	1,217	1,586	1,860	2,018	2,072	1,942	1,646	1,291	848	353	49	-	-	-	-	489,909	-
6/30/2035	2035	6	30	-	3,429	(1.4)	3,285	425,968	-	-	-	-	-	-	13	206	617	1,077	1,481	1,703	1,891	1,757	1,606	1,464	1,194	766	355	68	-	-	-	-	425,968	-
7/31/2035	2035	7	31	-	3,429	(1.4)	3,284	451,919	-	-	-	-	-	-	10	165	589	1,040	1,406	1,690	1,869	1,870	1,781	1,555	1,285	848	390	80	-	-	-	-	451,919	-
8/31/2035	2035	8	31	-	3,429	(1.4)	3,283	426,946	-	-	-	-	-	-	2	115	541	989	1,367	1,622	1,788	1,809	1,659	1,493	1,211	811	331	34	-	-	-	-	426,946	-
9/30/2035	2035	9	30	-	3,429	(1.4)	3,281	407,010	-	-	-	-	-	-	-	100	562	1,090	1,499	1,704	1,769	1,768	1,716	1,437	1,119	630	174	0	-	-	-	-	407,010	-
10/31/2035	2035	10	31	-	3,429	(1.4)	3,280	418,489	-	-	-	-	-	-	-	52	506	1,065	1,461	1,728	1,978	1,928	1,724	1,464	1,053	479	63	-	-	-	-	-	418,489	-
11/30/2035	2035	11	30	-	3,429	(1.4)	3,278	368,805	-	-	-	-	-	-	13	411	920	1,347	1,628	1,833	1,732	1,690	1,371	933	417	-	-	-	-	-	-	-	368,805	-
12/31/2035	2035	12	31	-	3,429	(1.4)	3,277	343,112	-	-	-	-	-	-	-	230	765	1,205	1,468	1,694	1,652	1,563	1,276	827	389	-	-	-	-	-	-	-	343,112	-
1/31/2036	2036	1	31	-	3,429	(1.4)	3,276	356,150	-	-	-	-	-	-	-	152	647	1,148	1,508	1,664	1,662	1,563	1,464	1,010	576	95	-	-	-	-	-	-	356,150	-
2/29/2036	2036	2	29	-	3,429	(1.4)	3,274	352,901	-	-	-	-	-	-	0	193	642	1,210	1,519	1,705	1,752	1,712	1,458	1,105	677	197	-	-	-	-	-	-	352,901	-
3/31/2036	2036	3	31	-	3,429	(1.4)	3,273	472,185	-	-	-	-	-	-	-	30	407	966	1,532	1,852	2,065	2,066	2,047	1,765	1,349	851	302	-	-	-	-	-	472,185	-
4/30/2036	2036	4	30	-	3,429	(1.4)	3,272	472,359	-	-	-	-	-	-	2	128	560	1,216	1,639	1,938	2,064	2,051	1,938	1,697	1,328	838	329	17	-	-	-	-	472,359	-
5/31/2036	2036	5	31	-	3,429	(1.4)	3,270	487,471	-	-	-	-	-	-	12	209	697	1,210	1,578	1,851	2,008	2,061	1,933	1,638	1,285	844	351	49	-	-	-	-	487,471	-
6/30/2036	2036	6	30	-	3,429	(1.4)	3,269	423,847	-	-	-	-	-	-	13	205	614	1,071	1,474	1,695	1,882	1,749	1,598	1,456	1,188	762	354	68	-	-	-	-	423,847	-
7/31/2036	2036	7	31	-	3,429	(1.4)	3,268	449,669	-	-	-	-	-	-	9	164	586	1,035	1,399	1,682	1,860	1,861	1,772	1,547	1,279	844	388	80	-	-	-	-	449,669	-
8/31/2036	2036	8	31	-	3,429	(1.4)	3,266	424,821	-	-	-	-	-	-	2	115	539	984	1,361	1,614	1,779	1,800	1,651	1,486	1,205	807	329	34	-	-	-	-	424,821	-
9/30/2036	2036	9	30	-	3,429	(1.4)	3,265	404,984	-	-	-	-	-	-	-	99	559	1,084	1,492	1,696	1,760	1,759	1,707	1,429	1,114	627	173	0	-	-	-	-	404,984	-
10/31/2036	2036	10	31	-	3,429	(1.4)	3,263	416,406	-	-	-	-	-	-	-	52	503	1,059	1,453	1,719	1,968	1,918	1,716	1,456	1,048	477	63	-	-	-	-	-	416,406	-
11/30/2036	2036	11	30	-	3,429	(1.4)	3,262	366,970	-	-	-	-	-	-	13	409	915	1,340	1,620	1,824	1,723	1,682	1,364	929	415	-	-	-	-	-	-	-	366,970	-
12/31/2036	2036	12	31	-	3,429	(1.4)	3,261	341,405	-	-	-	-	-	-	-	228	761	1,199	1,460	1,685	1,644	1,556	1,270	823	387	-	-	-	-	-	-	-	341,405	-
1/31/2037	2037	1	31	-	3,429	(1.4)	3,259	354,377	-	-	-	-	-	-	-	152	644	1,143	1,501	1,655	1,654	1,555	1,457	1,005	573	94	-	-	-	-	-	-	354,377	-
2/28/2037	2037	2	28	-	3,429	(1.4)	3,258	351,145	-	-	-	-	-	-	0	199	661	1,247	1,565	1,757	1,806	1,764	1,502	1,139	698	203	-	-	-	-	-	-	351,145	-
3/31/2037	2037	3	31	-	3,429	(1.4)	3,257	469,835	-	-	-	-	-	-	-	30	405	961	1,525	1,842	2,055	2,056	2,037	1,756	1,343	846	300	-	-	-	-	-	469,835	-
4/30/2037	2037	4	30	-	3,429	(1.4)	3,255	470,008	-	-	-	-	-	-	2	127	557	1,210	1,631	1,928	2,054	2,040	1,929	1,689	1,321	833	327	17	-	-	-	-	470,008	-
5/31/2037	2037	5	31	-	3,429	(1.4)	3,254	485,044	-	-	-	-	-	-	12	208	694	1,204	1,570	1,841	1,998	2,051	1,923	1,629	1,278	840	349	48	-	-	-	-	485,044	-
6/30/2037	2037	6	30	-	3,429	(1.4)	3,253	421,738	-	-	-	-	-	-	13	204	611	1,066	1,467	1,686	1,872	1,740	1,590	1,449	1,182	758	352	67	-	-	-	-	421,738	-
7/31/2037	2037	7	31	-	3,429	(1.4)	3,251	447,431	-	-	-	-	-	-	9	163	583	1,030	1,392	1,673	1,851	1,852	1,763	1,540	1,273	840	386	79	-	-	-	-	447,431	-
8/31/2037	2037	8	31	-	3,429	(1.4)	3,250	422,707	-	-	-	-	-	-	2	114	536	979	1,354	1,606	1,770	1,791	1,643	1,479	1,199	803	328	34	-	-	-	-	422,707	-
9/30/2037	2037	9	30	-	3,429	(1.4)	3,249	402,969	-	-	-	-	-	-	-	99	556	1,079	1,484	1,688	1,751	1,750	1,699	1,422	1,108	623	172	0	-	-	-	-	402,969	-
10/31/2037	2037	10	31	-	3,429	(1.4)	3,247	414,333	-	-	-	-	-	-	-	51	501	1,054	1,446	1,711	1,959	1,909	1,707	1,449	1,043	474	62	-	-	-	-	-	414,333	-
11/30/2037	2037	11	30	-	3,429	(1.3)	3,246	365,143	-	-	-	-	-	-	13	407	910	1,333	1,612	1,815	1,714	1,673	1,357	924	413	-	-	-	-	-	-	-	365,143	-
12/31/2037	2037	12	31	-	3,429	(1.3)	3,245	339,705	-	-	-	-	-	-	-	227	757	1,193	1,453	1,677	1,636	1,548	1,264	819	385	-	-	-	-	-	-	-	339,705	-
1/31/2038	2038	1	31	-	3,429	(1.3)	3,243	352,613	-	-	-	-	-	-	-	151	641	1,137	1,493	1,647	1,646	1,547	1,449	1,000	570	94	-	-	-	-	-	-	352,613	-
2/28/2038	2038	2	28	-	3,429	(1.3)	3,242	349,397	-	-	-	-	-	-	0	198	658	1,241	1,557	1,749	1,797	1,755	1,495	1,133	694	202	-	-	-	-	-	-	349,397	-
3/31/2038	2038	3	31	-	3,429	(1.3)	3,240	467,497	-	-	-	-	-	-	-	30	403	957	1,517	1,833	2,044	2,045	2,027	1,747	1,336	842	299	-	-	-	-	-	467,497	-
4/30/2038	2038	4	30	-	3,429	(1.3)	3,239	467,669	-	-	-	-	-	-	2	126	554	1,204	1,623	1,919	2,044	2,030	1,919	1,680	1,315	829	326	17	-	-	-	-	467,669	-
5/31/2038	2038	5	31	-	3,429	(1.3)	3,238	482,630	-	-	-	-	-	-	12	207	690	1,198	1,562	1,832	1,988	2,041	1,913	1,621	1,272	836	348	48	-	-	-	-	482,630	-
6/30/2038	2038	6	30	-	3,429	(1.3)	3,236	419,639	-	-	-	-	-	-	13	203	608	1,061	1,459	1,678	1,863	1,731	1,582	1,442	1,176	754	350	67	-	-	-	-	419,639	-
7/31/2038	2038	7	31	-	3,429	(1.3)	3,235	445,204	-	-	-	-	-	-	9	162	580	1,025	1,385	1,665	1,842	1,842	1,754	1,532	1,266	836	384	79	-	-	-	-	445,204	-
8/31/2038	2038	8	31	-	3,429	(1.3)	3,234	420,603	-	-	-	-	-	-	2	113	533	974	1,347	1,598	1,762	1,782	1,634	1,471	1,193	799	326	34	-	-	-	-	420,603	-
9/30/2038	2038	9	30	-	3,429	(1.3)	3,232	400,963	-	-	-	-	-	-	-	98	554	1,074	1,477	1,679	1,742	1,742	1,690	1,415	1,103	620	171	0	-	-	-	-	400,963	-
10/31/2038	2038	10	31	-	3,429	(1.3)	3,231	412,271	-	-	-	-	-	-	-	51	498	1,049	1,439	1,702	1,949	1,899	1,698	1,442	1,038	472	62	-	-	-	-	-	412,271	-
11/30/2038	2038	11	30	-	3,429	(1.3)	3,230	363,326	-	-	-	-	-	-	13	405	906	1,327	1,604	1,806	1,706	1,665	1,350	919	411	-	-	-	-	-	-	-	363,326	-

12/31/2038	2038	12	31	-	3,429	(1.3)	3,228	338,015	-	-	-	-	-	-	-	226	754	1,187	1,446	1,668	1,627	1,540	1,257	815	383	-	-	-	-	-	-	-	338,015	-
1/31/2039	2039	1	31	-	3,429	(1.3)	3,227	350,858	-	-	-	-	-	-	-	150	637	1,131	1,486	1,639	1,637	1,539	1,442	995	568	93	-	-	-	-	-	-	350,858	-
2/28/2039	2039	2	28	-	3,429	(1.3)	3,226	347,658	-	-	-	-	-	-	0	197	655	1,234	1,549	1,740	1,788	1,747	1,487	1,127	691	201	-	-	-	-	-	-	347,658	-
3/31/2039	2039	3	31	-	3,429	(1.3)	3,224	465,170	-	-	-	-	-	-	-	30	401	952	1,509	1,824	2,034	2,035	2,017	1,739	1,329	838	297	-	-	-	-	-	465,170	-
4/30/2039	2039	4	30	-	3,429	(1.3)	3,223	465,341	-	-	-	-	-	-	2	126	551	1,198	1,615	1,909	2,034	2,020	1,910	1,672	1,308	825	324	17	-	-	-	-	465,341	-
5/31/2039	2039	5	31	-	3,429	(1.3)	3,222	480,228	-	-	-	-	-	-	12	206	687	1,192	1,554	1,823	1,978	2,031	1,904	1,613	1,265	832	346	48	-	-	-	-	480,228	-
6/30/2039	2039	6	30	-	3,429	(1.3)	3,220	417,550	-	-	-	-	-	-	13	202	605	1,056	1,452	1,670	1,854	1,723	1,574	1,435	1,170	751	348	67	-	-	-	-	417,550	-
7/31/2039	2039	7	31	-	3,429	(1.3)	3,219	442,988	-	-	-	-	-	-	9	162	577	1,020	1,378	1,657	1,832	1,833	1,746	1,525	1,260	832	382	78	-	-	-	-	442,988	-
8/31/2039	2039	8	31	-	3,429	(1.3)	3,218	418,510	-	-	-	-	-	-	2	113	531	969	1,340	1,590	1,753	1,773	1,626	1,464	1,187	795	324	33	-	-	-	-	418,510	-
9/30/2039	2039	9	30	-	3,429	(1.3)	3,216	398,967	-	-	-	-	-	-	-	98	551	1,068	1,469	1,671	1,734	1,733	1,682	1,408	1,097	617	170	0	-	-	-	-	398,967	-
10/31/2039	2039	10	31	-	3,429	(1.3)	3,215	410,219	-	-	-	-	-	-	-	51	496	1,044	1,432	1,694	1,939	1,890	1,690	1,435	1,032	470	62	-	-	-	-	-	410,219	-
11/30/2039	2039	11	30	-	3,429	(1.3)	3,214	361,518	-	-	-	-	-	-	13	403	901	1,320	1,596	1,797	1,697	1,657	1,343	915	409	-	-	-	-	-	-	-	361,518	-
12/31/2039	2039	12	31	-	3,429	(1.3)	3,212	336,332	-	-	-	-	-	-	-	225	750	1,181	1,439	1,660	1,619	1,533	1,251	810	381	-	-	-	-	-	-	-	336,332	-
1/31/2040	2040	1	31	-	3,429	(1.3)	3,211	349,112	-	-	-	-	-	-	-	149	634	1,126	1,479	1,631	1,629	1,532	1,435	990	565	93	-	-	-	-	-	-	349,112	-
2/29/2040	2040	2	29	-	3,429	(1.3)	3,210	345,928	-	-	-	-	-	-	0	189	629	1,186	1,489	1,672	1,718	1,678	1,429	1,083	664	193	-	-	-	-	-	-	345,928	-
3/31/2040	2040	3	31	-	3,429	(1.3)	3,208	462,854	-	-	-	-	-	-	-	30	399	947	1,502	1,815	2,024	2,025	2,006	1,730	1,323	834	296	-	-	-	-	-	462,854	-
4/30/2040	2040	4	30	-	3,429	(1.3)	3,207	463,025	-	-	-	-	-	-	2	125	549	1,192	1,607	1,900	2,024	2,010	1,900	1,664	1,302	821	322	17	-	-	-	-	463,025	-
5/31/2040	2040	5	31	-	3,429	(1.3)	3,206	477,838	-	-	-	-	-	-	12	205	683	1,187	1,547	1,814	1,968	2,021	1,894	1,605	1,259	827	344	48	-	-	-	-	477,838	-
6/30/2040	2040	6	30	-	3,429	(1.3)	3,204	415,472	-	-	-	-	-	-	13	201	602	1,050	1,445	1,661	1,845	1,714	1,566	1,427	1,164	747	347	66	-	-	-	-	415,472	-
7/31/2040	2040	7	31	-	3,429	(1.3)	3,203	440,784	-	-	-	-	-	-	9	161	574	1,014	1,371	1,648	1,823	1,824	1,737	1,517	1,254	828	380	78	-	-	-	-	440,784	-
8/31/2040	2040	8	31	-	3,429	(1.3)	3,202	416,427	-	-	-	-	-	-	2	112	528	964	1,334	1,582	1,744	1,764	1,618	1,457	1,181	791	323	33	-	-	-	-	416,427	-
9/30/2040	2040	9	30	-	3,429	(1.3)	3,200	396,982	-	-	-	-	-	-	-	97	548	1,063	1,462	1,662	1,725	1,724	1,673	1,401	1,092	614	169	0	-	-	-	-	396,982	-
10/31/2040	2040	10	31	-	3,429	(1.3)	3,199	408,177	-	-	-	-	-	-	-	51	493	1,038	1,425	1,685	1,930	1,880	1,682	1,428	1,027	467	61	-	-	-	-	-	408,177	-
11/30/2040	2040	11	30	-	3,429	(1.3)	3,198	359,718	-	-	-	-	-	-	13	401	897	1,314	1,588	1,788	1,689	1,648	1,337	910	407	-	-	-	-	-	-	-	359,718	-
12/31/2040	2040	12	31	-	3,429	(1.3)	3,196	334,658	-	-	-	-	-	-	-	224	746	1,175	1,432	1,652	1,611	1,525	1,245	806	379	-	-	-	-	-	-	-	334,658	-
1/31/2041	2041	1	31	-	3,429	(1.3)	3,195	347,374	-	-	-	-	-	-	-	149	631	1,120	1,471	1,623	1,621	1,524	1,428	985	562	92	-	-	-	-	-	-	347,374	-
2/28/2041	2041	2	28	-	3,429	(1.3)	3,194	344,206	-	-	-	-	-	-	0	195	648	1,222	1,534	1,723	1,770	1,729	1,472	1,116	684	199	-	-	-	-	-	-	344,206	-
3/31/2041	2041	3	31	-	3,429	(1.3)	3,192	460,551	-	-	-	-	-	-	-	29	397	942	1,494	1,806	2,014	2,015	1,996	1,722	1,316	830	294	-	-	-	-	-	460,551	-
4/30/2041	2041	4	30	-	3,429	(1.3)	3,191	460,721	-	-	-	-	-	-	2	125	546	1,186	1,599	1,890	2,013	2,000	1,891	1,656	1,295	817	321	17	-	-	-	-	460,721	-
5/31/2041	2041	5	31	-	3,429	(1.3)	3,190	475,460	-	-	-	-	-	-	12	204	680	1,181	1,539	1,805	1,958	2,011	1,885	1,597	1,253	823	342	47	-	-	-	-	475,460	-
6/30/2041	2041	6	30	-	3,429	(1.3)	3,188	413,404	-	-	-	-	-	-	13	200	599	1,045	1,438	1,653	1,835	1,706	1,559	1,420	1,159	743	345	66	-	-	-	-	413,404	-
7/31/2041	2041	7	31	-	3,429	(1.3)	3,187	438,590	-	-	-	-	-	-	9	160	571	1,009	1,364	1,640	1,814	1,815	1,728	1,509	1,247	823	378	78	-	-	-	-	438,590	-
8/31/2041	2041	8	31	-	3,429	(1.3)	3,186	414,354	-	-	-	-	-	-	2	112	525	959	1,327	1,574	1,735	1,755	1,610	1,449	1,175	787	321	33	-	-	-	-	414,354	-
9/30/2041	2041	9	30	-	3,429	(1.3)	3,184	395,006	-	-	-	-	-	-	-	97	545	1,058	1,455	1,654	1,716	1,716	1,665	1,394	1,086	611	169	0	-	-	-	-	395,006	-
10/31/2041	2041	10	31	-	3,429	(1.3)	3,183	406,146	-	-	-	-	-	-	-	50	491	1,033	1,418	1,677	1,920	1,871	1,673	1,421	1,022	465	61	-	-	-	-	-	406,146	-
11/30/2041	2041	11	30	-	3,429	(1.3)	3,182	357,928	-	-	-	-	-	-	13	399	892	1,307	1,580	1,779	1,681	1,640	1,330	906	405	-	-	-	-	-	-	-	357,928	-
12/31/2041	2041	12	31	-	3,429	(1.3)	3,180	332,993	-	-	-	-	-	-	-	223	742	1,169	1,425	1,644	1,603	1,517	1,239	802	378	-	-	-	-	-	-	-	332,993	-
1/31/2042	2042	1	31	-	3,429	(1.3)	3,179	345,645	-	-	-	-	-	-	-	148	628	1,114	1,464	1,614	1,613	1,517	1,421	980	559	92	-	-	-	-	-	-	345,645	-
2/28/2042	2042	2	28	-	3,429	(1.3)	3,178	342,493	-	-	-	-	-	-	0	194	645	1,216	1,526	1,714	1,761	1,721	1,465	1,111	680	198	-	-	-	-	-	-	342,493	-
3/31/2042	2042	3	31	-	3,429	(1.3)	3,176	458,258	-	-	-	-	-	-	-	29	395	938	1,487	1,797	2,004	2,005	1,987	1,713	1,310	825	293	-	-	-	-	-	458,258	-
4/30/2042	2042	4	30	-	3,429	(1.3)	3,175	458,428	-	-	-	-	-	-	2	124	543	1,180	1,591	1,881	2,003	1,990	1,881	1,647	1,289	813	319	17	-	-	-	-	458,428	-
5/31/2042	2042	5	31	-	3,429	(1.3)	3,174	473,093	-	-	-	-	-	-	12	203	677	1,175	1,531	1,796	1,948	2,001	1,876	1,589	1,247	819	341	47	-	-	-	-	473,093	-
6/30/2042	2042	6	30	-	3,429	(1.3)	3,173	411,346	-	-	-	-	-	-	13	199	596	1,040	1,430	1,645	1,826	1,697	1,551	1,413	1,153	740	343	66	-	-	-	-	411,346	-
7/31/2042	2042	7	31	-	3,429	(1.3)	3,171	436,407	-	-	-	-	-	-	9	159	568	1,004	1,357	1,632	1,805	1,806	1,720	1,502	1,241	819	377	77	-	-	-	-	436,407	-
8/31/2042	2042	8	31	-	3,429	(1.3)	3,170	412,292	-	-	-	-	-	-	2	111	523	955	1,320	1,566	1,727	1,746	1,602	1,442	1,169	783	320	33	-	-	-	-	412,292	-
9/30/2042	2042	9	30	-	3,429	(1.3)	3,169	393,040	-	-	-	-	-	-	-	96	543	1,052	1,448	1,646	1,708	1,707	1,657	1,387	1,081	608	168	0	-	-	-	-	393,040	-
10/31/2042	2042	10	31	-	3,429	(1.3)	3,167	404,124	-	-	-	-	-	-	-	50	488	1,028	1,410	1,669	1,910	1,862	1,665	1,413	1,017	463	61	-	-	-	-	-	404,124	-
11/30/2042	2042	11	30	-	3,429	(1.3)	3,166	356,146	-	-	-	-	-	-	13	397	888	1,301	1,572	1,770	1,672	1,632	1,323	901	403	-	-	-	-	-	-	-	356,146	-
12/31/2042	2042	12	31	-	3,429	(1.3)	3,165	331,335	-	-	-	-	-	-	-	222	739	1,163	1,417	1,635	1,595	1,510	1,233	798	376	-	-	-	-	-	-	-	331,335	-
1/31/2043	2043	1	31	-	3,429	(1.3)	3,163	343,925	-	-	-	-	-	-	-	147	625	1,109	1,457	1,606	1,605	1,509	1,414	975	556	91	-	-	-	-	-	-	343,925	-
2/28/2043	2043	2	28	-	3,429	(1.3)	3,162	340,788	-	-	-	-	-	-	0	193	642	1,210	1,519	1,706	1,753	1,712	1,458	1,105	677	197	-	-	-	-	-	-	340,788	-
3/31/2043	2043	3	31	-	3,429	(1.3)	3,161	455,978	-	-	-	-	-	-	-	29	393	933	1,480	1,788	1,994	1,995	1,977	1,704	1,303	821	291	-	-	-	-	-	455,978	-
4/30/2043	2043	4	30	-	3,429	(1.3)	3,159	456,146	-	-	-	-	-	-	2	123	541	1,174	1,583	1,871	1,993	1,980	1,872	1,639	1,282	809	318	17	-	-	-	-	456,146	-
5/31/2043	2043	5	31	-	3,429	(1.3)	3,158	470,739	-	-	-	-	-	-	12	202	673	1,169	1,524	1,787	1,939	1,991	1,866	1,581	1,240	815	339	47	-	-	-	-	470,739	-
6/30/2043	2043	6	30	-	3,429	(1.3)	3,157	409,299	-	-	-	-	-	-	13	198	593	1,035	1,423	1,637	1,817	1,689	1,543	1,406	1,147	736	341	65	-	-	-	-	409,299	-
7/31/2043	2043	7	31	-	3,429	(1.3)	3,155	434,235	-	-	-	-	-	-	9	158	566	999	1,351	1,624	1,796	1,797	1,711	1,494	1,235	815	375	77	-	-	-	-	434,235	-
8/31/2043	2043	8	31	-	3,429	(1.3)	3,154	410,240	-	-	-	-	-	-	2	111	520	950	1,314	1,559	1,718	1,738	1,594	1,435	1,164	779	318	33	-	-	-	-	410,240	-
9/30/2043	2043	9	30	-	3,429	(1.3)	3,153	391,084	-	-	-	-	-	-	-	96	540	1,047	1,440	1,638	1,699	1,699	1,648	1,380	1,076	605	167	0	-	-	-	-	391,084	-
10/31/2043	2043	10	31	-	3,429	(1.3)	3,151	402,113	-	-	-	-	-	-	-	50	486	1,023	1,403	1,660	1,901	1,852	1,657	1,406	1,012	460	61	-	-	-	-	-	402,113	-
11/30/2043	2043	11	30	-	3,429	(1.3)	3,150	354,374	-	-	-	-	-	-	13	395	884	1,294	1,564	1,761	1,664	1,624	1,317	897	401	-	-	-	-	-	-	-	354,374	-
12/31/2043	2043	12	31	-	3,429	(1.3)	3,149	329,686	-	-	-	-	-	-	-	221	735	1,157	1,410	1,627	1,587	1,502	1,227	794	374	-	-	-	-	-	-	-	329,686	-
1/31/2044	2044	1	31	-	3,429	(1.3)	3,148	342,213	-	-	-	-	-	-	-	146	622	1,103	1,449	1,598	1,597	1,502	1,407	970	554	91	-	-	-	-	-	-	342,213	-
2/29/2044	2044	2	29	-	3,429	(1.3)	3,146	339,092	-	-	-	-	-	-	0	185	617	1,162	1,459	1,638	1,684	1,645	1,401	1,062	650	189	-	-	-	-	-	-	339,092	-
3/31/2044	2044	3	31	-	3,429	(1.3)	3,145	453,708	-	-	-	-	-	-	-	29	391	928	1,472	1,779	1,984	1,985	1,967	1,696	1,297	817	290	-	-	-	-	-	453,708	-
4/30/2044	2044	4	30	-	3,429	(1.3)	3,144	453,876	-	-	-	-	-	-	2	123	538	1,169	1,575	1,862	1,984	1,970	1,863	1,631	1,276	805	316	16	-	-	-	-	453,876	-
5/31/2044	2044	5	31	-	3,429	(1.3)	3,142	468,396	-	-	-	-	-	-	12	201	670	1,163	1,516	1,778	1,929	1,981	1,857	1,573	1,234	811	337	47	-	-	-	-	468,396	-
6/30/2044	2044	6	30	-	3,429	(1.3)	3,141	407,262	-	-	-	-	-	-	13	197	590	1,030	1,416	1,628	1,808	1,680	1,536	1,399	1,141	732	340	65	-	-	-	-	407,262	-
7/31/2044	2044	7	31	-	3,429	(1.3)	3,140	432,073	-	-	-	-	-	-	9	158	563	994	1,344	1,616	1,787	1,788	1,703	1,487	1,229	811	373	76	-	-	-	-	432,073	-
8/31/2044	2044	8	31	-	3,429	(1.3)	3,138	408,198	-	-	-	-	-	-	2	110	518	945	1,307	1,551	1,710	1,729	1,586	1,428	1,158	775	316	33	-	-	-	-	408,198	-
9/30/2044	2044	9	30	-	3,429	(1.3)	3,137	389,137	-	-	-	-	-	-	-	95	537	1,042	1,433	1,630	1,691	1,690	1,640	1,374	1,070	602	166	0	-	-	-	-	389,137	-
10/31/2044	2044	10	31	-	3,429	(1.3)	3,136	400,111	-	-	-	-	-	-	-	50	483	1,018	1,396	1,652	1,891	1,843	1,648	1,399	1,007	458	60	-	-	-	-	-	400,111	-
11/30/2044	2044	11	30	-	3,429	(1.3)	3,134	352,610	-	-	-	-	-	-	13	393	879	1,288	1,557	1,752	1,656	1,616	1,310	892	399	-	-	-	-	-	-	-	352,610	-
12/31/2044	2044	12	31	-	3,429	(1.3)	3,133	328,045	-	-	-	-	-	-	-	220	731	1,152	1,403	1,619	1,579	1,495	1,220	791	372	-	-	-	-	-	-	-	328,045	-
1/31/2045	2045	1	31	-	3,429	(1.3)	3,132	340,510	-	-	-	-	-	-	-	146	619	1,098	1,442	1,591	1,589	1,494	1,400	965	551	91	-	-	-	-	-	-	340,510	-
2/28/2045	2045	2	28	-	3,429	(1.3)	3,131	337,404	-	-	-	-	-	-	0	191	635	1,198	1,504	1,689	1,735	1,695	1,443	1,094	670	195	-	-	-	-	-	-	337,404	-
3/31/2045	2045	3	31	-	3,429	(1.3)	3,129	451,450	-	-	-	-	-	-	-	29	389	924	1,465	1,770	1,974	1,975	1,957	1,688	1,290	813	288	-	-	-	-	-	451,450	-
4/30/2045	2045	4	30	-	3,429	(1.3)	3,128	451,616	-	-	-	-	-	-	2	122	535	1,163	1,567	1,853	1,974	1,961	1,853	1,623	1,270	801	314	16	-	-	-	-	451,616	-
5/31/2045	2045	5	31	-	3,429	(1.3)	3,127	466,064	-	-	-	-	-	-	11	200	666	1,157	1,509	1,769	1,919	1,971	1,848	1,566	1,228	807	336	47	-	-	-	-	466,064	-
6/30/2045	2045	6	30	-	3,429	(1.3)	3,125	405,235	-	-	-	-	-	-	13	196	587	1,024	1,409	1,620	1,799	1,672	1,528	1,392	1,136	729	338	65	-	-	-	-	405,235	-
7/31/2045	2045	7	31	-	3,429	(1.3)	3,124	429,923	-	-	-	-	-	-	9	157	560	989	1,337	1,608	1,778	1,779	1,694	1,480	1,223	807	371	76	-	-	-	-	429,923	-
8/31/2045	2045	8	31	-	3,429	(1.3)	3,123	406,166	-	-	-	-	-	-	2	110	515	941	1,301	1,543	1,701	1,721	1,578	1,421	1,152	771	315	32	-	-	-	-	406,166	-
9/30/2045	2045	9	30	-	3,429	(1.3)	3,121	387,200	-	-	-	-	-	-	-	95	535	1,037	1,426	1,621	1,683	1,682	1,632	1,367	1,065	599	165	0	-	-	-	-	387,200	-
10/31/2045	2045	10	31	-	3,429	(1.3)	3,120	398,120	-	-	-	-	-	-	-	49	481	1,013	1,390	1,644	1,882	1,834	1,640	1,392	1,002	456	60	-	-	-	-	-	398,120	-
11/30/2045	2045	11	30	-	3,429	(1.3)	3,119	350,855	-	-	-	-	-	-	13	391	875	1,281	1,549	1,744	1,647	1,608	1,304	888	397	-	-	-	-	-	-	-	350,855	-
12/31/2045	2045	12	31	-	3,429	(1.3)	3,118	326,413	-	-	-	-	-	-	-	218	728	1,146	1,396	1,611	1,572	1,487	1,214	787	370	-	-	-	-	-	-	-	326,413	-
1/31/2046	2046	1	31	-	3,429	(1.3)	3,116	338,815	-	-	-	-	-	-	-	145	616	1,092	1,435	1,583	1,581	1,487	1,393	960	548	90	-	-	-	-	-	-	338,815	-
2/28/2046	2046	2	28	-	3,429	(1.3)	3,115	335,725	-	-	-	-	-	-	0	190	632	1,192	1,496	1,680	1,727	1,687	1,436	1,089	667	194	-	-	-	-	-	-	335,725	-
3/31/2046	2046	3	31	-	3,429	(1.3)	3,114	449,203	-	-	-	-	-	-	-	29	387	919	1,458	1,762	1,964	1,965	1,947	1,679	1,284	809	287	-	-	-	-	-	449,203	-
4/30/2046	2046	4	30	-	3,429	(1.3)	3,112	449,369	-	-	-	-	-	-	2	122	533	1,157	1,559	1,844	1,964	1,951	1,844	1,615	1,263	797	313	16	-	-	-	-	449,369	-
5/31/2046	2046	5	31	-	3,429	(1.3)	3,111	463,745	-	-	-	-	-	-	11	199	663	1,152	1,501	1,761	1,910	1,961	1,839	1,558	1,222	803	334	46	-	-	-	-	463,745	-
6/30/2046	2046	6	30	-	3,429	(1.3)	3,110	403,218	-	-	-	-	-	-	12	195	584	1,019	1,402	1,612	1,790	1,664	1,520	1,385	1,130	725	336	64	-	-	-	-	403,218	-
7/31/2046	2046	7	31	-	3,429	(1.3)	3,109	427,783	-	-	-	-	-	-	9	156	557	985	1,331	1,600	1,770	1,770	1,686	1,472	1,217	803	369	76	-	-	-	-	427,783	-
8/31/2046	2046	8	31	-	3,429	(1.3)	3,107	404,144	-	-	-	-	-	-	2	109	512	936	1,294	1,535	1,693	1,712	1,571	1,414	1,146	767	313	32	-	-	-	-	404,144	-
9/30/2046	2046	9	30	-	3,429	(1.3)	3,106	385,273	-	-	-	-	-	-	-	94	532	1,032	1,419	1,613	1,674	1,674	1,624	1,360	1,060	596	164	0	-	-	-	-	385,273	-
10/31/2046	2046	10	31	-	3,429	(1.3)	3,105	396,139	-	-	-	-	-	-	-	49	479	1,008	1,383	1,636	1,873	1,825	1,632	1,386	997	453	60	-	-	-	-	-	396,139	-
11/30/2046	2046	11	30	-	3,429	(1.3)	3,103	349,109	-	-	-	-	-	-	12	389	870	1,275	1,541	1,735	1,639	1,600	1,297	883	395	-	-	-	-	-	-	-	349,109	-
12/31/2046	2046	12	31	-	3,429	(1.3)	3,102	324,788	-	-	-	-	-	-	-	217	724	1,140	1,389	1,603	1,564	1,480	1,208	783	368	-	-	-	-	-	-	-	324,788	-
1/31/2047	2047	1	31	-	3,429	(1.3)	3,101	337,129	-	-	-	-	-	-	-	144	612	1,087	1,428	1,575	1,573	1,479	1,386	956	545	90	-	-	-	-	-	-	337,129	-
2/28/2047	2047	2	28	-	3,429	(1.3)	3,099	334,054	-	-	-	-	-	-	0	189	629	1,186	1,489	1,672	1,718	1,678	1,429	1,083	664	193	-	-	-	-	-	-	334,054	-
3/31/2047	2047	3	31	-	3,429	(1.3)	3,098	446,967	-	-	-	-	-	-	-	29	385	915	1,450	1,753	1,955	1,956	1,938	1,671	1,277	805	286	-	-	-	-	-	446,967	-
4/30/2047	2047	4	30	-	3,429	(1.3)	3,097	447,132	-	-	-	-	-	-	2	121	530	1,151	1,551	1,834	1,954	1,941	1,835	1,607	1,257	793	311	16	-	-	-	-	447,132	-
5/31/2047	2047	5	31	-	3,429	(1.3)	3,096	461,436	-	-	-	-	-	-	11	198	660	1,146	1,494	1,752	1,900	1,951	1,829	1,550	1,216	799	332	46	-	-	-	-	461,436	-
6/30/2047	2047	6	30	-	3,429	(1.3)	3,094	401,211	-	-	-	-	-	-	12	194	581	1,014	1,395	1,604	1,781	1,655	1,513	1,378	1,124	721	335	64	-	-	-	-	401,211	-
7/31/2047	2047	7	31	-	3,429	(1.3)	3,093	425,654	-	-	-	-	-	-	9	155	554	980	1,324	1,592	1,761	1,761	1,677	1,465	1,211	799	367	75	-	-	-	-	425,654	-
8/31/2047	2047	8	31	-	3,429	(1.3)	3,092	402,133	-	-	-	-	-	-	2	108	510	931	1,288	1,528	1,684	1,703	1,563	1,407	1,141	763	312	32	-	-	-	-	402,133	-
9/30/2047	2047	9	30	-	3,429	(1.3)	3,090	383,356	-	-	-	-	-	-	-	94	529	1,027	1,412	1,605	1,666	1,665	1,616	1,353	1,054	593	164	0	-	-	-	-	383,356	-
10/31/2047	2047	10	31	-	3,429	(1.3)	3,089	394,167	-	-	-	-	-	-	-	49	476	1,003	1,376	1,627	1,863	1,816	1,624	1,379	992	451	59	-	-	-	-	-	394,167	-
11/30/2047	2047	11	30	-	3,429	(1.3)	3,088	347,371	-	-	-	-	-	-	12	387	866	1,268	1,533	1,726	1,631	1,592	1,291	879	393	-	-	-	-	-	-	-	347,371	-
12/31/2047	2047	12	31	-	3,429	(1.3)	3,087	323,171	-	-	-	-	-	-	-	216	720	1,135	1,382	1,595	1,556	1,473	1,202	779	366	-	-	-	-	-	-	-	323,171	-

1/31/2048	2048	1	31	-	3,429	(1.3)	3,085	335,451	-	-	-	-	-	-	-	143	609	1,082	1,421	1,567	1,565	1,472	1,379	951	543	89	-	-	-	-	-	-	335,451	-
2/29/2048	2048	2	29	-	3,429	(1.3)	3,084	332,391	-	-	-	-	-	-	0	182	604	1,139	1,430	1,606	1,651	1,612	1,373	1,041	638	185	-	-	-	-	-	-	332,391	-
3/31/2048	2048	3	31	-	3,429	(1.3)	3,083	444,743	-	-	-	-	-	-	-	28	383	910	1,443	1,744	1,945	1,946	1,928	1,662	1,271	801	284	-	-	-	-	-	444,743	-
4/30/2048	2048	4	30	-	3,429	(1.3)	3,081	444,907	-	-	-	-	-	-	2	120	527	1,145	1,544	1,825	1,944	1,931	1,826	1,599	1,251	789	310	16	-	-	-	-	444,907	-
5/31/2048	2048	5	31	-	3,429	(1.3)	3,080	459,140	-	-	-	-	-	-	11	197	657	1,140	1,486	1,743	1,891	1,942	1,820	1,542	1,210	795	331	46	-	-	-	-	459,140	-
6/30/2048	2048	6	30	-	3,429	(1.3)	3,079	399,214	-	-	-	-	-	-	12	193	578	1,009	1,388	1,596	1,772	1,647	1,505	1,372	1,119	718	333	64	-	-	-	-	399,214	-
7/31/2048	2048	7	31	-	3,429	(1.3)	3,078	423,535	-	-	-	-	-	-	9	155	552	975	1,317	1,584	1,752	1,753	1,669	1,458	1,205	795	365	75	-	-	-	-	423,535	-
8/31/2048	2048	8	31	-	3,429	(1.3)	3,076	400,131	-	-	-	-	-	-	2	108	507	927	1,282	1,520	1,676	1,695	1,555	1,400	1,135	760	310	32	-	-	-	-	400,131	-
9/30/2048	2048	9	30	-	3,429	(1.3)	3,075	381,447	-	-	-	-	-	-	-	94	527	1,021	1,405	1,597	1,658	1,657	1,608	1,346	1,049	590	163	0	-	-	-	-	381,447	-
10/31/2048	2048	10	31	-	3,429	(1.3)	3,074	392,205	-	-	-	-	-	-	-	49	474	998	1,369	1,619	1,854	1,807	1,616	1,372	987	449	59	-	-	-	-	-	392,205	-
11/30/2048	2048	11	30	-	3,429	(1.3)	3,073	345,642	-	-	-	-	-	-	12	385	862	1,262	1,526	1,718	1,623	1,584	1,284	875	391	-	-	-	-	-	-	-	345,642	-
12/31/2048	2048	12	31	-	3,429	(1.3)	3,071	321,563	-	-	-	-	-	-	-	215	717	1,129	1,376	1,587	1,548	1,465	1,196	775	365	-	-	-	-	-	-	-	321,563	-
1/31/2049	2049	1	31	-	3,429	(1.3)	3,070	333,781	-	-	-	-	-	-	-	143	606	1,076	1,414	1,559	1,558	1,465	1,372	946	540	89	-	-	-	-	-	-	333,781	-
2/28/2049	2049	2	28	-	3,429	(1.3)	3,069	330,737	-	-	-	-	-	-	0	187	623	1,174	1,474	1,655	1,701	1,662	1,415	1,072	657	191	-	-	-	-	-	-	330,737	-
3/31/2049	2049	3	31	-	3,429	(1.3)	3,067	442,529	-	-	-	-	-	-	-	28	382	906	1,436	1,735	1,935	1,936	1,918	1,654	1,265	797	283	-	-	-	-	-	442,529	-
4/30/2049	2049	4	30	-	3,429	(1.3)	3,066	442,692	-	-	-	-	-	-	2	120	525	1,140	1,536	1,816	1,935	1,922	1,817	1,591	1,245	785	308	16	-	-	-	-	442,692	-
5/31/2049	2049	5	31	-	3,429	(1.3)	3,065	456,855	-	-	-	-	-	-	11	196	653	1,134	1,479	1,734	1,882	1,932	1,811	1,535	1,204	791	329	46	-	-	-	-	456,855	-
6/30/2049	2049	6	30	-	3,429	(1.3)	3,064	397,227	-	-	-	-	-	-	12	192	576	1,004	1,381	1,588	1,764	1,639	1,498	1,365	1,113	714	331	63	-	-	-	-	397,227	-
7/31/2049	2049	7	31	-	3,429	(1.3)	3,062	421,427	-	-	-	-	-	-	9	154	549	970	1,311	1,576	1,743	1,744	1,661	1,450	1,199	791	364	75	-	-	-	-	421,427	-
8/31/2049	2049	8	31	-	3,429	(1.3)	3,061	398,140	-	-	-	-	-	-	2	107	505	922	1,275	1,513	1,667	1,687	1,547	1,393	1,129	756	309	32	-	-	-	-	398,140	-
9/30/2049	2049	9	30	-	3,429	(1.3)	3,060	379,549	-	-	-	-	-	-	-	93	524	1,016	1,398	1,589	1,649	1,649	1,600	1,340	1,044	587	162	0	-	-	-	-	379,549	-
10/31/2049	2049	10	31	-	3,429	(1.3)	3,059	390,253	-	-	-	-	-	-	-	48	471	993	1,362	1,611	1,845	1,798	1,608	1,365	982	447	59	-	-	-	-	-	390,253	-
11/30/2049	2049	11	30	-	3,429	(1.3)	3,057	343,922	-	-	-	-	-	-	12	383	858	1,256	1,518	1,709	1,615	1,576	1,278	870	389	-	-	-	-	-	-	-	343,922	-
12/31/2049	2049	12	31	-	3,429	(1.3)	3,056	319,962	-	-	-	-	-	-	-	214	713	1,123	1,369	1,579	1,540	1,458	1,190	771	363	-	-	-	-	-	-	-	319,962	-
1/31/2050	2050	1	31	-	3,429	(1.3)	3,055	332,120	-	-	-	-	-	-	-	142	603	1,071	1,407	1,551	1,550	1,457	1,365	941	537	88	-	-	-	-	-	-	332,120	-
2/28/2050	2050	2	28	-	3,429	(1.3)	3,053	329,091	-	-	-	-	-	-	0	186	620	1,168	1,467	1,647	1,693	1,653	1,408	1,067	654	190	-	-	-	-	-	-	329,091	-
3/31/2050	2050	3	31	-	3,429	(1.3)	3,052	440,326	-	-	-	-	-	-	-	28	380	901	1,429	1,727	1,926	1,927	1,909	1,646	1,258	793	281	-	-	-	-	-	440,326	-
4/30/2050	2050	4	30	-	3,429	(1.3)	3,051	440,489	-	-	-	-	-	-	2	119	522	1,134	1,528	1,807	1,925	1,912	1,808	1,583	1,238	781	307	16	-	-	-	-	440,489	-
5/31/2050	2050	5	31	-	3,429	(1.3)	3,050	454,581	-	-	-	-	-	-	11	195	650	1,129	1,471	1,726	1,872	1,922	1,802	1,527	1,198	787	327	45	-	-	-	-	454,581	-
6/30/2050	2050	6	30	-	3,429	(1.3)	3,048	395,250	-	-	-	-	-	-	12	191	573	999	1,374	1,580	1,755	1,631	1,490	1,358	1,108	711	330	63	-	-	-	-	395,250	-
7/31/2050	2050	7	31	-	3,429	(1.3)	3,047	419,330	-	-	-	-	-	-	9	153	546	965	1,304	1,568	1,735	1,735	1,652	1,443	1,193	787	362	74	-	-	-	-	419,330	-
8/31/2050	2050	8	31	-	3,429	(1.3)	3,046	396,158	-	-	-	-	-	-	2	107	502	917	1,269	1,505	1,659	1,678	1,539	1,386	1,124	752	307	32	-	-	-	-	396,158	-
9/30/2050	2050	9	30	-	3,429	(1.3)	3,045	377,660	-	-	-	-	-	-	-	93	521	1,011	1,391	1,582	1,641	1,641	1,592	1,333	1,039	584	161	0	-	-	-	-	377,660	-
10/31/2050	2050	10	31	-	3,429	(1.3)	3,043	388,311	-	-	-	-	-	-	-	48	469	988	1,355	1,603	1,836	1,789	1,600	1,358	977	444	58	-	-	-	-	-	388,311	-
11/30/2050	2050	11	30	-	3,429	(1.3)	3,042	342,210	-	-	-	-	-	-	12	381	853	1,250	1,511	1,701	1,607	1,568	1,272	866	387	-	-	-	-	-	-	-	342,210	-
12/31/2050	2050	12	31	-	3,429	(1.3)	3,041	318,370	-	-	-	-	-	-	-	213	710	1,118	1,362	1,571	1,533	1,451	1,184	767	361	-	-	-	-	-	-	-	318,370	-
1/31/2051	2051	1	31	-	3,429	(1.3)	3,040	330,467	-	-	-	-	-	-	-	141	600	1,066	1,400	1,544	1,542	1,450	1,358	937	535	88	-	-	-	-	-	-	330,467	-
2/28/2051	2051	2	28	-	3,429	(1.3)	3,038	327,453	-	-	-	-	-	-	0	185	617	1,163	1,459	1,639	1,684	1,645	1,401	1,062	651	189	-	-	-	-	-	-	327,453	-
3/31/2051	2051	3	31	-	3,429	(1.3)	3,037	438,135	-	-	-	-	-	-	-	28	378	897	1,422	1,718	1,916	1,917	1,899	1,638	1,252	789	280	-	-	-	-	-	438,135	-
4/30/2051	2051	4	30	-	3,429	(1.3)	3,036	438,297	-	-	-	-	-	-	2	119	519	1,128	1,521	1,798	1,915	1,903	1,799	1,575	1,232	777	305	16	-	-	-	-	438,297	-
5/31/2051	2051	5	31	-	3,429	(1.3)	3,034	452,318	-	-	-	-	-	-	11	194	647	1,123	1,464	1,717	1,863	1,913	1,793	1,519	1,192	783	326	45	-	-	-	-	452,318	-
6/30/2051	2051	6	30	-	3,429	(1.3)	3,033	393,283	-	-	-	-	-	-	12	190	570	994	1,368	1,573	1,746	1,623	1,483	1,351	1,102	707	328	63	-	-	-	-	393,283	-
7/31/2051	2051	7	31	-	3,429	(1.3)	3,032	417,243	-	-	-	-	-	-	9	152	543	960	1,298	1,560	1,726	1,727	1,644	1,436	1,187	783	360	74	-	-	-	-	417,243	-
8/31/2051	2051	8	31	-	3,429	(1.3)	3,031	394,187	-	-	-	-	-	-	2	106	500	913	1,263	1,498	1,651	1,670	1,532	1,379	1,118	748	306	31	-	-	-	-	394,187	-
9/30/2051	2051	9	30	-	3,429	(1.3)	3,029	375,780	-	-	-	-	-	-	-	92	519	1,006	1,384	1,574	1,633	1,632	1,584	1,326	1,034	581	160	0	-	-	-	-	375,780	-
10/31/2051	2051	10	31	-	3,429	(1.3)	3,028	386,378	-	-	-	-	-	-	-	48	467	983	1,349	1,595	1,827	1,780	1,592	1,351	972	442	58	-	-	-	-	-	386,378	-
11/30/2051	2051	11	30	-	3,429	(1.3)	3,027	340,507	-	-	-	-	-	-	12	379	849	1,243	1,503	1,692	1,599	1,560	1,265	862	385	-	-	-	-	-	-	-	340,507	-
12/31/2051	2051	12	31	-	3,429	(1.3)	3,026	316,785	-	-	-	-	-	-	-	212	706	1,112	1,355	1,564	1,525	1,444	1,179	763	359	-	-	-	-	-	-	-	316,785	-
1/31/2052	2052	1	31	-	3,429	(1.3)	3,024	328,822	-	-	-	-	-	-	-	141	597	1,060	1,393	1,536	1,535	1,443	1,352	932	532	87	-	-	-	-	-	-	328,822	-
2/29/2052	2052	2	29	-	3,429	(1.3)	3,023	325,823	-	-	-	-	-	-	0	178	593	1,117	1,402	1,574	1,618	1,581	1,346	1,020	625	182	-	-	-	-	-	-	325,823	-
3/31/2052	2052	3	31	-	3,429	(1.3)	3,022	435,954	-	-	-	-	-	-	-	28	376	892	1,415	1,710	1,906	1,907	1,890	1,630	1,246	785	278	-	-	-	-	-	435,954	-
4/30/2052	2052	4	30	-	3,429	(1.3)	3,021	436,115	-	-	-	-	-	-	2	118	517	1,123	1,513	1,789	1,906	1,893	1,790	1,567	1,226	773	304	16	-	-	-	-	436,115	-
5/31/2052	2052	5	31	-	3,429	(1.3)	3,019	450,067	-	-	-	-	-	-	11	193	644	1,118	1,457	1,709	1,854	1,903	1,784	1,512	1,186	779	324	45	-	-	-	-	450,067	-
6/30/2052	2052	6	30	-	3,429	(1.3)	3,018	391,326	-	-	-	-	-	-	12	189	567	989	1,361	1,565	1,737	1,615	1,475	1,344	1,097	704	326	62	-	-	-	-	391,326	-
7/31/2052	2052	7	31	-	3,429	(1.3)	3,017	415,166	-	-	-	-	-	-	9	151	541	956	1,291	1,553	1,717	1,718	1,636	1,429	1,181	779	358	73	-	-	-	-	415,166	-
8/31/2052	2052	8	31	-	3,429	(1.3)	3,016	392,225	-	-	-	-	-	-	2	106	497	908	1,256	1,490	1,643	1,661	1,524	1,372	1,112	745	304	31	-	-	-	-	392,225	-
9/30/2052	2052	9	30	-	3,429	(1.3)	3,014	373,910	-	-	-	-	-	-	-	92	516	1,001	1,377	1,566	1,625	1,624	1,576	1,320	1,028	578	160	0	-	-	-	-	373,910	-
10/31/2052	2052	10	31	-	3,429	(1.3)	3,013	384,455	-	-	-	-	-	-	-	48	464	978	1,342	1,587	1,817	1,771	1,584	1,345	968	440	58	-	-	-	-	-	384,455	-
11/30/2052	2052	11	30	-	3,429	(1.3)	3,012	338,812	-	-	-	-	-	-	12	377	845	1,237	1,496	1,684	1,591	1,553	1,259	857	383	-	-	-	-	-	-	-	338,812	-
12/31/2052	2052	12	31	-	3,429	(1.3)	3,011	315,209	-	-	-	-	-	-	-	211	703	1,107	1,348	1,556	1,518	1,436	1,173	760	357	-	-	-	-	-	-	-	315,209	-
1/31/2053	2053	1	31	-	3,429	(1.3)	3,009	327,186	-	-	-	-	-	-	-	140	594	1,055	1,386	1,528	1,527	1,436	1,345	928	529	87	-	-	-	-	-	-	327,186	-
2/28/2053	2053	2	28	-	3,429	(1.3)	3,008	324,201	-	-	-	-	-	-	0	183	611	1,151	1,445	1,622	1,667	1,629	1,387	1,051	644	187	-	-	-	-	-	-	324,201	-
3/31/2053	2053	3	31	-	3,429	(1.3)	3,007	433,784	-	-	-	-	-	-	-	28	374	888	1,408	1,701	1,897	1,898	1,880	1,621	1,240	781	277	-	-	-	-	-	433,784	-
4/30/2053	2053	4	30	-	3,429	(1.2)	3,006	433,944	-	-	-	-	-	-	2	117	514	1,117	1,506	1,780	1,896	1,884	1,781	1,559	1,220	770	302	16	-	-	-	-	433,944	-
5/31/2053	2053	5	31	-	3,429	(1.2)	3,004	447,827	-	-	-	-	-	-	11	192	640	1,112	1,450	1,700	1,844	1,894	1,776	1,504	1,180	776	322	45	-	-	-	-	447,827	-
6/30/2053	2053	6	30	-	3,429	(1.2)	3,003	389,378	-	-	-	-	-	-	12	188	564	984	1,354	1,557	1,729	1,606	1,468	1,338	1,091	700	325	62	-	-	-	-	389,378	-
7/31/2053	2053	7	31	-	3,429	(1.2)	3,002	413,100	-	-	-	-	-	-	9	151	538	951	1,285	1,545	1,709	1,710	1,628	1,422	1,175	776	356	73	-	-	-	-	413,100	-
8/31/2053	2053	8	31	-	3,429	(1.2)	3,001	390,272	-	-	-	-	-	-	2	105	495	904	1,250	1,483	1,634	1,653	1,517	1,365	1,107	741	303	31	-	-	-	-	390,272	-
9/30/2053	2053	9	30	-	3,429	(1.2)	2,999	372,049	-	-	-	-	-	-	-	91	514	996	1,370	1,558	1,617	1,616	1,568	1,313	1,023	576	159	0	-	-	-	-	372,049	-
10/31/2053	2053	10	31	-	3,429	(1.2)	2,998	382,541	-	-	-	-	-	-	-	47	462	973	1,335	1,579	1,808	1,762	1,576	1,338	963	438	58	-	-	-	-	-	382,541	-
11/30/2053	2053	11	30	-	3,429	(1.2)	2,997	337,126	-	-	-	-	-	-	12	376	841	1,231	1,488	1,675	1,583	1,545	1,253	853	381	-	-	-	-	-	-	-	337,126	-
12/31/2053	2053	12	31	-	3,429	(1.2)	2,996	313,640	-	-	-	-	-	-	-	210	699	1,101	1,342	1,548	1,510	1,429	1,167	756	356	-	-	-	-	-	-	-	313,640	-

Florida Power & Light Company
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Staff's Third Data Request
Request No. 12
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20220000-OT

						Ann. Degrade																																
						0.50%									1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Date	Year	Month	Num Days	New Capacity (MWdc)	Cumulative Capacity (MWdc)	Monthly Degradation	Cumulative Capacity after Degradation (MWdc)	Energy per MWdc (MWh-ac)	Monthly Generation (MWh)	Hourly Gen. Ending 1:00	Hourly Gen. Ending 2:00	Hourly Gen. Ending 3:00	Hourly Gen. Ending 4:00	Hourly Gen. Ending 5:00	Hourly Gen. Ending 6:00	Hourly Gen. Ending 7:00	Hourly Gen. Ending 8:00	Hourly Gen. Ending 9:00	Hourly Gen. Ending 10:00	Hourly Gen. Ending 11:00	Hourly Gen. Ending 12:00	Hourly Gen. Ending 13:00	Hourly Gen. Ending 14:00	Hourly Gen. Ending 15:00	Hourly Gen. Ending 16:00	Hourly Gen. Ending 17:00	Hourly Gen. Ending 18:00	Hourly Gen. Ending 19:00	Hourly Gen. Ending 20:00	Hourly Gen. Ending 21:00	Hourly Gen. Ending 22:00	Hourly Gen. Ending 23:00	Hourly Gen. Ending 0:00	Monthly Generation (check)	check
1/31/2013	2013	1	31	-				111.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/28/2013	2013	2	28	-	-	-	-	111.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/31/2013	2013	3	31	-	-	-	-	147.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/30/2013	2013	4	30	-	-	-	-	146.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/31/2013	2013	5	31	-	-	-	-	149.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/30/2013	2013	6	30	-	-	-	-	129.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31/2013	2013	7	31	-	-	-	-	138.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/31/2013	2013	8	31	-	-	-	-	129.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9/30/2013	2013	9	30	-	-	-	-	124.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/31/2013	2013	10	31	-	-	-	-	127.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/30/2013	2013	11	30	-	-	-	-	115.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/31/2013	2013	12	31	-	-	-	-	107.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/31/2014	2014	1	31	1	1	-	1	111.3	148	-	-	-	-	-	-	-	0	0	0	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	148	-
2/28/2014	2014	2	28	1	3	(0.0)	3	111.1	295	-	-	-	-	-	-	-	0	1	1	1	1	2	1	1	1	1	0	-	-	-	-	-	-	-	295	-
3/31/2014	2014	3	31	1	4	(0.0)	4	147.4	587	-	-	-	-	-	-	-	0	0	1	2	2	3	3	3	2	2	1	0	-	-	-	-	-	-	587	-
4/30/2014	2014	4	30	1	5	(0.0)	5	146.3	776	-	-	-	-	-	-	-	0	1	2	3	3	3	3	3	3	2	1	1	0	-	-	-	-	-	776	-
5/31/2014	2014	5	31	1	7	(0.0)	7	149.0	988	-	-	-	-	-	-	-	0	1	2	3	4	4	4	4	3	3	2	1	0	-	-	-	-	-	988	-
6/30/2014	2014	6	30	1	8	(0.0)	8	129.5	1,031	-	-	-	-	-	-	-	0	1	3	4	4	5	4	4	4	3	2	1	0	-	-	-	-	-	1,031	-
7/31/2014	2014	7	31	1	9	(0.0)	9	138.9	1,290	-	-	-	-	-	-	-	0	2	3	4	5	5	5	5	4	4	3	1	0	-	-	-	-	-	1,290	-
8/31/2014	2014	8	31	1	11	(0.0)	11	129.9	1,378	-	-	-	-	-	-	-	0	2	3	4	5	6	6	5	5	4	3	1	0	-	-	-	-	-	1,378	-
9/30/2014	2014	9	30	1	12	(0.0)	12	124.6	1,486	-	-	-	-	-	-	-	0	2	4	5	6	6	6	6	5	4	2	1	0	-	-	-	-	-	1,486	-
10/31/2014	2014	10	31	1	13	(0.0)	13	127.9	1,695	-	-	-	-	-	-	-	0	2	4	6	7	8	8	7	6	4	2	0	-	-	-	-	-	-	1,695	-
11/30/2014	2014	11	30	1	15	(0.0)	15	115.0	1,676	-	-	-	-	-	-	-	2	4	6	7	8	8	8	6	4	2	-	-	-	-	-	-	-	-	1,676	-
12/31/2014	2014	12	31	1	16	(0.0)	16	107.8	1,713	-	-	-	-	-	-	-	1	4	6	7	9	8	8	6	4	2	-	-	-	-	-	-	-	-	1,713	-
1/31/2015	2015	1	31	1	17	(0.0)	17	111.3	1,841	-	-	-	-	-	-	-	1	3	6	8	8	9	8	8	5	3	1	-	-	-	-	-	-	-	1,841	-
2/28/2015	2015	2	28	1	17	(0.0)	17	111.1	1,908	-	-	-	-	-	-	-	1	3	7	8	9	10	10	8	6	4	1	-	-	-	-	-	-	-	1,908	-
3/31/2015	2015	3	31	1	18	(0.0)	18	147.4	2,624	-	-	-	-	-	-	-	0	2	5	8	10	11	11	12	10	8	5	2	-	-	-	-	-	-	2,624	-
4/30/2015	2015	4	30	1	19	(0.0)	18	146.3	2,697	-	-	-	-	-	-	-	0	3	7	9	11	12	12	11	10	8	5	2	0	-	-	-	-	-	2,697	-
5/31/2015	2015	5	31	1	19	(0.0)	19	149.0	2,842	-	-	-	-	-	-	-	1	4	7	9	11	12	12	11	10	8	5	2	0	-	-	-	-	-	2,842	-
6/30/2015	2015	6	30	1	20	(0.0)	20	129.5	2,554	-	-	-	-	-	-	-	1	3	6	9	10	11	11	10	9	7	5	2	0	-	-	-	-	-	2,554	-
7/31/2015	2015	7	31	1	20	(0.0)	20	138.9	2,828	-	-	-	-	-	-	-	1	3	6	9	11	12	12	11	10	8	6	3	1	-	-	-	-	-	2,828	-
8/31/2015	2015	8	31	1	21	(0.0)	21	129.9	2,727	-	-	-	-	-	-	-	0	3	6	8	10	12	12	11	10	8	5	2	0	-	-	-	-	-	2,727	-
9/30/2015	2015	9	30	1	22	(0.0)	22	124.6	2,693	-	-	-	-	-	-	-	0	3	7	10	11	12	12	11	10	8	4	1	0	-	-	-	-	-	2,693	-
10/31/2015	2015	10	31	1	22	(0.0)	22	127.9	2,847	-	-	-	-	-	-	-	0	3	7	10	12	13	13	12	10	7	4	1	-	-	-	-	-	-	2,847	-
11/30/2015	2015	11	30	1	23	(0.0)	23	115.0	2,632	-	-	-	-	-	-	-	3	6	9	11	13	12	12	10	7	3	-	-	-	-	-	-	-	-	2,632	-
12/31/2015	2015	12	31	1	24	(0.0)	24	107.8	2,535	-	-	-	-	-	-	-	2	5	9	11	13	12	12	9	6	3	-	-	-	-	-	-	-	-	2,535	-
1/31/2016	2016	1	31	1	24	(0.0)	24	111.3	2,695	-	-	-	-	-	-	-	1	5	8	11	12	13	12	11	8	5	1	-	-	-	-	-	-	-	2,695	-
2/29/2016	2016	2	29	1	25	(0.0)	25	111.1	2,766	-	-	-	-	-	-	-	1	5	9	12	13	14	13	12	9	6	2	-	-	-	-	-	-	-	2,766	-
3/31/2016	2016	3	31	1	26	(0.0)	26	147.4	3,767	-	-	-	-	-	-	-	0	3	7	12	15	16	16	17	14	11	7	3	-	-	-	-	-	-	3,767	-
4/30/2016	2016	4	30	1	26	(0.0)	26	146.3	3,838	-	-	-	-	-	-	-	1	4	10	13	16	17	17	16	14	11	7	3	0	-	-	-	-	-	3,838	-
5/31/2016	2016	5	31	1	27	(0.0)	27	149.0	4,010	-	-	-	-	-	-	-	1	5	10	13	15	17	17	16	14	11	7	3	0	-	-	-	-	-	4,010	-
6/30/2016	2016	6	30	1	28	(0.0)	28	129.5	3,574	-	-	-	-	-	-	-	1	5	9	12	14	16	15	13	12	10	7	3	1	-	-	-	-	-	3,574	-
7/31/2016	2016	7	31	1	28	(0.0)	28	138.9	3,928	-	-	-	-	-	-	-	1	5	9	12	15	16	16	16	14	11	8	4	1	-	-	-	-	-	3,928	-
8/31/2016	2016	8	31	1	29	(0.0)	29	129.9	3,762	-	-	-	-	-	-	-	1	4	8	12	14	16	16	15	13	11	8	3	0	-	-	-	-	-	3,762	-
9/30/2016	2016	9	30	1	30	(0.0)	30	124.6	3,691	-	-	-	-	-	-	-	1	5	10	13	15	16	16	16	13	11	6	2	0	-	-	-	-	-	3,691	-
10/31/2016	2016	10	31	1	31	(0.0)	30	127.9	3,876	-	-	-	-	-	-	-	0	4	9	13	16	18	18	16	14	10	5	1	-	-	-	-	-	-	3,876	-
11/30/2016	2016	11	30	1	31	(0.0)	31	115.0	3,563	-	-	-	-	-	-	-	4	8	13	16	18	17	17	13	10	5	-	-	-	-	-	-	-	-	3,563	-
12/31/2016	2016	12	31	1	32	(0.0)	32	107.8	3,412	-	-	-	-	-	-	-	2	7	12	14	17	17	16	13	8	4	-	-	-	-	-	-	-	-	3,412	-
1/31/2017	2017	1	31	1	33	(0.0)	33	111.3	3,677	-	-	-	-	-	-	-	1	6	12	15	17	17	16	15	11	7	1	-	-	-	-	-	-	-	3,677	-
2/28/2017	2017	2	28	1	35	(0.0)	34	111.1	3,823	-	-	-	-	-	-	-	2	7	13	17	19	20	19	17	13	8	3	-	-	-	-	-	-	-	3,823	-
3/31/2017	2017	3	31	1	36	(0.0)	36	147.4	5,272	-	-	-	-	-	-	-	0	4	10	17	21	23	23	23	20	15	10	4	-	-	-	-	-	-	5,272	-
4/30/2017	2017	4	30	1	37	(0.0)	37	146.3	5,432	-	-	-	-	-	-	-	1	6	14	19	22	24	24	22	20	16	10	4	0	-	-	-	-	-	5,432	-
5/31/2017	2017	5	31	1	39	(0.0)	39	149.0	5,736	-	-	-	-	-	-	-	2	7	14	18	22	24	24	23	20	16	10	5	1	-	-	-	-	-	5,736	-
6/30/2017	2017	6	30	1	40	(0.0)	40	129.5	5,164	-	-	-	-	-	-	-	2	7	13	18	21	23	21	19	18	15	10	5	1	-	-	-	-	-	5,164	-
7/31/2017	2017	7	31	1	42	(0.0)	41	138.9	5,730	-	-	-	-	-	-	-	2	7	13	18	21	24	24	23	20	17	11	5	1	-	-	-	-	-	5,730	-
8/31/2017	2017	8	31	1	43	(0.0)	43	129.9	5,536	-	-	-	-	-	-	-	1	7	12	17	21	23	23	21	20	16	11	5	1	-	-	-	-	-	5,536	-
9/30/2017	2017	9	30	1	44	(0.0)	44	124.6	5,478	-	-	-	-	-	-	-	1	7	14	20	23	24	24	23	20	16	9	3	0	-	-	-	-	-	5,478	-
10/31/2017	2017	10	31	1	46	(0.0)	45	127.9	5,799	-	-	-	-	-	-	-	0	6	14	20	24	27	27	24	21	15	7	1	-	-	-	-	-	-	5,799	-
11/30/2017	2017	11	30	1	47	(0.0)	47	115.0	5,370	-	-	-	-	-	-	-	5	13	19	23	27	25	25	20	14	7	-	-	-	-	-	-	-	-	5,370	-
12/31/2017	2017	12	31	1	49	(0.0)	48	107.8	5,180	-	-	-	-	-	-	-	3	11	18	22	26	25	24	19	13	7	-	-	-	-	-	-	-	-	5,180	-
1/31/2018	2018	1	31	3	51	(0.0)	51	111.3	5,653	-	-	-	-	-	-	-	2	10	18	24	26	26	25	24	16	10	2	-	-	-	-	-	-	-	5,653	-
2/28/2018	2018	2	28	3	54	(0.0)	53	111.1	5,946	-	-	-	-	-	-	-	3	10	21	26	30	30	30	26	20	13	4	-	-	-	-	-	-	-	5,946	-
3/31/2018	2018	3	31	3	57	(0.0)	56	147.4	8,285	-	-	-	-	-	-	-	0	6	16	27	32	36	36	37	32	24	16	6	-	-	-	-	-	-	8,285	-
4/30/2018	2018	4	30	3	59	(0.0)	59	146.3	8,618	-	-	-	-	-	-	-	2	9	22	30	35	38	38	35	31	25	16	7	0	-	-	-	-	-	8,618	-
5/31/2018	2018	5	31	3	62	(0.0)	62	149.0	9,181	-	-	-	-	-	-	-	3	12	22	29	35	38	39	37	31	25	17	7	1	-	-	-	-	-	9,181	-
6/30/2018	2018	6	30	3	65	(0.0)	64	129.5	8,334	-	-	-	-	-	-	-	3	11	21	29	33	37	34	31	29	24	16	8	2	-	-	-	-	-	8,334	-
7/31/2018	2018	7	31	3	68	(0.0)	67	138.9	9,316	-	-	-	-	-	-	-	3	11	21	29	35	39	39	37	32	27	18	9	2	-	-	-	-	-	9,316	-
8/31/2018	2018	8	31	3	70	(0.0)	70	129.9	9,064	-	-	-	-	-	-	-	2	11	20	28	34	38	38	35	32	27	18	8	1	-	-	-	-	-	9,064	-
9/30/2018	2018	9	30	3	73	(0.0)	72	124.6	9,027	-	-	-	-	-	-	-	1	11	23	33	38	39	39	38	33	26	15	4	0	-	-	-	-	-	9,027	-
10/31/2018	2018	10	31	3	76	(0.0)	75	127.9	9,615	-	-	-	-	-	-	-	0	11	23	33	39	45	44	40	35	25	12	2	-	-	-	-	-	-	9,615	-
11/30/2018	2018	11	30	3	79	(0.0)	78	115.0	8,955	-	-	-	-	-	-	-	9	21	32	39	44	42	42	34	24	12	-	-	-	-	-	-	-	-	8,955	-
12/31/2018	2018	12	31	3	81	(0.0)	81	107.8	8,684	-	-	-	-	-	-	-	5	19	30	37	43	42	40	32	21	11	-	-	-	-	-	-	-	-	8,684	-
1/31/2019	2019	1	31	5	86	(0.0)	85	111.3	9,490	-	-	-	-	-	-	-	4	16	30	39	44	44	42	40	28	17	3	-	-	-	-	-	-	-	9,490	-
2/28/2019	2019	2	28	5	91	(0.0)	90	111.1	9,992	-	-	-	-	-	-	-	5	17	35	44	50	51	50	43	34	21	7	-	-	-	-	-	-	-	9,992	-
3/31/2019	2019	3	31	5	95	(0.0)	95	147.4	13,937	-	-	-	-	-	-	-	0	10	27	45	54	61	60	61	53	41	26	10	-	-	-	-	-	-	13,937	-
4/30/2019	2019	4	30	5	100	(0.0)	99	146.3	14,511	-	-	-	-	-	-	-	3	15	36	50	59	64	63	60	53	42	27	11	1	-	-	-	-	-	14,511	-
5/31/2019	2019	5	31	5	105	(0.0)	104	149.0	15,473	-	-	-	-	-	-	-	5	20	37	49	59	64	66	62	53	42	28	12	2	-	-	-	-	-	15,473	-
6/30/2019	2019	6	30	5	110	(0.0)	109	129.5	14,056	-	-	-	-	-	-	-	6	19	35	48	56	63	58	53	49	40	26	13	3	-	-	-	-	-	14,056	-
7/31/2019	2019	7	31	5	114	(0.0)	113	138.9	15,724	-	-	-	-	-	-	-	4	19	35	48	59	65	65	63	55	46	31	15	3	-	-	-	-	-	15,724	-
8/31/2019	2019	8	31	5	119	(0.0)	118	129.9	15,309	-	-	-	-	-	-	-	3	18	34	47	58	65	65	59	55	45	31	13	2	-	-	-	-	-	15,309	-
9/30/2019	2019	9	30	5	124	(0.0)	122	124.6	15,256	-	-	-	-	-	-	-	2	19	39	56	64	66	66	65	55	44	25	8	0	-	-	-	-	-	15,256	-
10/31/2019	2019	10	31	5	128	(0.1)	127	127.9	16,259	-	-	-	-	-	-	-	1	18	40	56	66	76	75	68	59	43	20	3	-	-	-	-	-	-	16,259	-
11/30/2019	2019	11	30	5	133	(0.1)	132	115.0	15,150	-	-	-	-	-	-	-	15	35	53	66	75	72	71	57	40	19	-	-	-	-	-	-	-	-	15,150	-
12/31/2019	2019	12	31	5	138	(0.1)	136	107.8	14,699	-	-	-	-	-	-	-	9	31	51	62	73	72	67	54	36	19	-	-	-	-	-	-	-	-	14,699	-
1/31/2020	2020	1	31	6	144	(0.1)	142	111.3	15,843	-	-	-	-	-	-	-	6	27	50	66	73	74	70	67	46	28	5	-	-	-	-	-	-	-	15,843	-
2/29/2020	2020	2	29	6	150	(0.1)	148	111.1	16,474	-	-	-	-	-	-	-	8	27	55	70	79	81	80	69	54	34	11	-	-	-	-	-	-	-	16,474	-
3/31/2020	2020	3	31	6	156	(0.1)	154	147.4	22,717	-	-	-	-	-	-	-	0	17	44	73	88	99	99	100	87	67	43	16	-	-	-	-	-	-	22,717	-
4/30/2020	2020	4	30	6	162	(0.1)	160	146.3	23,407	-	-	-	-	-	-	-	4	24	58	80	96	103	102	96	85	68	43	18	1	-	-	-	-	-	23,407	-
5/31/2020	2020	5	31	6	168	(0.1)	166	149.0	24,719	-	-	-	-	-	-	-	8	32	59	78	94	102	105	100	85	67	45	19	3	-	-	-	-	-	24,719	-
6/30/2020	2020	6	30	6	174	(0.1)	172	129.5	22,258	-	-	-	-	-	-	-	9	30	56	76	89	100	92	84	77	63	42	20	4	-	-	-	-	-	22,258	-
7/31/2020	2020	7	31	6	180	(0.1)	178	138.9	24,695	-	-	-	-	-	-	-	7	29	55	76	92	103	102	98	86	72	49	23	5	-	-	-	-	-	24,695	-
8/31/2020	2020	8	31	6	185	(0.1)	184	129.9	23,860	-	-	-	-	-	-	-	4	28	53	74	90	101	101	92	85	70	48	20	2	-	-	-	-	-	23,860	-
9/30/2020	2020	9	30	6	191	(0.1)	190	124.6	23,610	-	-	-	-	-	-	-	4	29	61	86	99	102	102	100	85	67	39	12	0	-	-	-	-	-	23,610	-

10/31/2020	2020	10	31	6	197	(0.1)	195	127.9	24,996	-	-	-	-	-	-	-	1	27	61	86	101	117	115	105	90	66	31	5	-	-	-	-	-	24,996	-
11/30/2020	2020	11	30	6	203	(0.1)	201	115.0	23,149	-	-	-	-	-	-	-	24	54	82	101	115	109	108	87	62	30	-	-	-	-	-	-	-	23,149	-
12/31/2020	2020	12	31	6	209	(0.1)	207	107.8	22,330	-	-	-	-	-	-	-	13	48	77	94	111	109	102	83	55	28	-	-	-	-	-	-	-	22,330	-
1/31/2021	2021	1	31	8	218	(0.1)	215	111.3	23,967	-	-	-	-	-	-	-	9	41	75	100	110	112	106	101	70	42	8	-	-	-	-	-	-	23,967	-
2/28/2021	2021	2	28	8	226	(0.1)	223	111.1	24,826	-	-	-	-	-	-	-	12	43	86	109	123	127	125	108	84	53	17	-	-	-	-	-	-	24,826	-
3/31/2021	2021	3	31	8	234	(0.1)	231	147.4	34,115	-	-	-	-	-	-	-	1	26	66	109	133	148	148	150	130	100	64	25	-	-	-	-	-	34,115	-
4/30/2021	2021	4	30	8	242	(0.1)	240	146.3	35,036	-	-	-	-	-	-	-	6	37	88	120	143	154	153	144	128	101	65	27	2	-	-	-	-	35,036	-
5/31/2021	2021	5	31	8	250	(0.1)	248	149.0	36,886	-	-	-	-	-	-	-	12	48	87	117	140	152	157	149	126	100	67	29	5	-	-	-	-	36,886	-
6/30/2021	2021	6	30	8	258	(0.1)	256	129.5	33,118	-	-	-	-	-	-	-	13	45	83	114	132	148	137	125	115	94	62	30	6	-	-	-	-	33,118	-
7/31/2021	2021	7	31	8	267	(0.1)	264	138.9	36,647	-	-	-	-	-	-	-	10	44	81	113	137	152	152	146	128	107	72	34	7	-	-	-	-	36,647	-
8/31/2021	2021	8	31	8	275	(0.1)	272	129.9	35,319	-	-	-	-	-	-	-	6	42	78	110	133	150	149	137	126	103	71	30	3	-	-	-	-	35,319	-
9/30/2021	2021	9	30	8	283	(0.1)	280	124.6	34,867	-	-	-	-	-	-	-	5	43	90	127	146	151	151	148	126	100	57	17	0	-	-	-	-	34,867	-
10/31/2021	2021	10	31	8	291	(0.1)	288	127.9	36,831	-	-	-	-	-	-	-	2	40	90	127	150	173	170	155	133	97	46	7	-	-	-	-	-	36,831	-
11/30/2021	2021	11	30	8	299	(0.1)	296	115.0	34,038	-	-	-	-	-	-	-	35	80	120	148	169	161	159	128	91	44	-	-	-	-	-	-	-	34,038	-
12/31/2021	2021	12	31	8	307	(0.1)	304	107.8	32,769	-	-	-	-	-	-	-	20	70	113	138	163	160	149	121	81	42	-	-	-	-	-	-	-	32,769	-
1/31/2022	2022	1	31	14	322	(0.1)	318	111.3	35,433	-	-	-	-	-	-	-	14	60	111	147	163	165	156	149	103	63	11	-	-	-	-	-	-	35,433	-
2/28/2022	2022	2	28	14	336	(0.1)	332	111.1	36,953	-	-	-	-	-	-	-	18	64	128	162	183	189	187	160	125	79	25	-	-	-	-	-	-	36,953	-
3/31/2022	2022	3	31	14	351	(0.1)	347	147.4	51,097	-	-	-	-	-	-	-	1	38	99	164	199	222	222	225	195	150	97	37	-	-	-	-	-	51,097	-
4/30/2022	2022	4	30	14	365	(0.1)	361	146.3	52,782	-	-	-	-	-	-	-	10	55	132	181	216	232	230	217	193	152	98	41	2	-	-	-	-	52,782	-
5/31/2022	2022	5	31	14	379	(0.2)	375	149.0	55,870	-	-	-	-	-	-	-	18	72	132	177	212	230	238	225	191	152	102	44	7	-	-	-	-	55,870	-
6/30/2022	2022	6	30	14	394	(0.2)	389	129.5	50,417	-	-	-	-	-	-	-	20	69	127	173	201	226	208	190	175	143	94	45	9	-	-	-	-	50,417	-
7/31/2022	2022	7	31	14	408	(0.2)	403	138.9	56,052	-	-	-	-	-	-	-	16	67	124	172	209	233	232	223	195	163	110	52	11	-	-	-	-	56,052	-
8/31/2022	2022	8	31	14	422	(0.2)	418	129.9	54,258	-	-	-	-	-	-	-	10	64	120	168	205	230	229	210	194	159	109	46	5	-	-	-	-	54,258	-
9/30/2022	2022	9	30	14	437	(0.2)	432	124.6	53,784	-	-	-	-	-	-	-	8	66	139	197	225	233	233	228	195	154	88	27	0	-	-	-	-	53,784	-
10/31/2022	2022	10	31	14	451	(0.2)	446	127.9	57,035	-	-	-	-	-	-	-	3	62	139	197	232	268	263	239	205	150	71	11	-	-	-	-	-	57,035	-
11/30/2022	2022	11	30	14	465	(0.2)	460	115.0	52,903	-	-	-	-	-	-	-	54	124	186	230	263	250	248	199	141	68	-	-	-	-	-	-	-	52,903	-
12/31/2022	2022	12	31	14	480	(0.2)	474	107.8	51,106	-	-	-	-	-	-	-	31	110	176	216	254	249	233	189	126	65	-	-	-	-	-	-	-	51,106	-
1/31/2023	2023	1	31	15	495	(0.2)	489	111.3	54,483	-	-	-	-	-	-	-	21	93	171	227	251	254	240	229	159	96	18	-	-	-	-	-	-	54,483	-
2/28/2023	2023	2	28	15	510	(0.2)	505	111.1	56,079	-	-	-	-	-	-	-	27	96	194	246	278	287	283	243	190	119	38	-	-	-	-	-	-	56,079	-
3/31/2023	2023	3	31	15	526	(0.2)	520	147.4	76,604	-	-	-	-	-	-	-	1	58	148	246	298	333	333	338	292	225	145	55	-	-	-	-	-	76,604	-
4/30/2023	2023	4	30	15	541	(0.2)	535	146.3	78,236	-	-	-	-	-	-	-	14	82	196	268	320	344	341	321	286	226	145	61	3	-	-	-	-	78,236	-
5/31/2023	2023	5	31	15	556	(0.2)	550	149.0	81,938	-	-	-	-	-	-	-	27	106	194	260	311	338	350	330	281	222	150	65	10	-	-	-	-	81,938	-
6/30/2023	2023	6	30	15	572	(0.2)	565	129.5	73,209	-	-	-	-	-	-	-	29	100	184	252	292	328	302	276	254	208	137	66	13	-	-	-	-	73,209	-
7/31/2023	2023	7	31	15	587	(0.2)	580	138.9	80,635	-	-	-	-	-	-	-	23	96	178	248	301	335	334	321	281	235	159	75	16	-	-	-	-	80,635	-
8/31/2023	2023	8	31	15	603	(0.2)	596	129.9	77,374	-	-	-	-	-	-	-	14	91	172	240	292	328	327	299	277	227	156	66	8	-	-	-	-	77,374	-
9/30/2023	2023	9	30	15	618	(0.2)	611	124.6	76,067	-	-	-	-	-	-	-	12	94	197	278	318	330	330	323	275	217	125	38	0	-	-	-	-	76,067	-
10/31/2023	2023	10	31	15	633	(0.3)	626	127.9	80,038	-	-	-	-	-	-	-	4	87	195	276	325	376	370	336	288	210	99	15	-	-	-	-	-	80,038	-
11/30/2023	2023	11	30	15	649	(0.3)	641	115.0	73,693	-	-	-	-	-	-	-	75	172	260	321	366	348	345	278	197	95	-	-	-	-	-	-	-	73,693	-
12/31/2023	2023	12	31	15	664	(0.3)	656	107.8	70,695	-	-	-	-	-	-	-	42	151	243	298	352	345	322	262	174	90	-	-	-	-	-	-	-	70,695	-
1/31/2024	2024	1	31	12	676	(0.3)	668	111.3	74,368	-	-	-	-	-	-	-	29	126	233	309	342	346	328	313	217	132	24	-	-	-	-	-	-	74,368	-
2/29/2024	2024	2	29	12	689	(0.3)	680	111.1	75,581	-	-	-	-	-	-	-	36	125	252	320	362	374	369	316	247	155	50	-	-	-	-	-	-	75,581	-
3/31/2024	2024	3	31	12	701	(0.3)	692	147.4	102,003	-	-	-	-	-	-	-	2	77	197	327	397	443	443	450	389	299	193	73	-	-	-	-	-	102,003	-
4/30/2024	2024	4	30	12	713	(0.3)	704	146.3	102,980	-	-	-	-	-	-	-	19	108	257	353	421	452	449	423	376	297	191	80	5	-	-	-	-	102,980	-
5/31/2024	2024	5	31	12	726	(0.3)	716	149.0	106,670	-	-	-	-	-	-	-	35	138	253	338	404	440	455	430	365	290	195	84	13	-	-	-	-	106,670	-
6/30/2024	2024	6	30	12	738	(0.3)	728	129.5	94,306	-	-	-	-	-	-	-	37	129	237	324	376	422	389	355	328	268	176	85	17	-	-	-	-	94,306	-
7/31/2024	2024	7	31	12	750	(0.3)	740	138.9	102,830	-	-	-	-	-	-	-	29	122	227	316	384	427	426	409	358	300	203	95	21	-	-	-	-	102,830	-
8/31/2024	2024	8	31	12	763	(0.3)	752	129.9	97,721	-	-	-	-	-	-	-	18	115	217	303	369	414	413	378	349	286	197	83	10	-	-	-	-	97,721	-
9/30/2024	2024	9	30	12	775	(0.3)	764	124.6	95,183	-	-	-	-	-	-	-	14	117	246	348	398	413	413	404	345	272	156	47	0	-	-	-	-	95,183	-
10/31/2024	2024	10	31	12	787	(0.3)	776	127.9	99,264	-	-	-	-	-	-	-	5	109	242	342	403	466	458	417	357	261	123	18	-	-	-	-	-	99,264	-
11/30/2024	2024	11	30	12	799	(0.3)	788	115.0	90,617	-	-	-	-	-	-	-	92	212	319	394	450	428	425	342	242	117	-	-	-	-	-	-	-	90,617	-
12/31/2024	2024	12	31	12	812	(0.3)	800	107.8	86,218	-	-	-	-	-	-	-	52	185	297	364	429	421	393	319	213	110	-	-	-	-	-	-	-	86,218	-
1/31/2025	2025	1	31	14	825	(0.3)	813	111.3	90,534	-	-	-	-	-	-	-	35	154	283	377	417	422	399	381	264	160	29	-	-	-	-	-	-	90,534	-
2/28/2025	2025	2	28	14	839	(0.3)	826	111.1	91,850	-	-	-	-	-	-	-	45	158	318	402	456	470	464	398	311	195	63	-	-	-	-	-	-	91,850	-
3/31/2025	2025	3	31	14	852	(0.3)	840	147.4	123,750	-	-	-	-	-	-	-	2	93	239	397	482	537	537	545	472	363	234	89	-	-	-	-	-	123,750	-
4/30/2025	2025	4	30	14	866	(0.3)	853	146.3	124,732	-	-	-	-	-	-	-	23	131	312	428	510	548	544	513	455	360	232	97	6	-	-	-	-	124,732	-
5/31/2025	2025	5	31	14	879	(0.4)	866	149.0	128,997	-	-	-	-	-	-	-	43	167	306	409	489	532	550	520	442	350	235	102	16	-	-	-	-	128,997	-
6/30/2025	2025	6	30	14	893	(0.4)	879	129.5	113,872	-	-	-	-	-	-	-	45	155	286	391	454	510	470	429	395	324	213	103	21	-	-	-	-	113,872	-
7/31/2025	2025	7	31	14	907	(0.4)	892	138.9	123,980	-	-	-	-	-	-	-	35	147	274	381	463	515	513	493	432	361	244	115	25	-	-	-	-	123,980	-
8/31/2025	2025	8	31	14	920	(0.4)	906	129.9	117,651	-	-	-	-	-	-	-	21	139	261	365	444	499	497	455	421	344	237	100	12	-	-	-	-	117,651	-
9/30/2025	2025	9	30	14	934	(0.4)	919	124.6	114,436	-	-	-	-	-	-	-	17	141	296	418	478	497	497	485	414	327	187	56	0	-	-	-	-	114,436	-
10/31/2025	2025	10	31	14	947	(0.4)	932	127.9	119,182	-	-	-	-	-	-	-	6	130	291	411	484	560	550	500	429	313	148	22	-	-	-	-	-	119,182	-
11/30/2025	2025	11	30	14	961	(0.4)	945	115.0	108,657	-	-	-	-	-	-	-	111	254	383	473	539	513	509	410	290	140	-	-	-	-	-	-	-	108,657	-
12/31/2025	2025	12	31	14	974	(0.4)	958	107.8	103,252	-	-	-	-	-	-	-	62	221	355	436	514	504	470	382	255	132	-	-	-	-	-	-	-	103,252	-
1/31/2026	2026	1	31	15	990	(0.4)	973	111.3	108,331	-	-	-	-	-	-	-	42	184	339	451	499	505	477	456	316	192	35	-	-	-	-	-	-	108,331	-
2/28/2026	2026	2	28	15	1,005	(0.4)	988	111.1	109,818	-	-	-	-	-	-	-	53	189	380	481	545	562	555	476	371	234	75	-	-	-	-	-	-	109,818	-
3/31/2026	2026	3	31	15	1,020	(0.4)	1,003	147.4	147,843	-	-	-	-	-	-	-	3	111	285	474	576	642	642	652	564	434	279	106	-	-	-	-	-	147,843	-
4/30/2026	2026	4	30	15	1,036	(0.4)	1,018	146.3	148,904	-	-	-	-	-	-	-	27	156	372	511	609	654	650	612	544	430	277	115	7	-	-	-	-	148,904	-
5/31/2026	2026	5	31	15	1,051	(0.4)	1,033	149.0	153,884	-	-	-	-	-	-	-	51	199	365	488	583	635	657	620	527	418	281	121	19	-	-	-	-	153,884	-
6/30/2026	2026	6	30	15	1,067	(0.4)	1,048	129.5	135,744	-	-	-	-	-	-	-	53	185	341	466	541	608	560	511	471	386	254	122	25	-	-	-	-	135,744	-
7/31/2026	2026	7	31	15	1,082	(0.4)	1,063	138.9	147,692	-	-	-	-	-	-	-	42	176	326	454	552	614	612	587	514	430	291	137	30	-	-	-	-	147,692	-
8/31/2026	2026	8	31	15	1,097	(0.4)	1,078	129.9	140,059	-	-	-	-	-	-	-	25	165	310	434	529	594	592	542	501	410	282	120	14	-	-	-	-	140,059	-
9/30/2026	2026	9	30	15	1,113	(0.4)	1,093	124.6	136,144	-	-	-	-	-	-	-	21	168	352	497	569	591	591	578	493	389	223	67	0	-	-	-	-	136,144	-
10/31/2026	2026	10	31	15	1,128	(0.5)	1,108	127.9	141,701	-	-	-	-	-	-	-	7	155	346	489	575	666	654	595	510	372	176	26	-	-	-	-	-	141,701	-
11/30/2026	2026	11	30	15	1,144	(0.5)	1,123	115.0	129,109	-	-	-	-	-	-	-	132	302	455	562	641	610	605	487	345	166	-	-	-	-	-	-	-	129,109	-
12/31/2026	2026	12	31	15	1,159	(0.5)	1,138	107.8	122,613	-	-	-	-	-	-	-	74	263	422	518	610	598	558	454	303	156	-	-	-	-	-	-	-	122,613	-
1/31/2027	2027	1	31	15	1,174	(0.5)	1,153	111.3	128,324	-	-	-	-	-	-	-	49	218	402	534	591	598	566	540	374	227	41	-	-	-	-	-	-	128,324	-
2/28/2027	2027	2	28	15	1,190	(0.5)	1,168	111.1	129,771	-	-	-	-	-	-	-	63	223	449	568	644	664	656	563	439	276	89	-	-	-	-	-	-	129,771	-
3/31/2027	2027	3	31	15	1,205	(0.5)	1,183	147.4	174,295	-	-	-	-	-	-	-	3	131	336	559	679	757	757	768	665	512	329	126	-	-	-	-	-	174,295	-
4/30/2027	2027	4	30	15	1,221	(0.5)	1,198	146.3	175,145	-	-	-	-	-	-	-	32	183	438	601	716	769	764	720	640	506	325	136	8	-	-	-	-	175,145	-
5/31/2027	2027	5	31	15	1,236	(0.5)	1,212	149.0	180,601	-	-	-	-	-	-	-	60	234	428	573	685	745	771	727	619	490	330	142	22	-	-	-	-	180,601	-
6/30/2027	2027	6	30	15	1,252	(0.5)	1,227	129.5	158,968	-	-	-	-	-	-	-	62	217	399	546	634	712	655	599	552	452	297	143	29	-	-	-	-	158,968	-
7/31/2027	2027	7	31	15	1,267	(0.5)	1,242	138.9	172,596	-	-	-	-	-	-	-	49	205	381	530	645	717	715	686	601	503	340	160	35	-	-	-	-	172,596	-
8/31/2027	2027	8	31	15	1,282	(0.5)	1,257	129.9	163,341	-	-	-	-	-	-	-	29	193	362	507	617	693	691	632	584	478	329	140	16	-	-	-	-	163,341	-
9/30/2027	2027	9	30	15	1,298	(0.5)	1,272	124.6	158,458	-	-	-	-	-	-	-	24	195	410	579	662	688	688	672	574	453	260	78	0	-	-	-	-	158,458	-
10/31/2027	2027	10	31	15	1,313	(0.5)	1,287	127.9	164,605	-	-	-	-	-	-	-	8	180	402	568	668	773	760	691	592	433	204	31	-	-	-	-	-	164,605	-
11/30/2027	2027	11	30	15	1,329	(0.5)	1,302	115.0	149,692	-	-	-	-	-	-	-	153	350	528	651	743	707	701	564	400	193	-	-	-	-	-	-	-	149,692	-
12/31/2027	2027	12	31	15	1,344	(0.5)	1,317	107.8	141,898	-	-	-	-	-	-	-	85	304	488	599	706	692	646	526	350	181	-	-	-	-	-	-	-	141,898	-
1/31/2028	2028	1	31	17	1,361	(0.5)	1,333	111.3	148,362	-	-	-	-	-	-	-	57	252	464	617	683	691	654	624	433	263	48	-	-	-	-	-	-	148,362	-
2/29/2028	2028	2	29	17	1,377	(0.6)	1,349	111.1	149,891	-	-	-	-	-	-	-	70	249	501	634	719	741	731	627	489	308	99	-	-	-	-	-	-	149,891	-
3/31/2028	2028	3	31	17	1,394	(0.6)	1,365	147.4	201,131	-	-	-	-	-	-	-	3	151	388	645	784	873	873	887	768	590	380	145	-	-	-	-	-	201,131	-
4/30/2028	2028	4	30	17	1,410	(0.6)	1,381	146.3	201,927	-	-	-	-	-	-	-	37	211	505	693	826	887	881	830	737	583	375	156	9	-	-	-	-	201,927	-
5/31/2028	2028	5	31	17	1,427	(0.6)	1,397	149.0	208,033	-	-	-	-	-	-	-	69	270	493	660	789	858	888	838	713	565	380	164	25	-	-	-	-	208,033	-
6/30/2028	2028	6	30	17	1,443	(0.6)	1,413	129.5	182,955	-	-	-	-	-	-	-	72	250	459	629	730	820	754	689	635	521	342	165	33	-	-	-	-	182,955	-
7/31/2028	2028	7	31	17	1,460	(0.6)	1,429	138.9	198,471	-	-	-	-	-	-	-	56	236	438	610	742	825	822	789	691	578	391	184	40	-	-	-	-	198,471	-
8/31/2028	2028	8	31	17	1,476	(0.6)	1,444	129.9	187,673	-	-	-	-	-	-	-	34	221	416	582	708	796	793	726	671	549	378	160	18	-	-	-	-	187,673	-
9/30/2028	2028	9	30	17	1,493	(0.6)	1,460	124.6	181,916	-	-	-	-	-	-	-	28	224	471	665	760	790	789	772	658	520	298	90	0	-	-	-	-	181,916	-
10/31/2028	2028	10	31	17	1,509	(0.6)	1,476	127.9	188,824	-	-	-	-	-	-	-	9	206	461	651	767	887	872	793	680	496	235	35	-	-	-	-	-	188,824	-
11/30/2028	2028	11	30	17	1,526	(0.6)	1,492	115.0	171,585	-	-	-	-	-	-	-	175	401	605	747	852	810	804	647	459	221	-	-	-	-	-	-	-	171,585	-
12/31/2028	2028	12	31	17	1,543	(0.6)	1,508	107.8	162,527	-	-	-	-	-	-	-	98	348	560	686	809	793	740	602	401	207	-	-	-	-	-	-	-	162,527	-
1/31/2029	2029	1	31	18	1,561	(0.6)	1,526	111.3	169,830	-	-	-	-	-	-	-	65	289	532	707	782	791	748	714	495	301	55	-	-	-	-	-	-	169,830	-
2/28/2029	2029	2	28	18	1,579	(0.6)	1,543	111.1	171,482	-	-	-	-	-	-	-	84	295	593	751	851	878	867	743	580	365	118	-	-	-	-	-	-	171,482	-
3/31/2029	2029	3	31	18	1,597	(0.6)	1,560	147.4	229,972	-	-	-	-	-	-	-	4	173	444	738	896	999	998	1,014	878	675	435	166	-	-	-	-	-	229,972	-
4/30/2029	2029	4	30	18	1,615	(0.6)	1,578	146.3	230,756	-	-	-	-	-	-	-	42	241	577	792	944	1,014	1,007	948	843	666	429	179	10	-	-	-	-	230,756	-
5/31/2029	2029	5	31	18	1,633	(0.7)	1,595	149.0	237,605	-	-	-	-	-	-	-	79	308	563	754	901	980	1,014	957	814	645	434	187	29	-	-	-	-	237,605	-
6/30/2029	2029	6	30	18	1,651	(0.7)	1,613	129.5	208,852	-	-	-	-	-	-	-	82	285	524	718	833	936	861	787	725	594	391	188	38	-	-	-	-	208,852	-
7/31/2029	2029	7	31	18	1,669	(0.7)	1,630	138.9	226,448	-	-	-	-	-	-	-	64	269	500	696	846	941	938	901	788	660	446	210	46	-	-	-	-	226,448	-
8/31/2029	2029	8	31	18	1,687	(0.7)	1,647	129.9	214,020	-	-	-	-	-	-	-	38	252	474	664	808	907	905	828	765	627	432	183	21	-	-	-	-	214,020	-
9/30/2029	2029	9	30	18	1,705	(0.7)	1,665	124.6	207,352	-	-	-	-	-	-	-	31	255	537	758	866	900	900	880	750	592	340	102	0	-	-	-	-	207,352	-
10/31/2029	2029	10	31	18	1,723	(0.7)	1,682	127.9	215,122	-	-	-	-	-	-	-	10	235	525	742	873	1,011	993	903	774	565	267	40	-	-	-	-	-	215,122	-

11/30/2029	2029	11	30	18	1,741	(0.7)	1,699	115.0	195,390	-	-	-	-	-	-	-	199	456	689	850	970	923	915	737	522	251	-	-	-	-	-	-	-	195,390	-
12/31/2029	2029	12	31	18	1,759	(0.7)	1,717	107.8	184,991	-	-	-	-	-	-	-	111	396	637	781	920	902	842	685	456	236	-	-	-	-	-	-	-	184,991	-
1/31/2030	2030	1	31	21	1,780	(0.7)	1,737	111.3	193,378	-	-	-	-	-	-	-	74	329	605	805	890	901	852	814	564	342	62	-	-	-	-	-	-	193,378	-
2/28/2030	2030	2	28	21	1,801	(0.7)	1,758	111.1	195,334	-	-	-	-	-	-	-	95	336	676	855	970	1,000	987	847	661	416	134	-	-	-	-	-	-	195,334	-
3/31/2030	2030	3	31	21	1,823	(0.7)	1,778	147.4	262,057	-	-	-	-	-	-	-	4	197	506	841	1,021	1,138	1,137	1,155	1,001	769	495	189	-	-	-	-	-	262,057	-
4/30/2030	2030	4	30	21	1,844	(0.7)	1,799	146.3	263,046	-	-	-	-	-	-	-	48	275	657	903	1,076	1,156	1,148	1,081	961	760	489	204	12	-	-	-	-	263,046	-
5/31/2030	2030	5	31	21	1,865	(0.7)	1,819	149.0	270,950	-	-	-	-	-	-	-	90	351	642	860	1,027	1,118	1,156	1,091	928	736	495	214	33	-	-	-	-	270,950	-
6/30/2030	2030	6	30	21	1,886	(0.8)	1,839	129.5	238,244	-	-	-	-	-	-	-	93	325	598	819	950	1,067	982	898	827	678	446	215	44	-	-	-	-	238,244	-
7/31/2030	2030	7	31	21	1,907	(0.8)	1,860	138.9	258,404	-	-	-	-	-	-	-	73	307	571	794	966	1,074	1,070	1,028	899	753	509	239	52	-	-	-	-	258,404	-
8/31/2030	2030	8	31	21	1,929	(0.8)	1,880	129.9	244,304	-	-	-	-	-	-	-	44	288	542	758	922	1,036	1,033	945	873	715	493	209	24	-	-	-	-	244,304	-
9/30/2030	2030	9	30	21	1,950	(0.8)	1,901	124.6	236,770	-	-	-	-	-	-	-	36	291	613	865	989	1,028	1,027	1,004	857	676	388	117	0	-	-	-	-	236,770	-
10/31/2030	2030	10	31	21	1,971	(0.8)	1,921	127.9	245,720	-	-	-	-	-	-	-	12	269	600	847	998	1,154	1,135	1,032	884	646	305	46	-	-	-	-	-	245,720	-
11/30/2030	2030	11	30	21	1,992	(0.8)	1,942	115.0	223,251	-	-	-	-	-	-	-	228	521	787	971	1,108	1,054	1,046	842	597	287	-	-	-	-	-	-	-	223,251	-
12/31/2030	2030	12	31	21	2,013	(0.8)	1,962	107.8	211,433	-	-	-	-	-	-	-	127	453	728	892	1,052	1,031	963	783	522	269	-	-	-	-	-	-	-	211,433	-
1/31/2031	2031	1	31	17	2,031	(0.8)	1,978	111.3	220,234	-	-	-	-	-	-	-	85	374	689	916	1,014	1,026	971	926	642	390	71	-	-	-	-	-	-	220,234	-
2/28/2031	2031	2	28	17	2,048	(0.8)	1,995	111.1	221,687	-	-	-	-	-	-	-	108	381	767	971	1,101	1,135	1,120	961	750	472	152	-	-	-	-	-	-	221,687	-
3/31/2031	2031	3	31	17	2,065	(0.8)	2,011	147.4	296,397	-	-	-	-	-	-	-	5	223	572	951	1,155	1,287	1,287	1,307	1,132	870	560	213	-	-	-	-	-	296,397	-
4/30/2031	2031	4	30	17	2,082	(0.8)	2,027	146.3	296,520	-	-	-	-	-	-	-	55	310	741	1,017	1,213	1,303	1,294	1,218	1,083	856	551	230	13	-	-	-	-	296,520	-
5/31/2031	2031	5	31	17	2,099	(0.8)	2,044	149.0	304,427	-	-	-	-	-	-	-	101	394	722	966	1,154	1,256	1,299	1,226	1,043	827	556	240	37	-	-	-	-	304,427	-
6/30/2031	2031	6	30	17	2,117	(0.8)	2,060	129.5	266,820	-	-	-	-	-	-	-	105	364	670	917	1,064	1,195	1,100	1,005	927	759	499	240	49	-	-	-	-	266,820	-
7/31/2031	2031	7	31	17	2,134	(0.9)	2,076	138.9	288,485	-	-	-	-	-	-	-	81	343	637	886	1,078	1,199	1,195	1,147	1,004	841	568	267	59	-	-	-	-	288,485	-
8/31/2031	2031	8	31	17	2,151	(0.9)	2,093	129.9	271,900	-	-	-	-	-	-	-	49	321	603	843	1,026	1,153	1,149	1,051	972	796	548	232	27	-	-	-	-	271,900	-
9/30/2031	2031	9	30	17	2,168	(0.9)	2,109	124.6	262,714	-	-	-	-	-	-	-	40	323	680	960	1,098	1,140	1,140	1,114	951	750	430	130	0	-	-	-	-	262,714	-
10/31/2031	2031	10	31	17	2,185	(0.9)	2,125	127.9	271,834	-	-	-	-	-	-	-	13	297	663	938	1,104	1,277	1,255	1,141	978	714	338	50	-	-	-	-	-	271,834	-
11/30/2031	2031	11	30	17	2,202	(0.9)	2,142	115.0	246,254	-	-	-	-	-	-	-	251	575	868	1,072	1,223	1,163	1,154	928	658	317	-	-	-	-	-	-	-	246,254	-
12/31/2031	2031	12	31	17	2,220	(0.9)	2,158	107.8	232,550	-	-	-	-	-	-	-	140	498	801	982	1,157	1,134	1,059	861	574	296	-	-	-	-	-	-	-	232,550	-
1/31/2032	2032	1	31	15	2,234	(0.9)	2,172	111.3	241,743	-	-	-	-	-	-	-	93	411	757	1,006	1,113	1,126	1,065	1,017	705	428	78	-	-	-	-	-	-	241,743	-
2/29/2032	2032	2	29	15	2,249	(0.9)	2,185	111.1	242,855	-	-	-	-	-	-	-	114	403	811	1,027	1,164	1,200	1,185	1,017	793	499	161	-	-	-	-	-	-	242,855	-
3/31/2032	2032	3	31	15	2,263	(0.9)	2,199	147.4	324,065	-	-	-	-	-	-	-	5	244	625	1,040	1,262	1,407	1,407	1,428	1,237	951	613	233	-	-	-	-	-	324,065	-
4/30/2032	2032	4	30	15	2,278	(0.9)	2,212	146.3	323,576	-	-	-	-	-	-	-	59	339	809	1,110	1,323	1,421	1,412	1,330	1,182	935	601	251	14	-	-	-	-	323,576	-
5/31/2032	2032	5	31	15	2,292	(0.9)	2,226	149.0	331,576	-	-	-	-	-	-	-	110	430	786	1,052	1,257	1,368	1,415	1,336	1,136	900	605	261	41	-	-	-	-	331,576	-
6/30/2032	2032	6	30	15	2,307	(0.9)	2,240	129.5	290,073	-	-	-	-	-	-	-	114	396	728	997	1,157	1,299	1,196	1,093	1,007	825	543	261	53	-	-	-	-	290,073	-
7/31/2032	2032	7	31	15	2,321	(0.9)	2,253	138.9	313,048	-	-	-	-	-	-	-	88	372	692	962	1,170	1,301	1,296	1,245	1,090	912	617	290	64	-	-	-	-	313,048	-
8/31/2032	2032	8	31	15	2,336	(0.9)	2,267	129.9	294,515	-	-	-	-	-	-	-	53	347	653	914	1,112	1,249	1,245	1,139	1,053	862	594	252	29	-	-	-	-	294,515	-
9/30/2032	2032	9	30	15	2,350	(0.9)	2,280	124.6	284,057	-	-	-	-	-	-	-	43	350	735	1,038	1,187	1,233	1,233	1,205	1,028	811	465	140	0	-	-	-	-	284,057	-
10/31/2032	2032	10	31	15	2,365	(0.9)	2,294	127.9	293,398	-	-	-	-	-	-	-	14	321	716	1,012	1,191	1,378	1,355	1,232	1,056	771	364	55	-	-	-	-	-	293,398	-
11/30/2032	2032	11	30	15	2,379	(1.0)	2,308	115.0	265,327	-	-	-	-	-	-	-	271	620	935	1,155	1,317	1,253	1,243	1,000	709	341	-	-	-	-	-	-	-	265,327	-
12/31/2032	2032	12	31	15	2,394	(1.0)	2,321	107.8	250,131	-	-	-	-	-	-	-	150	536	861	1,056	1,245	1,220	1,139	926	617	319	-	-	-	-	-	-	-	250,131	-
1/31/2033	2033	1	31	-	2,394	(1.0)	2,320	111.3	258,281	-	-	-	-	-	-	-	99	439	809	1,075	1,189	1,203	1,138	1,087	753	457	83	-	-	-	-	-	-	258,281	-
2/28/2033	2033	2	28	-	2,394	(1.0)	2,319	111.1	257,744	-	-	-	-	-	-	-	126	443	892	1,129	1,280	1,319	1,302	1,117	872	549	177	-	-	-	-	-	-	257,744	-
3/31/2033	2033	3	31	-	2,394	(1.0)	2,318	147.4	341,662	-	-	-	-	-	-	-	6	257	659	1,096	1,331	1,484	1,483	1,506	1,304	1,003	646	246	-	-	-	-	-	341,662	-
4/30/2033	2033	4	30	-	2,394	(1.0)	2,317	146.3	338,906	-	-	-	-	-	-	-	62	355	847	1,163	1,386	1,489	1,479	1,393	1,238	979	630	263	15	-	-	-	-	338,906	-
5/31/2033	2033	5	31	-	2,394	(1.0)	2,316	149.0	345,020	-	-	-	-	-	-	-	114	447	818	1,095	1,308	1,423	1,472	1,390	1,182	937	630	272	42	-	-	-	-	345,020	-
6/30/2033	2033	6	30	-	2,394	(1.0)	2,315	129.5	299,876	-	-	-	-	-	-	-	117	409	753	1,030	1,196	1,343	1,236	1,130	1,041	853	561	270	55	-	-	-	-	299,876	-
7/31/2033	2033	7	31	-	2,394	(1.0)	2,314	138.9	321,542	-	-	-	-	-	-	-	91	382	710	988	1,201	1,337	1,332	1,279	1,119	937	634	298	65	-	-	-	-	321,542	-
8/31/2033	2033	8	31	-	2,394	(1.0)	2,313	129.9	300,568	-	-	-	-	-	-	-	54	354	666	932	1,134	1,274	1,271	1,162	1,075	880	606	257	30	-	-	-	-	300,568	-
9/30/2033	2033	9	30	-	2,394	(1.0)	2,312	124.6	288,048	-	-	-	-	-	-	-	44	355	746	1,052	1,204	1,250	1,250	1,222	1,043	823	472	142	0	-	-	-	-	288,048	-
10/31/2033	2033	10	31	-	2,394	(1.0)	2,311	127.9	295,637	-	-	-	-	-	-	-	14	323	721	1,020	1,200	1,389	1,365	1,241	1,064	777	367	55	-	-	-	-	-	295,637	-
11/30/2033	2033	11	30	-	2,394	(1.0)	2,311	115.0	265,669	-	-	-	-	-	-	-	271	621	936	1,156	1,319	1,254	1,245	1,001	710	342	-	-	-	-	-	-	-	265,669	-
12/31/2033	2033	12	31	-	2,394	(1.0)	2,310	107.8	248,886	-	-	-	-	-	-	-	150	533	857	1,051	1,238	1,214	1,133	922	614	317	-	-	-	-	-	-	-	248,886	-
1/31/2034	2034	1	31	-	2,394	(1.0)	2,309	111.3	256,995	-	-	-	-	-	-	-	99	437	805	1,069	1,183	1,197	1,133	1,081	750	455	83	-	-	-	-	-	-	256,995	-
2/28/2034	2034	2	28	-	2,394	(1.0)	2,308	111.1	256,461	-	-	-	-	-	-	-	125	441	887	1,123	1,273	1,313	1,296	1,112	867	546	176	-	-	-	-	-	-	256,461	-
3/31/2034	2034	3	31	-	2,394	(1.0)	2,307	147.4	339,961	-	-	-	-	-	-	-	6	256	656	1,091	1,324	1,476	1,476	1,499	1,298	998	643	245	-	-	-	-	-	339,961	-
4/30/2034	2034	4	30	-	2,394	(1.0)	2,306	146.3	337,220	-	-	-	-	-	-	-	62	353	843	1,157	1,379	1,481	1,472	1,386	1,231	974	627	261	15	-	-	-	-	337,220	-
5/31/2034	2034	5	31	-	2,394	(1.0)	2,305	149.0	343,302	-	-	-	-	-	-	-	114	445	814	1,089	1,301	1,416	1,465	1,383	1,176	932	627	271	42	-	-	-	-	343,302	-
6/30/2034	2034	6	30	-	2,394	(1.0)	2,304	129.5	298,383	-	-	-	-	-	-	-	117	407	749	1,025	1,190	1,337	1,230	1,124	1,036	849	558	269	55	-	-	-	-	298,383	-
7/31/2034	2034	7	31	-	2,394	(1.0)	2,303	138.9	319,942	-	-	-	-	-	-	-	90	381	707	983	1,195	1,330	1,325	1,272	1,114	933	630	296	65	-	-	-	-	319,942	-
8/31/2034	2034	8	31	-	2,394	(1.0)	2,302	129.9	299,072	-	-	-	-	-	-	-	54	353	663	928	1,129	1,268	1,264	1,157	1,069	876	603	255	29	-	-	-	-	299,072	-
9/30/2034	2034	9	30	-	2,394	(1.0)	2,301	124.6	286,614	-	-	-	-	-	-	-	43	353	742	1,047	1,198	1,244	1,244	1,216	1,037	819	470	141	0	-	-	-	-	286,614	-
10/31/2034	2034	10	31	-	2,394	(1.0)	2,300	127.9	294,166	-	-	-	-	-	-	-	14	322	718	1,015	1,194	1,382	1,358	1,235	1,059	773	365	55	-	-	-	-	-	294,166	-
11/30/2034	2034	11	30	-	2,394	(1.0)	2,299	115.0	264,347	-	-	-	-	-	-	-	270	617	932	1,150	1,312	1,248	1,239	996	706	340	-	-	-	-	-	-	-	264,347	-
12/31/2034	2034	12	31	-	2,394	(1.0)	2,298	107.8	247,648	-	-	-	-	-	-	-	149	531	853	1,045	1,232	1,208	1,127	917	611	316	-	-	-	-	-	-	-	247,648	-
1/31/2035	2035	1	31	-	2,394	(1.0)	2,297	111.3	255,716	-	-	-	-	-	-	-	98	434	800	1,064	1,177	1,191	1,127	1,076	746	453	82	-	-	-	-	-	-	255,716	-
2/28/2035	2035	2	28	-	2,394	(1.0)	2,296	111.1	255,185	-	-	-	-	-	-	-	124	439	883	1,118	1,267	1,306	1,290	1,106	863	543	175	-	-	-	-	-	-	255,185	-
3/31/2035	2035	3	31	-	2,394	(1.0)	2,295	147.4	338,269	-	-	-	-	-	-	-	6	255	653	1,085	1,318	1,469	1,468	1,491	1,292	993	639	244	-	-	-	-	-	338,269	-
4/30/2035	2035	4	30	-	2,394	(1.0)	2,294	146.3	335,541	-	-	-	-	-	-	-	62	351	839	1,151	1,372	1,474	1,464	1,379	1,225	969	623	260	15	-	-	-	-	335,541	-
5/31/2035	2035	5	31	-	2,394	(1.0)	2,293	149.0	341,594	-	-	-	-	-	-	-	113	443	810	1,084	1,295	1,409	1,458	1,376	1,170	928	624	269	42	-	-	-	-	341,594	-
6/30/2035	2035	6	30	-	2,394	(1.0)	2,292	129.5	296,898	-	-	-	-	-	-	-	116	405	745	1,020	1,184	1,330	1,224	1,119	1,031	845	555	267	54	-	-	-	-	296,898	-
7/31/2035	2035	7	31	-	2,394	(1.0)	2,291	138.9	318,349	-	-	-	-	-	-	-	90	379	703	978	1,190	1,323	1,318	1,266	1,108	928	627	295	65	-	-	-	-	318,349	-
8/31/2035	2035	8	31	-	2,394	(1.0)	2,290	129.9	297,583	-	-	-	-	-	-	-	53	351	660	923	1,123	1,262	1,258	1,151	1,064	871	600	254	29	-	-	-	-	297,583	-
9/30/2035	2035	9	30	-	2,394	(1.0)	2,289	124.6	285,188	-	-	-	-	-	-	-	43	351	738	1,042	1,192	1,238	1,237	1,210	1,032	815	467	141	0	-	-	-	-	285,188	-
10/31/2035	2035	10	31	-	2,394	(1.0)	2,289	127.9	292,701	-	-	-	-	-	-	-	14	320	714	1,009	1,188	1,375	1,351	1,229	1,054	769	364	54	-	-	-	-	-	292,701	-
11/30/2035	2035	11	30	-	2,394	(1.0)	2,288	115.0	263,031	-	-	-	-	-	-	-	268	614	927	1,145	1,306	1,242	1,232	992	703	339	-	-	-	-	-	-	-	263,031	-
12/31/2035	2035	12	31	-	2,394	(1.0)	2,287	107.8	246,415	-	-	-	-	-	-	-	148	528	848	1,040	1,226	1,202	1,122	913	608	314	-	-	-	-	-	-	-	246,415	-
1/31/2036	2036	1	31	-	2,394	(1.0)	2,286	111.3	254,443	-	-	-	-	-	-	-	98	432	797	1,059	1,171	1,185	1,121	1,070	742	450	82	-	-	-	-	-	-	254,443	-
2/29/2036	2036	2	29	-	2,394	(1.0)	2,285	111.1	253,915	-	-	-	-	-	-	-	119	421	848	1,074	1,217	1,255	1,239	1,063	829	522	168	-	-	-	-	-	-	253,915	-
3/31/2036	2036	3	31	-	2,394	(0.9)	2,284	147.4	336,585	-	-	-	-	-	-	-	6	254	649	1,080	1,311	1,462	1,461	1,484	1,285	988	636	242	-	-	-	-	-	336,585	-
4/30/2036	2036	4	30	-	2,394	(0.9)	2,283	146.3	333,871	-	-	-	-	-	-	-	61	349	834	1,146	1,365	1,467	1,457	1,372	1,219	964	620	259	15	-	-	-	-	333,871	-
5/31/2036	2036	5	31	-	2,394	(0.9)	2,282	149.0	339,893	-	-	-	-	-	-	-	112	440	806	1,078	1,289	1,402	1,450	1,369	1,164	923	620	268	42	-	-	-	-	339,893	-
6/30/2036	2036	6	30	-	2,394	(0.9)	2,281	129.5	295,420	-	-	-	-	-	-	-	116	403	742	1,015	1,178	1,323	1,218	1,113	1,026	841	553	266	54	-	-	-	-	295,420	-
7/31/2036	2036	7	31	-	2,394	(0.9)	2,280	138.9	316,765	-	-	-	-	-	-	-	89	377	700	973	1,184	1,317	1,312	1,260	1,103	923	624	293	64	-	-	-	-	316,765	-
8/31/2036	2036	8	31	-	2,394	(0.9)	2,279	129.9	296,102	-	-	-	-	-	-	-	53	349	656	918	1,118	1,255	1,252	1,145	1,059	867	597	253	29	-	-	-	-	296,102	-
9/30/2036	2036	9	30	-	2,394	(0.9)	2,278	124.6	283,768	-	-	-	-	-	-	-	43	349	735	1,037	1,186	1,232	1,231	1,204	1,027	811	465	140	0	-	-	-	-	283,768	-
10/31/2036	2036	10	31	-	2,394	(0.9)	2,277	127.9	291,245	-	-	-	-	-	-	-	14	318	711	1,004	1,182	1,368	1,345	1,223	1,048	765	362	54	-	-	-	-	-	291,245	-
11/30/2036	2036	11	30	-	2,394	(0.9)	2,276	115.0	261,722	-	-	-	-	-	-	-	267	611	923	1,139	1,299	1,236	1,226	987	699	337	-	-	-	-	-	-	-	261,722	-
12/31/2036	2036	12	31	-	2,394	(0.9)	2,275	107.8	245,189	-	-	-	-	-	-	-	147	525	844	1,035	1,220	1,196	1,116	908	605	312	-	-	-	-	-	-	-	245,189	-
1/31/2037	2037	1	31	-	2,394	(0.9)	2,274	111.3	253,177	-	-	-	-	-	-	-	97	430	793	1,054	1,166	1,179	1,116	1,065	738	448	81	-	-	-	-	-	-	253,177	-
2/28/2037	2037	2	28	-	2,394	(0.9)	2,273	111.1	252,651	-	-	-	-	-	-	-	123	434	874	1,106	1,254	1,293	1,277	1,095	854	538	173	-	-	-	-	-	-	252,651	-
3/31/2037	2037	3	31	-	2,394	(0.9)	2,272	147.4	334,910	-	-	-	-	-	-	-	6	252	646	1,075	1,305	1,454	1,454	1,476	1,279	983	633	241	-	-	-	-	-	334,910	-
4/30/2037	2037	4	30	-	2,394	(0.9)	2,271	146.3	332,210	-	-	-	-	-	-	-	61	348	830	1,140	1,359	1,459	1,450	1,365	1,213	959	617	257	15	-	-	-	-	332,210	-
5/31/2037	2037	5	31	-	2,394	(0.9)	2,271	149.0	338,202	-	-	-	-	-	-	-	112	438	802	1,073	1,282	1,395	1,443	1,362	1,159	918	617	267	41	-	-	-	-	338,202	-
6/30/2037	2037	6	30	-	2,394	(0.9)	2,270	129.5	293,950	-	-	-	-	-	-	-	115	401	738	1,010	1,172	1,317	1,212	1,107	1,021	836	550	265	54	-	-	-	-	293,950	-
7/31/2037	2037	7	31	-	2,394	(0.9)	2,269	138.9	315,188	-	-	-	-	-	-	-	89	375	696	968	1,178	1,310	1,305	1,253	1,097	919	621	292	64	-	-	-	-	315,188	-
8/31/2037	2037	8	31	-	2,394	(0.9)	2,268	129.9	294,628	-	-	-	-	-	-	-	53	347	653	914	1,112	1,249	1,246	1,139	1,053	863	594	252	29	-	-	-	-	294,628	-
9/30/2037	2037	9	30	-	2,394	(0.9)	2,267	124.6	282,356	-	-	-	-	-	-	-	43	347	731	1,032	1,180	1,226	1,225	1,198	1,022	807	463	139	0	-	-	-	-	282,356	-
10/31/2037	2037	10	31	-	2,394	(0.9)	2,266	127.9	289,795	-	-	-	-	-	-	-	14	317	707	999	1,176	1,361	1,338	1,217	1,043	762	360	54	-	-	-	-	-	289,795	-
11/30/2037	2037	11	30	-	2,394	(0.9)	2,265	115.0	260,420	-	-	-	-	-	-	-	266	608	918	1,133	1,293	1,230	1,220	982	696	335	-	-	-	-	-	-	-	260,420	-
12/31/2037	2037	12	31	-	2,394	(0.9)	2,264	107.8	243,968	-	-	-	-	-	-	-	147	523	840	1,030	1,214	1,190	1,111	904	602	311	-	-	-	-	-	-	-	243,968	-
1/31/2038	2038	1	31	-	2,394	(0.9)	2,263	111.3	251,917	-	-	-	-	-	-	-	97	428	789	1,048	1,160	1,173	1,110	1,060	735	446	81	-	-	-	-	-	-	251,917	-
2/28/2038	2038	2	28	-	2,394	(0.9)	2,262	111.1	251,393	-	-	-	-	-	-	-	122	432	870	1,101	1,248	1,287	1,270	1,090	850	535	172	-	-	-	-	-	-	251,393	-
3/31/2038	2038	3	31	-	2,394	(0.9)	2,261	147.4	333,243	-	-	-	-	-	-	-	6	251	643	1,069	1,298	1,447	1,446	1,469	1,272	978	630	240	-	-	-	-	-	333,243	-
4/30/2038	2038	4	30	-	2,394	(0.9)	2,260	146.3	330,556	-	-	-	-	-	-	-	61	346	826	1,134	1,352	1,452	1,443	1,358	1,207	955	614	256	15	-	-	-	-	330,556	-
5/31/2038	2038	5	31	-	2,394	(0.9)	2,259	149.0	336,518	-	-	-	-	-	-	-	111	436	798	1,068	1,276	1,388	1,436	1,355	1,153	914	614	265	41	-	-	-	-	336,518	-
6/30/2038	2038	6	30	-	2,394	(0.9)	2,258	129.5	292,487	-	-	-	-	-	-	-	115	399	734	1,005	1,166	1,310	1,206	1,102	1,016	832	547	263	53	-	-	-	-	292,487	-
7/31/2038	2038	7	31	-	2,394	(0.9)	2,257	138.9	313,619	-	-	-	-	-	-	-	89	373	693	964	1,172	1,304	1,299	1,247	1,092	914	618	290	64	-	-	-	-	313,619	-
8/31/2038	2038	8	31	-	2,394	(0.9)	2,256	129.9	293,162	-	-	-	-	-	-	-	53	346	650	909	1,107	1,243	1,239	1,134	1,048	858	591	250	29	-	-	-	-	293,162	-
9/30/2038	2038	9	30	-	2,394	(0.9)	2,255	124.6	280,950	-	-	-	-	-	-	-	43	346	727	1,027	1,174	1,219	1,219	1,192	1,017	803	460	139	0	-	-	-	-	280,950	-
10/31/2038	2038	10	31	-	2,394	(0.9)	2,255	127.9	288,353	-	-	-	-	-	-	-	14	315	704	994	1,171	1,355	1,331	1,211	1,038	758	358	54	-	-	-	-	-	288,353	-
11/30/2038	2038	11	30	-	2,394	(0.9)	2,254	115.0	259,123	-	-	-	-	-	-	-	264	605	913	1,128	1,287	1,224	1,214	977	692	334	-	-	-	-	-	-	-	259,123	-

12/31/2038	2038	12	31	-	2,394	(0.9)	2,253	107.8	242,754	-	-	-	-	-	-	-	146	520	836	1,025	1,208	1,184	1,105	899	599	309	-	-	-	-	-	-	-	242,754	-
1/31/2039	2039	1	31	-	2,394	(0.9)	2,252	111.3	250,663	-	-	-	-	-	-	-	96	426	785	1,043	1,154	1,168	1,105	1,055	731	444	81	-	-	-	-	-	-	250,663	-
2/28/2039	2039	2	28	-	2,394	(0.9)	2,251	111.1	250,142	-	-	-	-	-	-	-	122	430	865	1,095	1,242	1,281	1,264	1,085	846	532	172	-	-	-	-	-	-	250,142	-
3/31/2039	2039	3	31	-	2,394	(0.9)	2,250	147.4	331,585	-	-	-	-	-	-	-	6	250	640	1,064	1,292	1,440	1,439	1,462	1,266	973	627	239	-	-	-	-	-	331,585	-
4/30/2039	2039	4	30	-	2,394	(0.9)	2,249	146.3	328,911	-	-	-	-	-	-	-	60	344	822	1,129	1,345	1,445	1,435	1,352	1,201	950	611	255	15	-	-	-	-	328,911	-
5/31/2039	2039	5	31	-	2,394	(0.9)	2,248	149.0	334,844	-	-	-	-	-	-	-	111	434	794	1,062	1,269	1,381	1,429	1,349	1,147	909	611	264	41	-	-	-	-	334,844	-
6/30/2039	2039	6	30	-	2,394	(0.9)	2,247	129.5	291,031	-	-	-	-	-	-	-	114	397	731	1,000	1,161	1,304	1,200	1,096	1,011	828	545	262	53	-	-	-	-	291,031	-
7/31/2039	2039	7	31	-	2,394	(0.9)	2,246	138.9	312,058	-	-	-	-	-	-	-	88	371	689	959	1,166	1,297	1,292	1,241	1,086	910	615	289	63	-	-	-	-	312,058	-
8/31/2039	2039	8	31	-	2,394	(0.9)	2,245	129.9	291,703	-	-	-	-	-	-	-	52	344	647	905	1,101	1,237	1,233	1,128	1,043	854	588	249	29	-	-	-	-	291,703	-
9/30/2039	2039	9	30	-	2,394	(0.9)	2,244	124.6	279,552	-	-	-	-	-	-	-	42	344	724	1,021	1,168	1,213	1,213	1,186	1,012	799	458	138	0	-	-	-	-	279,552	-
10/31/2039	2039	10	31	-	2,394	(0.9)	2,243	127.9	286,918	-	-	-	-	-	-	-	13	314	700	990	1,165	1,348	1,325	1,205	1,033	754	356	53	-	-	-	-	-	286,918	-
11/30/2039	2039	11	30	-	2,394	(0.9)	2,242	115.0	257,834	-	-	-	-	-	-	-	263	602	909	1,122	1,280	1,217	1,208	972	689	332	-	-	-	-	-	-	-	257,834	-
12/31/2039	2039	12	31	-	2,394	(0.9)	2,241	107.8	241,546	-	-	-	-	-	-	-	145	518	832	1,020	1,202	1,178	1,100	895	596	308	-	-	-	-	-	-	-	241,546	-
1/31/2040	2040	1	31	-	2,394	(0.9)	2,240	111.3	249,415	-	-	-	-	-	-	-	96	424	781	1,038	1,148	1,162	1,099	1,049	727	442	80	-	-	-	-	-	-	249,415	-
2/29/2040	2040	2	29	-	2,394	(0.9)	2,240	111.1	248,897	-	-	-	-	-	-	-	117	413	831	1,052	1,193	1,230	1,214	1,042	813	511	165	-	-	-	-	-	-	248,897	-
3/31/2040	2040	3	31	-	2,394	(0.9)	2,239	147.4	329,934	-	-	-	-	-	-	-	6	249	636	1,059	1,285	1,433	1,432	1,454	1,260	968	624	238	-	-	-	-	-	329,934	-
4/30/2040	2040	4	30	-	2,394	(0.9)	2,238	146.3	327,274	-	-	-	-	-	-	-	60	342	818	1,123	1,338	1,438	1,428	1,345	1,195	945	608	254	15	-	-	-	-	327,274	-
5/31/2040	2040	5	31	-	2,394	(0.9)	2,237	149.0	333,177	-	-	-	-	-	-	-	110	432	790	1,057	1,263	1,374	1,422	1,342	1,141	905	608	263	41	-	-	-	-	333,177	-
6/30/2040	2040	6	30	-	2,394	(0.9)	2,236	129.5	289,583	-	-	-	-	-	-	-	113	395	727	995	1,155	1,297	1,194	1,091	1,006	824	542	261	53	-	-	-	-	289,583	-
7/31/2040	2040	7	31	-	2,394	(0.9)	2,235	138.9	310,505	-	-	-	-	-	-	-	88	369	686	954	1,160	1,291	1,286	1,235	1,081	905	612	287	63	-	-	-	-	310,505	-
8/31/2040	2040	8	31	-	2,394	(0.9)	2,234	129.9	290,251	-	-	-	-	-	-	-	52	342	643	900	1,096	1,231	1,227	1,122	1,038	850	585	248	29	-	-	-	-	290,251	-
9/30/2040	2040	9	30	-	2,394	(0.9)	2,233	124.6	278,161	-	-	-	-	-	-	-	42	342	720	1,016	1,162	1,207	1,207	1,180	1,007	795	456	137	0	-	-	-	-	278,161	-
10/31/2040	2040	10	31	-	2,394	(0.9)	2,232	127.9	285,489	-	-	-	-	-	-	-	13	312	697	985	1,159	1,341	1,318	1,199	1,028	750	355	53	-	-	-	-	-	285,489	-
11/30/2040	2040	11	30	-	2,394	(0.9)	2,231	115.0	256,550	-	-	-	-	-	-	-	262	599	904	1,116	1,274	1,211	1,202	967	686	330	-	-	-	-	-	-	-	256,550	-
12/31/2040	2040	12	31	-	2,394	(0.9)	2,230	107.8	240,343	-	-	-	-	-	-	-	144	515	827	1,014	1,196	1,172	1,094	890	593	306	-	-	-	-	-	-	-	240,343	-
1/31/2041	2041	1	31	-	2,394	(0.9)	2,229	111.3	248,174	-	-	-	-	-	-	-	95	422	777	1,033	1,143	1,156	1,094	1,044	724	439	80	-	-	-	-	-	-	248,174	-
2/28/2041	2041	2	28	-	2,394	(0.9)	2,228	111.1	247,658	-	-	-	-	-	-	-	121	426	857	1,085	1,230	1,268	1,252	1,074	838	527	170	-	-	-	-	-	-	247,658	-
3/31/2041	2041	3	31	-	2,394	(0.9)	2,227	147.4	328,292	-	-	-	-	-	-	-	6	247	633	1,053	1,279	1,426	1,425	1,447	1,253	964	621	236	-	-	-	-	-	328,292	-
4/30/2041	2041	4	30	-	2,394	(0.9)	2,227	146.3	325,645	-	-	-	-	-	-	-	60	341	814	1,117	1,332	1,431	1,421	1,338	1,189	940	605	252	14	-	-	-	-	325,645	-
5/31/2041	2041	5	31	-	2,394	(0.9)	2,226	149.0	331,519	-	-	-	-	-	-	-	110	430	786	1,052	1,257	1,368	1,415	1,335	1,136	900	605	261	41	-	-	-	-	331,519	-
6/30/2041	2041	6	30	-	2,394	(0.9)	2,225	129.5	288,141	-	-	-	-	-	-	-	113	393	723	990	1,149	1,291	1,188	1,086	1,001	820	539	259	53	-	-	-	-	288,141	-
7/31/2041	2041	7	31	-	2,394	(0.9)	2,224	138.9	308,960	-	-	-	-	-	-	-	87	367	682	949	1,154	1,284	1,279	1,229	1,075	901	609	286	63	-	-	-	-	308,960	-
8/31/2041	2041	8	31	-	2,394	(0.9)	2,223	129.9	288,806	-	-	-	-	-	-	-	52	341	640	896	1,090	1,224	1,221	1,117	1,033	845	582	247	28	-	-	-	-	288,806	-
9/30/2041	2041	9	30	-	2,394	(0.9)	2,222	124.6	276,776	-	-	-	-	-	-	-	42	341	717	1,011	1,157	1,201	1,201	1,174	1,002	791	453	136	0	-	-	-	-	276,776	-
10/31/2041	2041	10	31	-	2,394	(0.9)	2,221	127.9	284,069	-	-	-	-	-	-	-	13	311	693	980	1,153	1,335	1,312	1,193	1,022	747	353	53	-	-	-	-	-	284,069	-
11/30/2041	2041	11	30	-	2,394	(0.9)	2,220	115.0	255,273	-	-	-	-	-	-	-	260	596	900	1,111	1,267	1,205	1,196	962	682	329	-	-	-	-	-	-	-	255,273	-
12/31/2041	2041	12	31	-	2,394	(0.9)	2,219	107.8	239,147	-	-	-	-	-	-	-	144	512	823	1,009	1,190	1,166	1,089	886	590	305	-	-	-	-	-	-	-	239,147	-
1/31/2042	2042	1	31	-	2,394	(0.9)	2,218	111.3	246,939	-	-	-	-	-	-	-	95	420	773	1,028	1,137	1,150	1,088	1,039	720	437	79	-	-	-	-	-	-	246,939	-
2/28/2042	2042	2	28	-	2,394	(0.9)	2,217	111.1	246,426	-	-	-	-	-	-	-	120	424	852	1,079	1,223	1,262	1,245	1,068	833	525	169	-	-	-	-	-	-	246,426	-
3/31/2042	2042	3	31	-	2,394	(0.9)	2,216	147.4	326,658	-	-	-	-	-	-	-	6	246	630	1,048	1,273	1,419	1,418	1,440	1,247	959	617	235	-	-	-	-	-	326,658	-
4/30/2042	2042	4	30	-	2,394	(0.9)	2,215	146.3	324,024	-	-	-	-	-	-	-	60	339	810	1,112	1,325	1,423	1,414	1,332	1,183	936	602	251	14	-	-	-	-	324,024	-
5/31/2042	2042	5	31	-	2,394	(0.9)	2,215	149.0	329,869	-	-	-	-	-	-	-	109	427	782	1,047	1,251	1,361	1,407	1,329	1,130	896	602	260	40	-	-	-	-	329,869	-
6/30/2042	2042	6	30	-	2,394	(0.9)	2,214	129.5	286,707	-	-	-	-	-	-	-	112	391	720	985	1,143	1,284	1,182	1,080	996	816	536	258	52	-	-	-	-	286,707	-
7/31/2042	2042	7	31	-	2,394	(0.9)	2,213	138.9	307,422	-	-	-	-	-	-	-	87	366	679	944	1,149	1,278	1,273	1,223	1,070	896	606	285	62	-	-	-	-	307,422	-
8/31/2042	2042	8	31	-	2,394	(0.9)	2,212	129.9	287,369	-	-	-	-	-	-	-	52	339	637	891	1,085	1,218	1,215	1,111	1,027	841	580	245	28	-	-	-	-	287,369	-
9/30/2042	2042	9	30	-	2,394	(0.9)	2,211	124.6	275,399	-	-	-	-	-	-	-	42	339	713	1,006	1,151	1,195	1,195	1,168	997	787	451	136	0	-	-	-	-	275,399	-
10/31/2042	2042	10	31	-	2,394	(0.9)	2,210	127.9	282,655	-	-	-	-	-	-	-	13	309	690	975	1,147	1,328	1,305	1,187	1,017	743	351	53	-	-	-	-	-	282,655	-
11/30/2042	2042	11	30	-	2,394	(0.9)	2,209	115.0	254,003	-	-	-	-	-	-	-	259	593	895	1,105	1,261	1,199	1,190	958	679	327	-	-	-	-	-	-	-	254,003	-
12/31/2042	2042	12	31	-	2,394	(0.9)	2,208	107.8	237,957	-	-	-	-	-	-	-	143	510	819	1,004	1,184	1,161	1,083	881	587	303	-	-	-	-	-	-	-	237,957	-
1/31/2043	2043	1	31	-	2,394	(0.9)	2,207	111.3	245,710	-	-	-	-	-	-	-	94	417	769	1,022	1,131	1,145	1,083	1,034	717	435	79	-	-	-	-	-	-	245,710	-
2/28/2043	2043	2	28	-	2,394	(0.9)	2,206	111.1	245,199	-	-	-	-	-	-	-	119	422	848	1,074	1,217	1,255	1,239	1,063	829	522	168	-	-	-	-	-	-	245,199	-
3/31/2043	2043	3	31	-	2,394	(0.9)	2,205	147.4	325,032	-	-	-	-	-	-	-	6	245	627	1,043	1,266	1,412	1,411	1,433	1,241	954	614	234	-	-	-	-	-	325,032	-
4/30/2043	2043	4	30	-	2,394	(0.9)	2,204	146.3	322,411	-	-	-	-	-	-	-	59	337	806	1,106	1,319	1,416	1,407	1,325	1,177	931	599	250	14	-	-	-	-	322,411	-
5/31/2043	2043	5	31	-	2,394	(0.9)	2,204	149.0	328,227	-	-	-	-	-	-	-	109	425	778	1,041	1,244	1,354	1,400	1,322	1,124	891	599	259	40	-	-	-	-	328,227	-
6/30/2043	2043	6	30	-	2,394	(0.9)	2,203	129.5	285,280	-	-	-	-	-	-	-	112	389	716	980	1,138	1,278	1,176	1,075	991	812	534	257	52	-	-	-	-	285,280	-
7/31/2043	2043	7	31	-	2,394	(0.9)	2,202	138.9	305,892	-	-	-	-	-	-	-	86	364	676	940	1,143	1,271	1,267	1,216	1,065	892	603	283	62	-	-	-	-	305,892	-
8/31/2043	2043	8	31	-	2,394	(0.9)	2,201	129.9	285,939	-	-	-	-	-	-	-	51	337	634	887	1,079	1,212	1,209	1,106	1,022	837	577	244	28	-	-	-	-	285,939	-
9/30/2043	2043	9	30	-	2,394	(0.9)	2,200	124.6	274,028	-	-	-	-	-	-	-	41	337	709	1,001	1,145	1,189	1,189	1,162	992	783	449	135	0	-	-	-	-	274,028	-
10/31/2043	2043	10	31	-	2,394	(0.9)	2,199	127.9	281,248	-	-	-	-	-	-	-	13	307	686	970	1,142	1,321	1,299	1,181	1,012	739	349	52	-	-	-	-	-	281,248	-
11/30/2043	2043	11	30	-	2,394	(0.9)	2,198	115.0	252,739	-	-	-	-	-	-	-	258	590	891	1,100	1,255	1,193	1,184	953	675	325	-	-	-	-	-	-	-	252,739	-
12/31/2043	2043	12	31	-	2,394	(0.9)	2,197	107.8	236,773	-	-	-	-	-	-	-	142	507	815	999	1,178	1,155	1,078	877	584	302	-	-	-	-	-	-	-	236,773	-
1/31/2044	2044	1	31	-	2,394	(0.9)	2,196	111.3	244,487	-	-	-	-	-	-	-	94	415	765	1,017	1,126	1,139	1,077	1,029	713	433	79	-	-	-	-	-	-	244,487	-
2/29/2044	2044	2	29	-	2,394	(0.9)	2,195	111.1	243,979	-	-	-	-	-	-	-	115	405	815	1,032	1,170	1,206	1,190	1,021	797	501	162	-	-	-	-	-	-	243,979	-
3/31/2044	2044	3	31	-	2,394	(0.9)	2,194	147.4	323,414	-	-	-	-	-	-	-	5	244	624	1,038	1,260	1,404	1,404	1,426	1,235	949	611	233	-	-	-	-	-	323,414	-
4/30/2044	2044	4	30	-	2,394	(0.9)	2,193	146.3	320,807	-	-	-	-	-	-	-	59	336	802	1,101	1,312	1,409	1,400	1,318	1,171	927	596	249	14	-	-	-	-	320,807	-
5/31/2044	2044	5	31	-	2,394	(0.9)	2,193	149.0	326,593	-	-	-	-	-	-	-	108	423	774	1,036	1,238	1,347	1,394	1,315	1,119	887	596	257	40	-	-	-	-	326,593	-
6/30/2044	2044	6	30	-	2,394	(0.9)	2,192	129.5	283,860	-	-	-	-	-	-	-	111	387	713	975	1,132	1,272	1,170	1,069	986	808	531	256	52	-	-	-	-	283,860	-
7/31/2044	2044	7	31	-	2,394	(0.9)	2,191	138.9	304,369	-	-	-	-	-	-	-	86	362	672	935	1,137	1,265	1,260	1,210	1,059	887	600	282	62	-	-	-	-	304,369	-
8/31/2044	2044	8	31	-	2,394	(0.9)	2,190	129.9	284,515	-	-	-	-	-	-	-	51	335	631	883	1,074	1,206	1,203	1,100	1,017	833	574	243	28	-	-	-	-	284,515	-
9/30/2044	2044	9	30	-	2,394	(0.9)	2,189	124.6	272,664	-	-	-	-	-	-	-	41	336	706	996	1,139	1,183	1,183	1,157	987	779	447	134	0	-	-	-	-	272,664	-
10/31/2044	2044	10	31	-	2,394	(0.9)	2,188	127.9	279,848	-	-	-	-	-	-	-	13	306	683	965	1,136	1,315	1,292	1,175	1,007	735	348	52	-	-	-	-	-	279,848	-
11/30/2044	2044	11	30	-	2,394	(0.9)	2,187	115.0	251,481	-	-	-	-	-	-	-	256	587	886	1,094	1,249	1,187	1,178	948	672	324	-	-	-	-	-	-	-	251,481	-
12/31/2044	2044	12	31	-	2,394	(0.9)	2,186	107.8	235,594	-	-	-	-	-	-	-	142	505	811	994	1,172	1,149	1,073	873	581	300	-	-	-	-	-	-	-	235,594	-
1/31/2045	2045	1	31	-	2,394	(0.9)	2,185	111.3	243,270	-	-	-	-	-	-	-	93	413	762	1,012	1,120	1,133	1,072	1,023	709	431	78	-	-	-	-	-	-	243,270	-
2/28/2045	2045	2	28	-	2,394	(0.9)	2,184	111.1	242,764	-	-	-	-	-	-	-	118	417	840	1,063	1,205	1,243	1,227	1,053	821	517	167	-	-	-	-	-	-	242,764	-
3/31/2045	2045	3	31	-	2,394	(0.9)	2,183	147.4	321,805	-	-	-	-	-	-	-	5	242	621	1,033	1,254	1,397	1,397	1,418	1,229	944	608	232	-	-	-	-	-	321,805	-
4/30/2045	2045	4	30	-	2,394	(0.9)	2,183	146.3	319,210	-	-	-	-	-	-	-	59	334	798	1,095	1,305	1,402	1,393	1,312	1,166	922	593	247	14	-	-	-	-	319,210	-
5/31/2045	2045	5	31	-	2,394	(0.9)	2,182	149.0	324,968	-	-	-	-	-	-	-	107	421	770	1,031	1,232	1,341	1,387	1,309	1,113	882	593	256	40	-	-	-	-	324,968	-
6/30/2045	2045	6	30	-	2,394	(0.9)	2,181	129.5	282,448	-	-	-	-	-	-	-	111	385	709	970	1,126	1,265	1,165	1,064	981	804	528	254	52	-	-	-	-	282,448	-
7/31/2045	2045	7	31	-	2,394	(0.9)	2,180	138.9	302,855	-	-	-	-	-	-	-	86	360	669	930	1,132	1,259	1,254	1,204	1,054	883	597	280	61	-	-	-	-	302,855	-
8/31/2045	2045	8	31	-	2,394	(0.9)	2,179	129.9	283,099	-	-	-	-	-	-	-	51	334	628	878	1,069	1,200	1,197	1,095	1,012	829	571	242	28	-	-	-	-	283,099	-
9/30/2045	2045	9	30	-	2,394	(0.9)	2,178	124.6	271,307	-	-	-	-	-	-	-	41	334	702	991	1,134	1,178	1,177	1,151	982	775	445	134	0	-	-	-	-	271,307	-
10/31/2045	2045	10	31	-	2,394	(0.9)	2,177	127.9	278,455	-	-	-	-	-	-	-	13	304	679	960	1,130	1,308	1,286	1,169	1,002	732	346	52	-	-	-	-	-	278,455	-
11/30/2045	2045	11	30	-	2,394	(0.9)	2,176	115.0	250,229	-	-	-	-	-	-	-	255	584	882	1,089	1,242	1,182	1,172	943	669	322	-	-	-	-	-	-	-	250,229	-
12/31/2045	2045	12	31	-	2,394	(0.9)	2,175	107.8	234,422	-	-	-	-	-	-	-	141	502	807	989	1,166	1,143	1,067	868	578	299	-	-	-	-	-	-	-	234,422	-
1/31/2046	2046	1	31	-	2,394	(0.9)	2,174	111.3	242,059	-	-	-	-	-	-	-	93	411	758	1,007	1,114	1,128	1,067	1,018	706	428	78	-	-	-	-	-	-	242,059	-
2/28/2046	2046	2	28	-	2,394	(0.9)	2,174	111.1	241,556	-	-	-	-	-	-	-	118	415	836	1,058	1,199	1,237	1,221	1,047	817	514	166	-	-	-	-	-	-	241,556	-
3/31/2046	2046	3	31	-	2,394	(0.9)	2,173	147.4	320,203	-	-	-	-	-	-	-	5	241	618	1,027	1,247	1,391	1,390	1,411	1,223	940	605	231	-	-	-	-	-	320,203	-
4/30/2046	2046	4	30	-	2,394	(0.9)	2,172	146.3	317,621	-	-	-	-	-	-	-	58	332	794	1,090	1,299	1,395	1,386	1,305	1,160	917	590	246	14	-	-	-	-	317,621	-
5/31/2046	2046	5	31	-	2,394	(0.9)	2,171	149.0	323,350	-	-	-	-	-	-	-	107	419	767	1,026	1,226	1,334	1,380	1,302	1,108	878	590	255	40	-	-	-	-	323,350	-
6/30/2046	2046	6	30	-	2,394	(0.9)	2,170	129.5	281,042	-	-	-	-	-	-	-	110	383	705	966	1,121	1,259	1,159	1,059	976	800	526	253	51	-	-	-	-	281,042	-
7/31/2046	2046	7	31	-	2,394	(0.9)	2,169	138.9	301,347	-	-	-	-	-	-	-	85	358	666	926	1,126	1,253	1,248	1,198	1,049	878	594	279	61	-	-	-	-	301,347	-
8/31/2046	2046	8	31	-	2,394	(0.9)	2,168	129.9	281,690	-	-	-	-	-	-	-	51	332	624	874	1,063	1,194	1,191	1,089	1,007	825	568	241	28	-	-	-	-	281,690	-
9/30/2046	2046	9	30	-	2,394	(0.9)	2,167	124.6	269,957	-	-	-	-	-	-	-	41	332	699	986	1,128	1,172	1,171	1,145	977	771	442	133	0	-	-	-	-	269,957	-
10/31/2046	2046	10	31	-	2,394	(0.9)	2,166	127.9	277,069	-	-	-	-	-	-	-	13	303	676	956	1,125	1,302	1,279	1,163	997	728	344	51	-	-	-	-	-	277,069	-
11/30/2046	2046	11	30	-	2,394	(0.9)	2,165	115.0	248,984	-	-	-	-	-	-	-	254	582	878	1,083	1,236	1,176	1,167	939	665	320	-	-	-	-	-	-	-	248,984	-
12/31/2046	2046	12	31	-	2,394	(0.9)	2,164	107.8	233,255	-	-	-	-	-	-	-	140	500	803	985	1,161	1,138	1,062	864	576	297	-	-	-	-	-	-	-	233,255	-
1/31/2047	2047	1	31	-	2,394	(0.9)	2,164	111.3	240,854	-	-	-	-	-	-	-	92	409	754	1,002	1,109	1,122	1,061	1,013	702	426	77	-	-	-	-	-	-	240,854	-
2/28/2047	2047	2	28	-	2,394	(0.9)	2,163	111.1	240,354	-	-	-	-	-	-	-	117	413	831	1,053	1,193	1,230	1,215	1,042	813	512	165	-	-	-	-	-	-	240,354	-
3/31/2047	2047	3	31	-	2,394	(0.9)	2,162	147.4	318,609	-	-	-	-	-	-	-	5	240	615	1,022	1,241	1,384	1,383	1,404	1,216	935	602	229	-	-	-	-	-	318,609	-
4/30/2047	2047	4	30	-	2,394	(0.9)	2,161	146.3	316,040	-	-	-	-	-	-	-	58	331	790	1,084	1,292	1,388	1,379	1,299	1,154	913	587	245	14	-	-	-	-	316,040	-
5/31/2047	2047	5	31	-	2,394	(0.9)	2,160	149.0	321,741	-	-	-	-	-	-	-	106	417	763	1,021	1,220	1,327	1,373	1,296	1,102	874	587	254	39	-	-	-	-	321,741	-
6/30/2047	2047	6	30	-	2,394	(0.9)	2,159	129.5	279,643	-	-	-	-	-	-	-	110	382	702	961	1,115	1,253	1,153	1,054	971	796	523	252	51	-	-	-	-	279,643	-
7/31/2047	2047	7	31	-	2,394	(0.9)	2,158	138.9	299,847	-	-	-	-	-	-	-	85	357	662	921	1,120	1,246	1,242	1,192	1,044	874	591	278	61	-	-	-	-	299,847	-
8/31/2047	2047	8	31	-	2,394	(0.9)	2,157	129.9	280,288	-	-	-	-	-	-	-	50	331	621	869	1,058	1,188	1,185	1,084	1,002	821	565	239	28	-	-	-	-	280,288	-
9/30/2047	2047	9	30	-	2,394	(0.9)	2,156	124.6	268,613	-	-	-	-	-	-	-	41	331	695	981	1,122	1,166	1,166	1,140	972	767	440	132	0	-	-	-	-	268,613	-
10/31/2047	2047	10	31	-	2,394	(0.9)	2,156	127.9	275,690	-	-	-	-	-	-	-	13	301	673	951	1,119	1,295	1,273	1,158	992	724	342	51	-	-	-	-	-	275,690	-
11/30/2047	2047	11	30	-	2,394	(0.9)	2,155	115.0	247,744	-	-	-	-	-	-	-	253	579	873	1,078	1,230	1,170	1,161	934	662	319	-	-	-	-	-	-	-	247,744	-
12/31/2047	2047	12	31	-	2,394	(0.9)	2,154	107.8	232,094	-	-	-	-	-	-	-	140	497	799	980	1,155	1,132	1,057	860	573	296	-	-	-	-	-	-	-	232,094	-

1/31/2048	2048	1	31	-	2,394	(0.9)	2,153	111.3	239,655	-	-	-	-	-	-	-	92	407	750	997	1,103	1,116	1,056	1,008	699	424	77	-	-	-	-	-	-	239,655	-
2/29/2048	2048	2	29	-	2,394	(0.9)	2,152	111.1	239,158	-	-	-	-	-	-	-	112	397	799	1,011	1,146	1,182	1,167	1,001	781	491	158	-	-	-	-	-	-	239,158	-
3/31/2048	2048	3	31	-	2,394	(0.9)	2,151	147.4	317,024	-	-	-	-	-	-	-	5	239	612	1,017	1,235	1,377	1,376	1,397	1,210	930	599	228	-	-	-	-	-	317,024	-
4/30/2048	2048	4	30	-	2,394	(0.9)	2,150	146.3	314,467	-	-	-	-	-	-	-	58	329	786	1,079	1,286	1,381	1,372	1,292	1,148	908	584	244	14	-	-	-	-	314,467	-
5/31/2048	2048	5	31	-	2,394	(0.9)	2,149	149.0	320,140	-	-	-	-	-	-	-	106	415	759	1,016	1,214	1,321	1,366	1,289	1,097	869	584	252	39	-	-	-	-	320,140	-
6/30/2048	2048	6	30	-	2,394	(0.9)	2,148	129.5	278,251	-	-	-	-	-	-	-	109	380	698	956	1,110	1,247	1,147	1,048	966	792	521	251	51	-	-	-	-	278,251	-
7/31/2048	2048	7	31	-	2,394	(0.9)	2,147	138.9	298,355	-	-	-	-	-	-	-	84	355	659	917	1,115	1,240	1,235	1,187	1,038	870	588	276	61	-	-	-	-	298,355	-
8/31/2048	2048	8	31	-	2,394	(0.9)	2,147	129.9	278,893	-	-	-	-	-	-	-	50	329	618	865	1,053	1,182	1,179	1,078	997	816	562	238	27	-	-	-	-	278,893	-
9/30/2048	2048	9	30	-	2,394	(0.9)	2,146	124.6	267,276	-	-	-	-	-	-	-	40	329	692	977	1,117	1,160	1,160	1,134	967	763	438	132	0	-	-	-	-	267,276	-
10/31/2048	2048	10	31	-	2,394	(0.9)	2,145	127.9	274,318	-	-	-	-	-	-	-	13	300	669	946	1,114	1,289	1,267	1,152	987	721	341	51	-	-	-	-	-	274,318	-
11/30/2048	2048	11	30	-	2,394	(0.9)	2,144	115.0	246,511	-	-	-	-	-	-	-	251	576	869	1,073	1,224	1,164	1,155	929	659	317	-	-	-	-	-	-	-	246,511	-
12/31/2048	2048	12	31	-	2,394	(0.9)	2,143	107.8	230,939	-	-	-	-	-	-	-	139	495	795	975	1,149	1,126	1,051	855	570	294	-	-	-	-	-	-	-	230,939	-
1/31/2049	2049	1	31	-	2,394	(0.9)	2,142	111.3	238,463	-	-	-	-	-	-	-	92	405	746	992	1,098	1,111	1,051	1,003	695	422	77	-	-	-	-	-	-	238,463	-
2/28/2049	2049	2	28	-	2,394	(0.9)	2,141	111.1	237,967	-	-	-	-	-	-	-	116	409	823	1,042	1,181	1,218	1,203	1,032	805	507	163	-	-	-	-	-	-	237,967	-
3/31/2049	2049	3	31	-	2,394	(0.9)	2,140	147.4	315,446	-	-	-	-	-	-	-	5	238	609	1,012	1,229	1,370	1,369	1,390	1,204	926	596	227	-	-	-	-	-	315,446	-
4/30/2049	2049	4	30	-	2,394	(0.9)	2,139	146.3	312,902	-	-	-	-	-	-	-	58	327	782	1,074	1,280	1,375	1,366	1,286	1,143	904	581	242	14	-	-	-	-	312,902	-
5/31/2049	2049	5	31	-	2,394	(0.9)	2,139	149.0	318,546	-	-	-	-	-	-	-	105	413	755	1,011	1,208	1,314	1,359	1,283	1,091	865	581	251	39	-	-	-	-	318,546	-
6/30/2049	2049	6	30	-	2,394	(0.9)	2,138	129.5	276,866	-	-	-	-	-	-	-	108	378	695	951	1,104	1,240	1,142	1,043	962	788	518	249	51	-	-	-	-	276,866	-
7/31/2049	2049	7	31	-	2,394	(0.9)	2,137	138.9	296,870	-	-	-	-	-	-	-	84	353	656	912	1,109	1,234	1,229	1,181	1,033	865	585	275	60	-	-	-	-	296,870	-
8/31/2049	2049	8	31	-	2,394	(0.9)	2,136	129.9	277,505	-	-	-	-	-	-	-	50	327	615	861	1,047	1,177	1,173	1,073	992	812	560	237	27	-	-	-	-	277,505	-
9/30/2049	2049	9	30	-	2,394	(0.9)	2,135	124.6	265,946	-	-	-	-	-	-	-	40	327	689	972	1,111	1,154	1,154	1,128	963	760	436	131	0	-	-	-	-	265,946	-
10/31/2049	2049	10	31	-	2,394	(0.9)	2,134	127.9	272,953	-	-	-	-	-	-	-	13	298	666	941	1,108	1,282	1,260	1,146	982	717	339	51	-	-	-	-	-	272,953	-
11/30/2049	2049	11	30	-	2,394	(0.9)	2,133	115.0	245,284	-	-	-	-	-	-	-	250	573	865	1,067	1,218	1,158	1,149	925	655	316	-	-	-	-	-	-	-	245,284	-
12/31/2049	2049	12	31	-	2,394	(0.9)	2,132	107.8	229,789	-	-	-	-	-	-	-	138	492	791	970	1,143	1,121	1,046	851	567	293	-	-	-	-	-	-	-	229,789	-
1/31/2050	2050	1	31	-	2,394	(0.9)	2,131	111.3	237,276	-	-	-	-	-	-	-	91	403	743	987	1,092	1,105	1,046	998	692	420	76	-	-	-	-	-	-	237,276	-
2/28/2050	2050	2	28	-	2,394	(0.9)	2,131	111.1	236,783	-	-	-	-	-	-	-	115	407	819	1,037	1,176	1,212	1,197	1,027	801	504	162	-	-	-	-	-	-	236,783	-
3/31/2050	2050	3	31	-	2,394	(0.9)	2,130	147.4	313,876	-	-	-	-	-	-	-	5	236	606	1,007	1,223	1,363	1,362	1,384	1,198	921	593	226	-	-	-	-	-	313,876	-
4/30/2050	2050	4	30	-	2,394	(0.9)	2,129	146.3	311,345	-	-	-	-	-	-	-	57	326	778	1,068	1,273	1,368	1,359	1,279	1,137	899	578	241	14	-	-	-	-	311,345	-
5/31/2050	2050	5	31	-	2,394	(0.9)	2,128	149.0	316,961	-	-	-	-	-	-	-	105	411	751	1,006	1,202	1,308	1,352	1,277	1,086	861	579	250	39	-	-	-	-	316,961	-
6/30/2050	2050	6	30	-	2,394	(0.9)	2,127	129.5	275,488	-	-	-	-	-	-	-	108	376	692	947	1,099	1,234	1,136	1,038	957	784	515	248	50	-	-	-	-	275,488	-
7/31/2050	2050	7	31	-	2,394	(0.9)	2,126	138.9	295,392	-	-	-	-	-	-	-	83	351	653	908	1,104	1,228	1,223	1,175	1,028	861	582	273	60	-	-	-	-	295,392	-
8/31/2050	2050	8	31	-	2,394	(0.9)	2,125	129.9	276,124	-	-	-	-	-	-	-	50	326	612	856	1,042	1,171	1,167	1,068	987	808	557	236	27	-	-	-	-	276,124	-
9/30/2050	2050	9	30	-	2,394	(0.9)	2,124	124.6	264,622	-	-	-	-	-	-	-	40	326	685	967	1,106	1,149	1,148	1,123	958	756	434	130	0	-	-	-	-	264,622	-
10/31/2050	2050	10	31	-	2,394	(0.9)	2,123	127.9	271,594	-	-	-	-	-	-	-	13	297	663	937	1,103	1,276	1,254	1,140	978	714	337	50	-	-	-	-	-	271,594	-
11/30/2050	2050	11	30	-	2,394	(0.9)	2,123	115.0	244,064	-	-	-	-	-	-	-	249	570	860	1,062	1,212	1,152	1,144	920	652	314	-	-	-	-	-	-	-	244,064	-
12/31/2050	2050	12	31	-	2,394	(0.9)	2,122	107.8	228,646	-	-	-	-	-	-	-	137	490	787	965	1,138	1,115	1,041	847	564	291	-	-	-	-	-	-	-	228,646	-
1/31/2051	2051	1	31	-	2,394	(0.9)	2,121	111.3	236,095	-	-	-	-	-	-	-	91	401	739	982	1,087	1,100	1,040	993	689	418	76	-	-	-	-	-	-	236,095	-
2/28/2051	2051	2	28	-	2,394	(0.9)	2,120	111.1	235,604	-	-	-	-	-	-	-	115	405	815	1,032	1,170	1,206	1,191	1,021	797	501	162	-	-	-	-	-	-	235,604	-
3/31/2051	2051	3	31	-	2,394	(0.9)	2,119	147.4	312,313	-	-	-	-	-	-	-	5	235	603	1,002	1,217	1,356	1,356	1,377	1,192	917	590	225	-	-	-	-	-	312,313	-
4/30/2051	2051	4	30	-	2,394	(0.9)	2,118	146.3	309,795	-	-	-	-	-	-	-	57	324	774	1,063	1,267	1,361	1,352	1,273	1,131	895	576	240	14	-	-	-	-	309,795	-
5/31/2051	2051	5	31	-	2,394	(0.9)	2,117	149.0	315,383	-	-	-	-	-	-	-	104	409	748	1,001	1,196	1,301	1,346	1,270	1,080	856	576	249	39	-	-	-	-	315,383	-
6/30/2051	2051	6	30	-	2,394	(0.9)	2,116	129.5	274,117	-	-	-	-	-	-	-	107	374	688	942	1,093	1,228	1,130	1,033	952	780	513	247	50	-	-	-	-	274,117	-
7/31/2051	2051	7	31	-	2,394	(0.9)	2,116	138.9	293,922	-	-	-	-	-	-	-	83	350	649	903	1,098	1,222	1,217	1,169	1,023	857	579	272	60	-	-	-	-	293,922	-
8/31/2051	2051	8	31	-	2,394	(0.9)	2,115	129.9	274,750	-	-	-	-	-	-	-	49	324	609	852	1,037	1,165	1,162	1,062	982	804	554	235	27	-	-	-	-	274,750	-
9/30/2051	2051	9	30	-	2,394	(0.9)	2,114	124.6	263,305	-	-	-	-	-	-	-	40	324	682	962	1,100	1,143	1,143	1,117	953	752	431	130	0	-	-	-	-	263,305	-
10/31/2051	2051	10	31	-	2,394	(0.9)	2,113	127.9	270,242	-	-	-	-	-	-	-	13	295	659	932	1,097	1,270	1,248	1,135	973	710	336	50	-	-	-	-	-	270,242	-
11/30/2051	2051	11	30	-	2,394	(0.9)	2,112	115.0	242,849	-	-	-	-	-	-	-	248	567	856	1,057	1,206	1,147	1,138	915	649	313	-	-	-	-	-	-	-	242,849	-
12/31/2051	2051	12	31	-	2,394	(0.9)	2,111	107.8	227,508	-	-	-	-	-	-	-	137	488	783	960	1,132	1,110	1,036	843	561	290	-	-	-	-	-	-	-	227,508	-
1/31/2052	2052	1	31	-	2,394	(0.9)	2,110	111.3	234,920	-	-	-	-	-	-	-	90	399	735	978	1,082	1,094	1,035	988	685	416	75	-	-	-	-	-	-	234,920	-
2/29/2052	2052	2	29	-	2,394	(0.9)	2,109	111.1	234,432	-	-	-	-	-	-	-	110	389	783	991	1,124	1,159	1,144	981	766	482	155	-	-	-	-	-	-	234,432	-
3/31/2052	2052	3	31	-	2,394	(0.9)	2,109	147.4	310,759	-	-	-	-	-	-	-	5	234	600	997	1,211	1,350	1,349	1,370	1,186	912	587	224	-	-	-	-	-	310,759	-
4/30/2052	2052	4	30	-	2,394	(0.9)	2,108	146.3	308,253	-	-	-	-	-	-	-	57	323	770	1,058	1,261	1,354	1,345	1,267	1,126	890	573	239	14	-	-	-	-	308,253	-
5/31/2052	2052	5	31	-	2,394	(0.9)	2,107	149.0	313,813	-	-	-	-	-	-	-	104	407	744	996	1,190	1,295	1,339	1,264	1,075	852	573	247	38	-	-	-	-	313,813	-
6/30/2052	2052	6	30	-	2,394	(0.9)	2,106	129.5	272,753	-	-	-	-	-	-	-	107	372	685	937	1,088	1,222	1,125	1,028	947	776	510	246	50	-	-	-	-	272,753	-
7/31/2052	2052	7	31	-	2,394	(0.9)	2,105	138.9	292,459	-	-	-	-	-	-	-	83	348	646	899	1,093	1,216	1,211	1,163	1,018	852	576	271	59	-	-	-	-	292,459	-
8/31/2052	2052	8	31	-	2,394	(0.9)	2,104	129.9	273,382	-	-	-	-	-	-	-	49	322	606	848	1,032	1,159	1,156	1,057	977	800	551	233	27	-	-	-	-	273,382	-
9/30/2052	2052	9	30	-	2,394	(0.9)	2,103	124.6	261,995	-	-	-	-	-	-	-	40	322	678	957	1,095	1,137	1,137	1,111	948	748	429	129	0	-	-	-	-	261,995	-
10/31/2052	2052	10	31	-	2,394	(0.9)	2,102	127.9	268,897	-	-	-	-	-	-	-	13	294	656	927	1,092	1,263	1,242	1,129	968	707	334	50	-	-	-	-	-	268,897	-
11/30/2052	2052	11	30	-	2,394	(0.9)	2,102	115.0	241,640	-	-	-	-	-	-	-	246	564	852	1,051	1,200	1,141	1,132	911	646	311	-	-	-	-	-	-	-	241,640	-
12/31/2052	2052	12	31	-	2,394	(0.9)	2,101	107.8	226,375	-	-	-	-	-	-	-	136	485	779	956	1,126	1,104	1,031	838	559	288	-	-	-	-	-	-	-	226,375	-
1/31/2053	2053	1	31	-	2,394	(0.9)	2,100	111.3	233,750	-	-	-	-	-	-	-	90	397	732	973	1,076	1,089	1,030	983	682	414	75	-	-	-	-	-	-	233,750	-
2/28/2053	2053	2	28	-	2,394	(0.9)	2,099	111.1	233,265	-	-	-	-	-	-	-	114	401	807	1,022	1,158	1,194	1,179	1,011	789	496	160	-	-	-	-	-	-	233,265	-
3/31/2053	2053	3	31	-	2,394	(0.9)	2,098	147.4	309,212	-	-	-	-	-	-	-	5	233	597	992	1,205	1,343	1,342	1,363	1,181	908	584	223	-	-	-	-	-	309,212	-
4/30/2053	2053	4	30	-	2,394	(0.9)	2,097	146.3	306,719	-	-	-	-	-	-	-	56	321	767	1,052	1,254	1,347	1,339	1,260	1,120	886	570	238	14	-	-	-	-	306,719	-
5/31/2053	2053	5	31	-	2,394	(0.9)	2,096	149.0	312,251	-	-	-	-	-	-	-	103	405	740	991	1,184	1,288	1,332	1,258	1,070	848	570	246	38	-	-	-	-	312,251	-
6/30/2053	2053	6	30	-	2,394	(0.9)	2,095	129.5	271,395	-	-	-	-	-	-	-	106	370	681	933	1,082	1,216	1,119	1,023	943	772	508	244	50	-	-	-	-	271,395	-
7/31/2053	2053	7	31	-	2,394	(0.9)	2,095	138.9	291,004	-	-	-	-	-	-	-	82	346	643	894	1,087	1,210	1,205	1,157	1,013	848	573	269	59	-	-	-	-	291,004	-
8/31/2053	2053	8	31	-	2,394	(0.9)	2,094	129.9	272,021	-	-	-	-	-	-	-	49	321	603	844	1,027	1,153	1,150	1,052	973	796	549	232	27	-	-	-	-	272,021	-
9/30/2053	2053	9	30	-	2,394	(0.9)	2,093	124.6	260,691	-	-	-	-	-	-	-	39	321	675	952	1,089	1,132	1,131	1,106	944	745	427	129	0	-	-	-	-	260,691	-
10/31/2053	2053	10	31	-	2,394	(0.9)	2,092	127.9	267,559	-	-	-	-	-	-	-	13	292	653	923	1,086	1,257	1,235	1,123	963	703	332	50	-	-	-	-	-	267,559	-
11/30/2053	2053	11	30	-	2,394	(0.9)	2,091	115.0	240,437	-	-	-	-	-	-	-	245	562	848	1,046	1,194	1,135	1,127	906	643	309	-	-	-	-	-	-	-	240,437	-
12/31/2053	2053	12	31	-	2,394	(0.9)	2,090	107.8	225,248	-	-	-	-	-	-	-	135	483	775	951	1,121	1,099	1,025	834	556	287	-	-	-	-	-	-	-	225,248	-

Florida Power & Light Company
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Staff's Third Data Request
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Attachment 1 of 1
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FPL & GULF 000007
20220000-OT

Ann. Degrade: 0.50%

Date	Year	Month	Num Days	New Capacity (MWdc)	Cumulative Capacity (MWdc)	Monthly Degradation	Cumulative Capacity after Degradation (MWdc)	Energy per MWdc (MWh-ac)	Monthly Generation (MWh)	1 Hourly Gen. Ending 1:00	2 Hourly Gen. Ending 2:00	3 Hourly Gen. Ending 3:00	4 Hourly Gen. Ending 4:00	5 Hourly Gen. Ending 5:00	6 Hourly Gen. Ending 6:00	7 Hourly Gen. Ending 7:00	8 Hourly Gen. Ending 8:00	9 Hourly Gen. Ending 9:00	10 Hourly Gen. Ending 10:00	11 Hourly Gen. Ending 11:00	12 Hourly Gen. Ending 12:00	13 Hourly Gen. Ending 13:00	14 Hourly Gen. Ending 14:00	15 Hourly Gen. Ending 15:00	16 Hourly Gen. Ending 16:00	17 Hourly Gen. Ending 17:00	18 Hourly Gen. Ending 18:00	19 Hourly Gen. Ending 19:00	20 Hourly Gen. Ending 20:00	21 Hourly Gen. Ending 21:00	22 Hourly Gen. Ending 22:00	23 Hourly Gen. Ending 23:00	24 Hourly Gen. Ending 0:00	Monthly Generation (check)	check
1/31/2013	2013	1	31	-				111.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/28/2013	2013	2	28	-	-	-	-	111.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/31/2013	2013	3	31	-	-	-	-	147.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/30/2013	2013	4	30	-	-	-	-	146.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/31/2013	2013	5	31	-	-	-	-	149.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/30/2013	2013	6	30	-	-	-	-	129.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31/2013	2013	7	31	-	-	-	-	138.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/31/2013	2013	8	31	-	-	-	-	129.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9/30/2013	2013	9	30	-	-	-	-	124.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/31/2013	2013	10	31	-	-	-	-	127.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/30/2013	2013	11	30	-	-	-	-	115.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/31/2013	2013	12	31	-	-	-	-	107.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/31/2014	2014	1	31	2	2	-	2	111.3	175	-	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	175	-
2/28/2014	2014	2	28	2	3	(0.0)	3	111.1	349	-	-	-	-	-	-	-	0	1	1	2	2	2	2	2	1	1	0	-	-	-	-	-	-	349	-
3/31/2014	2014	3	31	2	5	(0.0)	5	147.4	695	-	-	-	-	-	-	-	0	1	1	2	3	3	3	3	3	2	1	1	-	-	-	-	-	695	-
4/30/2014	2014	4	30	2	6	(0.0)	6	146.3	919	-	-	-	-	-	-	-	0	1	2	3	4	4	4	4	3	3	2	1	0	-	-	-	-	919	-
5/31/2014	2014	5	31	2	8	(0.0)	8	149.0	1,170	-	-	-	-	-	-	-	0	2	3	4	4	5	5	5	4	3	2	1	0	-	-	-	-	1,170	-
6/30/2014	2014	6	30	2	9	(0.0)	9	129.5	1,221	-	-	-	-	-	-	-	0	2	3	4	5	5	5	5	4	3	2	1	0	-	-	-	-	1,221	-
7/31/2014	2014	7	31	2	11	(0.0)	11	138.9	1,527	-	-	-	-	-	-	-	0	2	3	5	6	6	6	6	5	4	3	1	0	-	-	-	-	1,527	-
8/31/2014	2014	8	31	2	13	(0.0)	13	129.9	1,632	-	-	-	-	-	-	-	0	2	4	5	6	7	7	6	6	5	3	1	0	-	-	-	-	1,632	-
9/30/2014	2014	9	30	2	14	(0.0)	14	124.6	1,760	-	-	-	-	-	-	-	0	2	5	6	7	8	8	7	6	5	3	1	0	-	-	-	-	1,760	-
10/31/2014	2014	10	31	2	16	(0.0)	16	127.9	2,007	-	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	5	2	0	-	-	-	-	-	2,007	-
11/30/2014	2014	11	30	2	17	(0.0)	17	115.0	1,985	-	-	-	-	-	-	-	2	5	7	9	10	9	9	7	5	3	-	-	-	-	-	-	-	1,985	-
12/31/2014	2014	12	31	2	19	(0.0)	19	107.8	2,029	-	-	-	-	-	-	-	1	4	7	9	10	10	9	8	5	3	-	-	-	-	-	-	-	2,029	-
1/31/2015	2015	1	31	0	19	(0.0)	19	111.3	2,136	-	-	-	-	-	-	-	1	4	7	9	10	10	9	9	6	4	1	-	-	-	-	-	-	2,136	-
2/28/2015	2015	2	28	0	20	(0.0)	20	111.1	2,173	-	-	-	-	-	-	-	1	4	8	10	11	11	11	9	7	5	1	-	-	-	-	-	-	2,173	-
3/31/2015	2015	3	31	0	20	(0.0)	20	147.4	2,934	-	-	-	-	-	-	-	0	2	6	9	11	13	13	13	11	9	6	2	-	-	-	-	-	2,934	-
4/30/2015	2015	4	30	0	20	(0.0)	20	146.3	2,964	-	-	-	-	-	-	-	1	3	7	10	12	13	13	12	11	9	6	2	0	-	-	-	-	2,964	-
5/31/2015	2015	5	31	0	21	(0.0)	21	149.0	3,073	-	-	-	-	-	-	-	1	4	7	10	12	13	13	12	11	8	6	2	0	-	-	-	-	3,073	-
6/30/2015	2015	6	30	0	21	(0.0)	21	129.5	2,719	-	-	-	-	-	-	-	1	4	7	9	11	12	11	10	9	8	5	2	0	-	-	-	-	2,719	-
7/31/2015	2015	7	31	0	21	(0.0)	21	138.9	2,966	-	-	-	-	-	-	-	1	4	7	9	11	12	12	12	10	9	6	3	1	-	-	-	-	2,966	-
8/31/2015	2015	8	31	0	22	(0.0)	22	129.9	2,821	-	-	-	-	-	-	-	1	3	6	9	11	12	12	11	10	8	6	2	0	-	-	-	-	2,821	-
9/30/2015	2015	9	30	0	22	(0.0)	22	124.6	2,749	-	-	-	-	-	-	-	0	3	7	10	11	12	12	12	10	8	5	1	0	-	-	-	-	2,749	-
10/31/2015	2015	10	31	0	23	(0.0)	22	127.9	2,869	-	-	-	-	-	-	-	0	3	7	10	12	13	13	12	10	8	4	1	-	-	-	-	-	2,869	-
11/30/2015	2015	11	30	0	23	(0.0)	23	115.0	2,620	-	-	-	-	-	-	-	3	6	9	11	13	12	12	10	7	3	-	-	-	-	-	-	-	2,620	-
12/31/2015	2015	12	31	0	23	(0.0)	23	107.8	2,495	-	-	-	-	-	-	-	1	5	9	11	12	12	11	9	6	3	-	-	-	-	-	-	-	2,495	-
1/31/2016	2016	1	31	0	23	(0.0)	23	111.3	2,598	-	-	-	-	-	-	-	1	4	8	11	12	12	11	11	8	5	1	-	-	-	-	-	-	2,598	-
2/29/2016	2016	2	29	0	24	(0.0)	24	111.1	2,615	-	-	-	-	-	-	-	1	4	9	11	13	13	13	11	9	5	2	-	-	-	-	-	-	2,615	-
3/31/2016	2016	3	31	0	24	(0.0)	24	147.4	3,496	-	-	-	-	-	-	-	0	3	7	11	14	15	15	15	13	10	7	3	-	-	-	-	-	3,496	-
4/30/2016	2016	4	30	0	24	(0.0)	24	146.3	3,498	-	-	-	-	-	-	-	1	4	9	12	14	15	15	14	13	10	6	3	0	-	-	-	-	3,498	-
5/31/2016	2016	5	31	0	24	(0.0)	24	149.0	3,591	-	-	-	-	-	-	-	1	5	9	11	14	15	15	14	12	10	7	3	0	-	-	-	-	3,591	-
6/30/2016	2016	6	30	0	25	(0.0)	24	129.5	3,147	-	-	-	-	-	-	-	1	4	8	11	13	14	13	12	11	9	6	3	1	-	-	-	-	3,147	-
7/31/2016	2016	7	31	0	25	(0.0)	24	138.9	3,402	-	-	-	-	-	-	-	1	4	8	10	13	14	14	14	12	10	7	3	1	-	-	-	-	3,402	-
8/31/2016	2016	8	31	0	25	(0.0)	25	129.9	3,207	-	-	-	-	-	-	-	1	4	7	10	12	14	14	12	11	9	6	3	0	-	-	-	-	3,207	-
9/30/2016	2016	9	30	0	25	(0.0)	25	124.6	3,098	-	-	-	-	-	-	-	0	4	8	11	13	13	13	13	11	9	5	2	0	-	-	-	-	3,098	-
10/31/2016	2016	10	31	0	25	(0.0)	25	127.9	3,206	-	-	-	-	-	-	-	0	4	8	11	13	15	15	13	12	8	4	1	-	-	-	-	-	3,206	-
11/30/2016	2016	11	30	0	26	(0.0)	25	115.0	2,904	-	-	-	-	-	-	-	3	7	10	13	14	14	14	11	8	4	-	-	-	-	-	-	-	2,904	-
12/31/2016	2016	12	31	0	26	(0.0)	25	107.8	2,742	-	-	-	-	-	-	-	2	6	9	12	14	13	12	10	7	3	-	-	-	-	-	-	-	2,742	-
1/31/2017	2017	1	31	0	26	(0.0)	26	111.3	2,883	-	-	-	-	-	-	-	1	5	9	12	13	13	13	12	8	5	1	-	-	-	-	-	-	2,883	-
2/28/2017	2017	2	28	0	27	(0.0)	26	111.1	2,928	-	-	-	-	-	-	-	1	5	10	13	15	15	15	13	10	6	2	-	-	-	-	-	-	2,928	-
3/31/2017	2017	3	31	0	27	(0.0)	27	147.4	3,949	-	-	-	-	-	-	-	0	3	8	13	15	17	17	17	15	12	7	3	-	-	-	-	-	3,949	-
4/30/2017	2017	4	30	0	28	(0.0)	27	146.3	3,984	-	-	-	-	-	-	-	1	4	10	14	16	18	17	16	15	12	7	3	0	-	-	-	-	3,984	-
5/31/2017	2017	5	31	0	28	(0.0)	28	149.0	4,124	-	-	-	-	-	-	-	1	5	10	13	16	17	18	17	14	11	8	3	1	-	-	-	-	4,124	-
6/30/2017	2017	6	30	0	28	(0.0)	28	129.5	3,644	-	-	-	-	-	-	-	1	5	9	13	15	16	15	14	13	10	7	3	1	-	-	-	-	3,644	-
7/31/2017	2017	7	31	0	29	(0.0)	29	138.9	3,971	-	-	-	-	-	-	-	1	5	9	12	15	17	16	16	14	12	8	4	1	-	-	-	-	3,971	-
8/31/2017	2017	8	31	0	29	(0.0)	29	129.9	3,772	-	-	-	-	-	-	-	1	4	8	12	14	16	16	15	13	11	8	3	0	-	-	-	-	3,772	-
9/30/2017	2017	9	30	0	30	(0.0)	29	124.6	3,672	-	-	-	-	-	-	-	1	5	10	13	15	16	16	16	13	10	6	2	0	-	-	-	-	3,672	-
10/31/2017	2017	10	31	0	30	(0.0)	30	127.9	3,827	-	-	-	-	-	-	-	0	4	9	13	16	18	18	16	14	10	5	1	-	-	-	-	-	3,827	-
11/30/2017	2017	11	30	0	31	(0.0)	30	115.0	3,492	-	-	-	-	-	-	-	4	8	12	15	17	16	16	13	9	4	-	-	-	-	-	-	-	3,492	-
12/31/2017	2017	12	31	0	31	(0.0)	31	107.8	3,321	-	-	-	-	-	-	-	2	7	11	14	17	16	15	12	8	4	-	-	-	-	-	-	-	3,321	-
1/31/2018	2018	1	31	0	31	(0.0)	31	111.3	3,457	-	-	-	-	-	-	-	1	6	11	14	16	16	15	15	10	6	1	-	-	-	-	-	-	3,457	-
2/28/2018	2018	2	28	0	32	(0.0)	31	111.1	3,478	-	-	-	-	-	-	-	2	6	12	15	17	18	18	15	12	7	2	-	-	-	-	-	-	3,478	-
3/31/2018	2018	3	31	0	32	(0.0)	32	147.4	4,647	-	-	-	-	-	-	-	0	4	9	15	18	20	20	20	18	14	9	3	-	-	-	-	-	4,647	-
4/30/2018	2018	4	30	0	32	(0.0)	32	146.3	4,646	-	-	-	-	-	-	-	1	5	12	16	19	20	20	19	17	13	9	4	0	-	-	-	-	4,646	-
5/31/2018	2018	5	31	0	32	(0.0)	32	149.0	4,767	-	-	-	-	-	-	-	2	6	11	15	18	20	20	19	16	13	9	4	1	-	-	-	-	4,767	-
6/30/2018	2018	6	30	0	33	(0.0)	32	129.5	4,175	-	-	-	-	-	-	-	2	6	10	14	17	19	17	16	15	12	8	4	1	-	-	-	-	4,175	-
7/31/2018	2018	7	31	0	33	(0.0)	32	138.9	4,512	-	-	-	-	-	-	-	1	5	10	14	17	19	19	18	16	13	9	4	1	-	-	-	-	4,512	-
8/31/2018	2018	8	31	0	33	(0.0)	33	129.9	4,250	-	-	-	-	-	-	-	1	5	9	13	16	18	18	16	15	12	9	4	0	-	-	-	-	4,250	-
9/30/2018	2018	9	30	0	33	(0.0)	33	124.6	4,104	-	-	-	-	-	-	-	1	5	11	15	17	18	18	17	15	12	7	2	0	-	-	-	-	4,104	-
10/31/2018	2018	10	31	0	34	(0.0)	33	127.9	4,244	-	-	-	-	-	-	-	0	5	10	15	17	20	20	18	15	11	5	1	-	-	-	-	-	4,244	-
11/30/2018	2018	11	30	0	34	(0.0)	33	115.0	3,843	-	-	-	-	-	-	-	4	9	14	17	19	18	18	14	10	5	-	-	-	-	-	-	-	3,843	-
12/31/2018	2018	12	31	0	34	(0.0)	34	107.8	3,627	-	-	-	-	-	-	-	2	8	12	15	18	18	17	13	9	5	-	-	-	-	-	-	-	3,627	-
1/31/2019	2019	1	31	0	35	(0.0)	34	111.3	3,786	-	-	-	-	-	-	-	1	6	12	16	17	18	17	16	11	7	1	-	-	-	-	-	-	3,786	-
2/28/2019	2019	2	28	0	35	(0.0)	34	111.1	3,819	-	-	-	-	-	-	-	2	7	13	17	19	20	19	17	13	8	3	-	-	-	-	-	-	3,819	-
3/31/2019	2019	3	31	0	35	(0.0)	35	147.4	5,116	-	-	-	-	-	-	-	0	4	10	16	20	22	22	23	20	15	10	4	-	-	-	-	-	5,116	-
4/30/2019	2019	4	30	0	36	(0.0)	35	146.3	5,128	-	-	-	-	-	-	-	1	5	13	18	21	23	22	21	19	15	10	4	0	-	-	-	-	5,128	-
5/31/2019	2019	5	31	0	36	(0.0)	35	149.0	5,276	-	-	-	-	-	-	-	2	7	13	17	20	22	23	21	18	14	10	4	1	-	-	-	-	5,276	-
6/30/2019	2019	6	30	0	36	(0.0)	36	129.5	4,633	-	-	-	-	-	-	-	2	6	12	16	18	21	19	17	16	13	9	4	1	-	-	-	-	4,633	-
7/31/2019	2019	7	31	0	37	(0.0)	36	138.9	5,019	-	-	-	-	-	-	-	1	6	11	15	19	21	21	20	17	15	10	5	1	-	-	-	-	5,019	-
8/31/2019	2019	8	31	0	37	(0.0)	36	129.9	4,739	-	-	-	-	-	-	-	1	6	11	15	18	20	20	18	17	14	10	4	0	-	-	-	-	4,739	-
9/30/2019	2019	9	30	0	38	(0.0)	37	124.6	4,587	-	-	-	-	-	-	-	1	6	12	17	19	20	20	19	17	13	8	2	0	-	-	-	-	4,587	-
10/31/2019	2019	10	31	0	38	(0.0)	37	127.9	4,755	-	-	-	-	-	-	-	0	5	12	16	19	22	22	20	17	12	6	1	-	-	-	-	-	4,755	-
11/30/2019	2019	11	30	0	38	(0.0)	38	115.0	4,315	-	-	-	-	-	-	-	4	10	15	19	21	20	20	16	12	6	-	-	-	-	-	-	-	4,315	-
12/31/2019	2019	12	31	0	39	(0.0)	38	107.8	4,082	-	-	-	-	-	-	-	2	9	14	17	20	20	19	15	10	5	-	-	-	-	-	-	-	4,082	-
1/31/2020	2020	1	31	1	39	(0.0)	38	111.3	4,276	-	-	-	-	-	-	-	2	7	13	18	20	20	19	18	12	8	1	-	-	-	-	-	-	4,276	-
2/29/2020	2020	2	29	1	40	(0.0)	39	111.1	4,328	-	-	-	-	-	-	-	2	7	14	18	21	21	21	18	14	9	3	-	-	-	-	-	-	4,328	-
3/31/2020	2020	3	31	1	40	(0.0)	39	147.4	5,818	-	-	-	-	-	-	-	0	4	11	19	23	25	25	26	22	17	11	4	-	-	-	-	-	5,818	-
4/30/2020	2020	4	30	1	41	(0.0)	40	146.3	5,851	-	-	-	-	-	-	-	1	6	15	20	24	26	26	24	21	17	11	5	0	-	-	-	-	5,851	-
5/31/2020	2020	5	31	1	41	(0.0)	41	149.0	6,038	-	-	-	-	-	-	-	2	8	14	19	23	25	26	24	21	16	11	5	1	-	-	-	-	6,038	-
6/30/2020	2020	6	30	1	42	(0.0)	41	129.5	5,319	-	-	-	-	-	-	-	2	7	13	18	21	24	22	20	18	15	10	5	1	-	-	-	-	5,319	-
7/31/2020	2020	7	31	1	42	(0.0)	42	138.9	5,779	-	-	-	-	-	-	-	2	7	13	18	22	24	24	23	20	17	11	5	1	-	-	-	-	5,779	-
8/31/2020	2020	8	31	1	43	(0.0)	42	129.9	5,473	-	-	-	-	-	-	-	1	6	12	17	21	23	23	21	20	16	11	5	1	-	-	-	-	5,473	-
9/30/2020	2020	9	30	1	44	(0.0)	43	124.6	5,313	-	-	-	-	-	-	-	1	7	14	19	22	23	23	23	19	15	9	3	0	-	-	-	-	5,313	-

10/31/2020	2020	10	31	1	44	(0.0)	43	127.9	5,523	-	-	-	-	-	-	-	0	6	13	19	22	26	26	23	20	15	7	1	-	-	-	-	-	5,523	-
11/30/2020	2020	11	30	1	45	(0.0)	44	115.0	5,026	-	-	-	-	-	-	-	5	12	18	22	25	24	24	19	13	6	-	-	-	-	-	-	-	5,026	-
12/31/2020	2020	12	31	1	45	(0.0)	44	107.8	4,768	-	-	-	-	-	-	-	3	10	16	20	24	23	22	18	12	6	-	-	-	-	-	-	-	4,768	-
1/31/2021	2021	1	31	1	46	(0.0)	45	111.3	4,996	-	-	-	-	-	-	-	2	8	16	21	23	23	22	21	15	9	2	-	-	-	-	-	-	4,996	-
2/28/2021	2021	2	28	1	47	(0.0)	46	111.1	5,059	-	-	-	-	-	-	-	2	9	18	22	25	26	26	22	17	11	3	-	-	-	-	-	-	5,059	-
3/31/2021	2021	3	31	1	47	(0.0)	46	147.4	6,804	-	-	-	-	-	-	-	0	5	13	22	27	30	30	30	26	20	13	5	-	-	-	-	-	6,804	-
4/30/2021	2021	4	30	1	48	(0.0)	47	146.3	6,845	-	-	-	-	-	-	-	1	7	17	23	28	30	30	28	25	20	13	5	0	-	-	-	-	6,845	-
5/31/2021	2021	5	31	1	48	(0.0)	47	149.0	7,066	-	-	-	-	-	-	-	2	9	17	22	27	29	30	28	24	19	13	6	1	-	-	-	-	7,066	-
6/30/2021	2021	6	30	1	49	(0.0)	48	129.5	6,227	-	-	-	-	-	-	-	2	8	16	21	25	28	26	23	22	18	12	6	1	-	-	-	-	6,227	-
7/31/2021	2021	7	31	1	50	(0.0)	49	138.9	6,769	-	-	-	-	-	-	-	2	8	15	21	25	28	28	27	24	20	13	6	1	-	-	-	-	6,769	-
8/31/2021	2021	8	31	1	50	(0.0)	49	129.9	6,413	-	-	-	-	-	-	-	1	8	14	20	24	27	27	25	23	19	13	5	1	-	-	-	-	6,413	-
9/30/2021	2021	9	30	1	51	(0.0)	50	124.6	6,227	-	-	-	-	-	-	-	1	8	16	23	26	27	27	26	23	18	10	3	0	-	-	-	-	6,227	-
10/31/2021	2021	10	31	1	52	(0.0)	51	127.9	6,476	-	-	-	-	-	-	-	0	7	16	22	26	30	30	27	23	17	8	1	-	-	-	-	-	6,476	-
11/30/2021	2021	11	30	1	52	(0.0)	51	115.0	5,895	-	-	-	-	-	-	-	6	14	21	26	29	28	28	22	16	8	-	-	-	-	-	-	-	5,895	-
12/31/2021	2021	12	31	1	53	(0.0)	52	107.8	5,594	-	-	-	-	-	-	-	3	12	19	24	28	27	25	21	14	7	-	-	-	-	-	-	-	5,594	-
1/31/2022	2022	1	31	1	54	(0.0)	53	111.3	5,923	-	-	-	-	-	-	-	2	10	19	25	27	28	26	25	17	10	2	-	-	-	-	-	-	5,923	-
2/28/2022	2022	2	28	1	56	(0.0)	55	111.1	6,058	-	-	-	-	-	-	-	3	10	21	27	30	31	31	26	20	13	4	-	-	-	-	-	-	6,058	-
3/31/2022	2022	3	31	1	57	(0.0)	56	147.4	8,226	-	-	-	-	-	-	-	0	6	16	26	32	36	36	36	31	24	16	6	-	-	-	-	-	8,226	-
4/30/2022	2022	4	30	1	58	(0.0)	57	146.3	8,354	-	-	-	-	-	-	-	2	9	21	29	34	37	36	34	31	24	16	6	0	-	-	-	-	8,354	-
5/31/2022	2022	5	31	1	60	(0.0)	58	149.0	8,702	-	-	-	-	-	-	-	3	11	21	28	33	36	37	35	30	24	16	7	1	-	-	-	-	8,702	-
6/30/2022	2022	6	30	1	61	(0.0)	60	129.5	7,735	-	-	-	-	-	-	-	3	11	19	27	31	35	32	29	27	22	14	7	1	-	-	-	-	7,735	-
7/31/2022	2022	7	31	1	62	(0.0)	61	138.9	8,478	-	-	-	-	-	-	-	2	10	19	26	32	35	35	34	30	25	17	8	2	-	-	-	-	8,478	-
8/31/2022	2022	8	31	1	64	(0.0)	62	129.9	8,097	-	-	-	-	-	-	-	1	10	18	25	31	34	34	31	29	24	16	7	1	-	-	-	-	8,097	-
9/30/2022	2022	9	30	1	65	(0.0)	64	124.6	7,925	-	-	-	-	-	-	-	1	10	21	29	33	34	34	34	29	23	13	4	0	-	-	-	-	7,925	-
10/31/2022	2022	10	31	1	66	(0.0)	65	127.9	8,303	-	-	-	-	-	-	-	0	9	20	29	34	39	38	35	30	22	10	2	-	-	-	-	-	8,303	-
11/30/2022	2022	11	30	1	68	(0.0)	66	115.0	7,614	-	-	-	-	-	-	-	8	18	27	33	38	36	36	29	20	10	-	-	-	-	-	-	-	7,614	-
12/31/2022	2022	12	31	1	69	(0.0)	68	107.8	7,275	-	-	-	-	-	-	-	4	16	25	31	36	35	33	27	18	9	-	-	-	-	-	-	-	7,275	-
1/31/2023	2023	1	31	1	70	(0.0)	69	111.3	7,634	-	-	-	-	-	-	-	3	13	24	32	35	36	34	32	22	14	2	-	-	-	-	-	-	7,634	-
2/28/2023	2023	2	28	1	71	(0.0)	70	111.1	7,739	-	-	-	-	-	-	-	4	13	27	34	38	40	39	34	26	16	5	-	-	-	-	-	-	7,739	-
3/31/2023	2023	3	31	1	72	(0.0)	71	147.4	10,419	-	-	-	-	-	-	-	0	8	20	33	41	45	45	46	40	31	20	8	-	-	-	-	-	10,419	-
4/30/2023	2023	4	30	1	73	(0.0)	72	146.3	10,495	-	-	-	-	-	-	-	2	11	26	36	43	46	46	43	38	30	19	8	0	-	-	-	-	10,495	-
5/31/2023	2023	5	31	1	74	(0.0)	73	149.0	10,847	-	-	-	-	-	-	-	4	14	26	34	41	45	46	44	37	29	20	9	1	-	-	-	-	10,847	-
6/30/2023	2023	6	30	1	76	(0.0)	74	129.5	9,568	-	-	-	-	-	-	-	4	13	24	33	38	43	39	36	33	27	18	9	2	-	-	-	-	9,568	-
7/31/2023	2023	7	31	1	77	(0.0)	75	138.9	10,411	-	-	-	-	-	-	-	3	12	23	32	39	43	43	41	36	30	21	10	2	-	-	-	-	10,411	-
8/31/2023	2023	8	31	1	78	(0.0)	76	129.9	9,874	-	-	-	-	-	-	-	2	12	22	31	37	42	42	38	35	29	20	8	1	-	-	-	-	9,874	-
9/30/2023	2023	9	30	1	79	(0.0)	77	124.6	9,598	-	-	-	-	-	-	-	1	12	25	35	40	42	42	41	35	27	16	5	0	-	-	-	-	9,598	-
10/31/2023	2023	10	31	1	80	(0.0)	78	127.9	9,990	-	-	-	-	-	-	-	0	11	24	34	41	47	46	42	36	26	12	2	-	-	-	-	-	9,990	-
11/30/2023	2023	11	30	1	81	(0.0)	79	115.0	9,103	-	-	-	-	-	-	-	9	21	32	40	45	43	43	34	24	12	-	-	-	-	-	-	-	9,103	-
12/31/2023	2023	12	31	1	82	(0.0)	80	107.8	8,645	-	-	-	-	-	-	-	5	19	30	36	43	42	39	32	21	11	-	-	-	-	-	-	-	8,645	-
1/31/2024	2024	1	31	1	83	(0.0)	81	111.3	9,063	-	-	-	-	-	-	-	3	15	28	38	42	42	40	38	26	16	3	-	-	-	-	-	-	9,063	-
2/29/2024	2024	2	29	1	85	(0.0)	83	111.1	9,180	-	-	-	-	-	-	-	4	15	31	39	44	45	45	38	30	19	6	-	-	-	-	-	-	9,180	-
3/31/2024	2024	3	31	1	86	(0.0)	84	147.4	12,349	-	-	-	-	-	-	-	0	9	24	40	48	54	54	54	47	36	23	9	-	-	-	-	-	12,349	-
4/30/2024	2024	4	30	1	87	(0.0)	85	146.3	12,428	-	-	-	-	-	-	-	2	13	31	43	51	55	54	51	45	36	23	10	1	-	-	-	-	12,428	-
5/31/2024	2024	5	31	1	88	(0.0)	86	149.0	12,834	-	-	-	-	-	-	-	4	17	30	41	49	53	55	52	44	35	23	10	2	-	-	-	-	12,834	-
6/30/2024	2024	6	30	1	89	(0.0)	87	129.5	11,312	-	-	-	-	-	-	-	4	15	28	39	45	51	47	43	39	32	21	10	2	-	-	-	-	11,312	-
7/31/2024	2024	7	31	1	91	(0.0)	89	138.9	12,299	-	-	-	-	-	-	-	3	15	27	38	46	51	51	49	43	36	24	11	2	-	-	-	-	12,299	-
8/31/2024	2024	8	31	1	92	(0.0)	90	129.9	11,656	-	-	-	-	-	-	-	2	14	26	36	44	49	49	45	42	34	24	10	1	-	-	-	-	11,656	-
9/30/2024	2024	9	30	1	93	(0.0)	91	124.6	11,322	-	-	-	-	-	-	-	2	14	29	41	47	49	49	48	41	32	19	6	0	-	-	-	-	11,322	-
10/31/2024	2024	10	31	1	94	(0.0)	92	127.9	11,777	-	-	-	-	-	-	-	1	13	29	41	48	55	54	49	42	31	15	2	-	-	-	-	-	11,777	-
11/30/2024	2024	11	30	1	96	(0.0)	93	115.0	10,723	-	-	-	-	-	-	-	11	25	38	47	53	51	50	40	29	14	-	-	-	-	-	-	-	10,723	-
12/31/2024	2024	12	31	1	97	(0.0)	94	107.8	10,177	-	-	-	-	-	-	-	6	22	35	43	51	50	46	38	25	13	-	-	-	-	-	-	-	10,177	-
1/31/2025	2025	1	31	1	98	(0.0)	96	111.3	10,639	-	-	-	-	-	-	-	4	18	33	44	49	50	47	45	31	19	3	-	-	-	-	-	-	10,639	-
2/28/2025	2025	2	28	1	99	(0.0)	97	111.1	10,746	-	-	-	-	-	-	-	5	18	37	47	53	55	54	47	36	23	7	-	-	-	-	-	-	10,746	-
3/31/2025	2025	3	31	1	100	(0.0)	98	147.4	14,417	-	-	-	-	-	-	-	0	11	28	46	56	63	63	64	55	42	27	10	-	-	-	-	-	14,417	-
4/30/2025	2025	4	30	1	101	(0.0)	99	146.3	14,471	-	-	-	-	-	-	-	3	15	36	50	59	64	63	59	53	42	27	11	1	-	-	-	-	14,471	-
5/31/2025	2025	5	31	1	103	(0.0)	100	149.0	14,905	-	-	-	-	-	-	-	5	19	35	47	57	61	64	60	51	40	27	12	2	-	-	-	-	14,905	-
6/30/2025	2025	6	30	1	104	(0.0)	101	129.5	13,106	-	-	-	-	-	-	-	5	18	33	45	52	59	54	49	46	37	25	12	2	-	-	-	-	13,106	-
7/31/2025	2025	7	31	1	105	(0.0)	102	138.9	14,215	-	-	-	-	-	-	-	4	17	31	44	53	59	59	57	49	41	28	13	3	-	-	-	-	14,215	-
8/31/2025	2025	8	31	1	106	(0.0)	103	129.9	13,439	-	-	-	-	-	-	-	2	16	30	42	51	57	57	52	48	39	27	11	1	-	-	-	-	13,439	-
9/30/2025	2025	9	30	1	107	(0.0)	105	124.6	13,025	-	-	-	-	-	-	-	2	16	34	48	54	57	57	55	47	37	21	6	0	-	-	-	-	13,025	-
10/31/2025	2025	10	31	1	108	(0.0)	106	127.9	13,517	-	-	-	-	-	-	-	1	15	33	47	55	64	62	57	49	36	17	3	-	-	-	-	-	13,517	-
11/30/2025	2025	11	30	1	110	(0.0)	107	115.0	12,281	-	-	-	-	-	-	-	13	29	43	53	61	58	58	46	33	16	-	-	-	-	-	-	-	12,281	-
12/31/2025	2025	12	31	1	111	(0.0)	108	107.8	11,630	-	-	-	-	-	-	-	7	25	40	49	58	57	53	43	29	15	-	-	-	-	-	-	-	11,630	-
1/31/2026	2026	1	31	1	112	(0.0)	109	111.3	12,142	-	-	-	-	-	-	-	5	21	38	51	56	57	54	51	35	21	4	-	-	-	-	-	-	12,142	-
2/28/2026	2026	2	28	1	113	(0.0)	110	111.1	12,250	-	-	-	-	-	-	-	6	21	42	54	61	63	62	53	41	26	8	-	-	-	-	-	-	12,250	-
3/31/2026	2026	3	31	1	114	(0.0)	111	147.4	16,414	-	-	-	-	-	-	-	0	12	32	53	64	71	71	72	63	48	31	12	-	-	-	-	-	16,414	-
4/30/2026	2026	4	30	1	115	(0.0)	113	146.3	16,456	-	-	-	-	-	-	-	3	17	41	56	67	72	72	68	60	48	31	13	1	-	-	-	-	16,456	-
5/31/2026	2026	5	31	1	117	(0.0)	114	149.0	16,931	-	-	-	-	-	-	-	6	22	40	54	64	70	72	68	58	46	31	13	2	-	-	-	-	16,931	-
6/30/2026	2026	6	30	1	118	(0.0)	115	129.5	14,870	-	-	-	-	-	-	-	6	20	37	51	59	67	61	56	52	42	28	13	3	-	-	-	-	14,870	-
7/31/2026	2026	7	31	1	119	(0.0)	116	138.9	16,110	-	-	-	-	-	-	-	5	19	36	49	60	67	67	64	56	47	32	15	3	-	-	-	-	16,110	-
8/31/2026	2026	8	31	1	120	(0.0)	117	129.9	15,215	-	-	-	-	-	-	-	3	18	34	47	57	65	64	59	54	45	31	13	1	-	-	-	-	15,215	-
9/30/2026	2026	9	30	1	121	(0.0)	118	124.6	14,730	-	-	-	-	-	-	-	2	18	38	54	62	64	64	62	53	42	24	7	0	-	-	-	-	14,730	-
10/31/2026	2026	10	31	1	123	(0.0)	119	127.9	15,270	-	-	-	-	-	-	-	1	17	37	53	62	72	71	64	55	40	19	3	-	-	-	-	-	15,270	-
11/30/2026	2026	11	30	1	124	(0.0)	121	115.0	13,860	-	-	-	-	-	-	-	14	32	49	60	69	65	65	52	37	18	-	-	-	-	-	-	-	13,860	-
12/31/2026	2026	12	31	1	125	(0.1)	122	107.8	13,113	-	-	-	-	-	-	-	8	28	45	55	65	64	60	49	32	17	-	-	-	-	-	-	-	13,113	-
1/31/2027	2027	1	31	1	127	(0.1)	123	111.3	13,706	-	-	-	-	-	-	-	5	23	43	57	63	64	60	58	40	24	4	-	-	-	-	-	-	13,706	-
2/28/2027	2027	2	28	1	128	(0.1)	125	111.1	13,843	-	-	-	-	-	-	-	7	24	48	61	69	71	70	60	47	29	9	-	-	-	-	-	-	13,843	-
3/31/2027	2027	3	31	1	129	(0.1)	126	147.4	18,569	-	-	-	-	-	-	-	0	14	36	60	72	81	81	82	71	54	35	13	-	-	-	-	-	18,569	-
4/30/2027	2027	4	30	1	131	(0.1)	127	146.3	18,637	-	-	-	-	-	-	-	3	20	47	64	76	82	81	77	68	54	35	14	1	-	-	-	-	18,637	-
5/31/2027	2027	5	31	1	132	(0.1)	129	149.0	19,195	-	-	-	-	-	-	-	6	25	46	61	73	79	82	77	66	52	35	15	2	-	-	-	-	19,195	-
6/30/2027	2027	6	30	1	134	(0.1)	130	129.5	16,876	-	-	-	-	-	-	-	7	23	42	58	67	76	70	64	59	48	32	15	3	-	-	-	-	16,876	-
7/31/2027	2027	7	31	1	135	(0.1)	132	138.9	18,302	-	-	-	-	-	-	-	5	22	40	56	68	76	76	73	64	53	36	17	4	-	-	-	-	18,302	-
8/31/2027	2027	8	31	1	137	(0.1)	133	129.9	17,302	-	-	-	-	-	-	-	3	20	38	54	65	73	73	67	62	51	35	15	2	-	-	-	-	17,302	-
9/30/2027	2027	9	30	1	138	(0.1)	135	124.6	16,766	-	-	-	-	-	-	-	3	21	43	61	70	73	73	71	61	48	27	8	0	-	-	-	-	16,766	-
10/31/2027	2027	10	31	1	140	(0.1)	136	127.9	17,398	-	-	-	-	-	-	-	1	19	42	60	71	82	80	73	63	46	22	3	-	-	-	-	-	17,398	-
11/30/2027	2027	11	30	1	141	(0.1)	137	115.0	15,806	-	-	-	-	-	-	-	16	37	56	69	78	75	74	60	42	20	-	-	-	-	-	-	-	15,806	-
12/31/2027	2027	12	31	1	143	(0.1)	139	107.8	14,968	-	-	-	-	-	-	-	9	32	52	63	74	73	68	55	37	19	-	-	-	-	-	-	-	14,968	-
1/31/2028	2028	1	31	4	146	(0.1)	142	111.3	15,847	-	-	-	-	-	-	-	6	27	50	66	73	74	70	67	46	28	5	-	-	-	-	-	-	15,847	-
2/29/2028	2028	2	29	4	150	(0.1)	146	111.1	16,205	-	-	-	-	-	-	-	8	27	54	69	78	80	79	68	53	33	11	-	-	-	-	-	-	16,205	-
3/31/2028	2028	3	31	4	153	(0.1)	149	147.4	21,999	-	-	-	-	-	-	-	0	17	42	71	86	96	95	97	84	65	42	16	-	-	-	-	-	21,999	-
4/30/2028	2028	4	30	4	157	(0.1)	153	146.3	22,336	-	-	-	-	-	-	-	4	23	56	77	91	98	97	92	82	65	41	17	1	-	-	-	-	22,336	-
5/31/2028	2028	5	31	4	160	(0.1)	156	149.0	23,263	-	-	-	-	-	-	-	8	30	55	74	88	96	99	94	80	63	42	18	3	-	-	-	-	23,263	-
6/30/2028	2028	6	30	4	164	(0.1)	160	129.5	20,675	-	-	-	-	-	-	-	8	28	52	71	82	93	85	78	72	59	39	19	4	-	-	-	-	20,675	-
7/31/2028	2028	7	31	4	168	(0.1)	163	138.9	22,657	-	-	-	-	-	-	-	6	27	50	70	85	94	94	90	79	66	45	21	5	-	-	-	-	22,657	-
8/31/2028	2028	8	31	4	171	(0.1)	167	129.9	21,636	-	-	-	-	-	-	-	4	26	48	67	82	92	91	84	77	63	44	18	2	-	-	-	-	21,636	-
9/30/2028	2028	9	30	4	175	(0.1)	170	124.6	21,173	-	-	-	-	-	-	-	3	26	55	77	88	92	92	90	77	60	35	10	0	-	-	-	-	21,173	-
10/31/2028	2028	10	31	4	178	(0.1)	173	127.9	22,181	-	-	-	-	-	-	-	1	24	54	76	90	104	102	93	80	58	28	4	-	-	-	-	-	22,181	-
11/30/2028	2028	11	30	4	182	(0.1)	177	115.0	20,337	-	-	-	-	-	-	-	21	48	72	88	101	96	95	77	54	26	-	-	-	-	-	-	-	20,337	-
12/31/2028	2028	12	31	4	185	(0.1)	180	107.8	19,431	-	-	-	-	-	-	-	12	42	67	82	97	95	88	72	48	25	-	-	-	-	-	-	-	19,431	-
1/31/2029	2029	1	31	4	189	(0.1)	184	111.3	20,471	-	-	-	-	-	-	-	8	35	64	85	94	95	90	86	60	36	7	-	-	-	-	-	-	20,471	-
2/28/2029	2029	2	28	4	192	(0.1)	187	111.1	20,835	-	-	-	-	-	-	-	10	36	72	91	103	107	105	90	70	44	14	-	-	-	-	-	-	20,835	-
3/31/2029	2029	3	31	4	196	(0.1)	191	147.4	28,157	-	-	-	-	-	-	-	0	21	54	90	110	122	122	124	108	83	53	20	-	-	-	-	-	28,157	-
4/30/2029	2029	4	30	4	200	(0.1)	195	146.3	28,464	-	-	-	-	-	-	-	5	30	71	98	116	125	124	117	104	82	53	22	1	-	-	-	-	28,464	-
5/31/2029	2029	5	31	4	203	(0.1)	198	149.0	29,522	-	-	-	-	-	-	-	10	38	70	94	112	122	126	119	101	80	54	23	4	-	-	-	-	29,522	-
6/30/2029	2029	6	30	4	207	(0.1)	202	129.5	26,132	-	-	-	-	-	-	-	10	36	66	90	104	117	108	98	91	74	49	24	5	-	-	-	-	26,132	-
7/31/2029	2029	7	31	4	211	(0.1)	205	138.9	28,528	-	-	-	-	-	-	-	8	34	63	88	107	119	118	113	99	83	56	26	6	-	-	-	-	28,528	-
8/31/2029	2029	8	31	4	214	(0.1)	209	129.9	27,142	-	-	-	-	-	-	-	5	32	60	84	102	115	115	105	97	79	55	23	3	-	-	-	-	27,142	-
9/30/2029	2029	9	30	4	218	(0.1)	212	124.6	26,467	-	-	-	-	-	-	-	4	33	69	97	111	115	115	112	96	76	43	13	0	-	-	-	-	26,467	-
10/31/2029	2029	10	31	4	222	(0.1)	216	127.9	27,631	-	-	-	-	-	-	-	1	30	67	95	112	130	128	116	99	73	34	5	-	-	-	-	-	27,631	-

11/30/2029	2029	11	30	4	225	(0.1)	220	115.0	25,250	-	-	-	-	-	-	-	26	59	89	110	125	119	118	95	67	32	-	-	-	-	-	-	-	25,250	-
12/31/2029	2029	12	31	4	229	(0.1)	223	107.8	24,049	-	-	-	-	-	-	-	14	52	83	102	120	117	109	89	59	31	-	-	-	-	-	-	-	24,049	-
1/31/2030	2030	1	31	6	234	(0.1)	229	111.3	25,450	-	-	-	-	-	-	-	10	43	80	106	117	119	112	107	74	45	8	-	-	-	-	-	-	25,450	-
2/28/2030	2030	2	28	6	240	(0.1)	234	111.1	26,013	-	-	-	-	-	-	-	13	45	90	114	129	133	131	113	88	55	18	-	-	-	-	-	-	26,013	-
3/31/2030	2030	3	31	6	246	(0.1)	240	147.4	35,299	-	-	-	-	-	-	-	1	27	68	113	138	153	153	156	135	104	67	25	-	-	-	-	-	35,299	-
4/30/2030	2030	4	30	6	251	(0.1)	245	146.3	35,825	-	-	-	-	-	-	-	7	37	90	123	147	157	156	147	131	103	67	28	2	-	-	-	-	35,825	-
5/31/2030	2030	5	31	6	257	(0.1)	250	149.0	37,296	-	-	-	-	-	-	-	12	48	88	118	141	154	159	150	128	101	68	29	5	-	-	-	-	37,296	-
6/30/2030	2030	6	30	6	262	(0.1)	256	129.5	33,134	-	-	-	-	-	-	-	13	45	83	114	132	148	137	125	115	94	62	30	6	-	-	-	-	33,134	-
7/31/2030	2030	7	31	6	268	(0.1)	261	138.9	36,298	-	-	-	-	-	-	-	10	43	80	112	136	151	150	144	126	106	72	34	7	-	-	-	-	36,298	-
8/31/2030	2030	8	31	6	273	(0.1)	267	129.9	34,650	-	-	-	-	-	-	-	6	41	77	107	131	147	146	134	124	101	70	30	3	-	-	-	-	34,650	-
9/30/2030	2030	9	30	6	279	(0.1)	272	124.6	33,897	-	-	-	-	-	-	-	5	42	88	124	142	147	147	144	123	97	56	17	0	-	-	-	-	33,897	-
10/31/2030	2030	10	31	6	284	(0.1)	278	127.9	35,499	-	-	-	-	-	-	-	2	39	87	122	144	167	164	149	128	93	44	7	-	-	-	-	-	35,499	-
11/30/2030	2030	11	30	6	290	(0.1)	283	115.0	32,538	-	-	-	-	-	-	-	33	76	115	142	162	154	152	123	87	42	-	-	-	-	-	-	-	32,538	-
12/31/2030	2030	12	31	6	295	(0.1)	288	107.8	31,080	-	-	-	-	-	-	-	19	67	107	131	155	152	141	115	77	40	-	-	-	-	-	-	-	31,080	-
1/31/2031	2031	1	31	4	300	(0.1)	292	111.3	32,556	-	-	-	-	-	-	-	12	55	102	135	150	152	143	137	95	58	10	-	-	-	-	-	-	32,556	-
2/28/2031	2031	2	28	4	304	(0.1)	296	111.1	32,951	-	-	-	-	-	-	-	16	57	114	144	164	169	167	143	111	70	23	-	-	-	-	-	-	32,951	-
3/31/2031	2031	3	31	4	308	(0.1)	301	147.4	44,293	-	-	-	-	-	-	-	1	33	85	142	173	192	192	195	169	130	84	32	-	-	-	-	-	44,293	-
4/30/2031	2031	4	30	4	312	(0.1)	305	146.3	44,545	-	-	-	-	-	-	-	8	47	111	153	182	196	194	183	163	129	83	35	2	-	-	-	-	44,545	-
5/31/2031	2031	5	31	4	316	(0.1)	309	149.0	45,968	-	-	-	-	-	-	-	15	60	109	146	174	190	196	185	157	125	84	36	6	-	-	-	-	45,968	-
6/30/2031	2031	6	30	4	320	(0.1)	313	129.5	40,493	-	-	-	-	-	-	-	16	55	102	139	161	181	167	153	141	115	76	36	7	-	-	-	-	40,493	-
7/31/2031	2031	7	31	4	325	(0.1)	317	138.9	43,997	-	-	-	-	-	-	-	12	52	97	135	164	183	182	175	153	128	87	41	9	-	-	-	-	43,997	-
8/31/2031	2031	8	31	4	329	(0.1)	321	129.9	41,668	-	-	-	-	-	-	-	7	49	92	129	157	177	176	161	149	122	84	36	4	-	-	-	-	41,668	-
9/30/2031	2031	9	30	4	333	(0.1)	325	124.6	40,451	-	-	-	-	-	-	-	6	50	105	148	169	176	176	172	146	116	66	20	0	-	-	-	-	40,451	-
10/31/2031	2031	10	31	4	337	(0.1)	329	127.9	42,050	-	-	-	-	-	-	-	2	46	103	145	171	198	194	177	151	111	52	8	-	-	-	-	-	42,050	-
11/30/2031	2031	11	30	4	341	(0.1)	333	115.0	38,266	-	-	-	-	-	-	-	39	89	135	167	190	181	179	144	102	49	-	-	-	-	-	-	-	38,266	-
12/31/2031	2031	12	31	4	345	(0.1)	337	107.8	36,297	-	-	-	-	-	-	-	22	78	125	153	181	177	165	134	90	46	-	-	-	-	-	-	-	36,297	-
1/31/2032	2032	1	31	3	348	(0.1)	339	111.3	37,775	-	-	-	-	-	-	-	14	64	118	157	174	176	166	159	110	67	12	-	-	-	-	-	-	37,775	-
2/29/2032	2032	2	29	3	351	(0.1)	342	111.1	37,992	-	-	-	-	-	-	-	18	63	127	161	182	188	185	159	124	78	25	-	-	-	-	-	-	37,992	-
3/31/2032	2032	3	31	3	353	(0.1)	344	147.4	50,752	-	-	-	-	-	-	-	1	38	98	163	198	220	220	224	194	149	96	37	-	-	-	-	-	50,752	-
4/30/2032	2032	4	30	3	356	(0.1)	347	146.3	50,731	-	-	-	-	-	-	-	9	53	127	174	207	223	221	208	185	147	94	39	2	-	-	-	-	50,731	-
5/31/2032	2032	5	31	3	359	(0.1)	349	149.0	52,041	-	-	-	-	-	-	-	17	67	123	165	197	215	222	210	178	141	95	41	6	-	-	-	-	52,041	-
6/30/2032	2032	6	30	3	361	(0.1)	352	129.5	45,575	-	-	-	-	-	-	-	18	62	114	157	182	204	188	172	158	130	85	41	8	-	-	-	-	45,575	-
7/31/2032	2032	7	31	3	364	(0.1)	354	138.9	49,236	-	-	-	-	-	-	-	14	59	109	151	184	205	204	196	171	144	97	46	10	-	-	-	-	49,236	-
8/31/2032	2032	8	31	3	367	(0.1)	357	129.9	46,369	-	-	-	-	-	-	-	8	55	103	144	175	197	196	179	166	136	94	40	5	-	-	-	-	46,369	-
9/30/2032	2032	9	30	3	369	(0.1)	359	124.6	44,768	-	-	-	-	-	-	-	7	55	116	164	187	194	194	190	162	128	73	22	0	-	-	-	-	44,768	-
10/31/2032	2032	10	31	3	372	(0.1)	362	127.9	46,287	-	-	-	-	-	-	-	2	51	113	160	188	217	214	194	167	122	57	9	-	-	-	-	-	46,287	-
11/30/2032	2032	11	30	3	375	(0.2)	364	115.0	41,900	-	-	-	-	-	-	-	43	98	148	182	208	198	196	158	112	54	-	-	-	-	-	-	-	41,900	-
12/31/2032	2032	12	31	3	377	(0.2)	367	107.8	39,539	-	-	-	-	-	-	-	24	85	136	167	197	193	180	146	98	50	-	-	-	-	-	-	-	39,539	-
1/31/2033	2033	1	31	-	377	(0.2)	367	111.3	40,827	-	-	-	-	-	-	-	16	69	128	170	188	190	180	172	119	72	13	-	-	-	-	-	-	40,827	-
2/28/2033	2033	2	28	-	377	(0.2)	367	111.1	40,742	-	-	-	-	-	-	-	20	70	141	178	202	209	206	177	138	87	28	-	-	-	-	-	-	40,742	-
3/31/2033	2033	3	31	-	377	(0.2)	366	147.4	54,007	-	-	-	-	-	-	-	1	41	104	173	210	235	234	238	206	159	102	39	-	-	-	-	-	54,007	-
4/30/2033	2033	4	30	-	377	(0.2)	366	146.3	53,572	-	-	-	-	-	-	-	10	56	134	184	219	235	234	220	196	155	100	41	2	-	-	-	-	53,572	-
5/31/2033	2033	5	31	-	377	(0.2)	366	149.0	54,538	-	-	-	-	-	-	-	18	71	129	173	207	225	233	220	187	148	100	43	7	-	-	-	-	54,538	-
6/30/2033	2033	6	30	-	377	(0.2)	366	129.5	47,402	-	-	-	-	-	-	-	19	65	119	163	189	212	195	179	165	135	89	43	9	-	-	-	-	47,402	-
7/31/2033	2033	7	31	-	377	(0.2)	366	138.9	50,827	-	-	-	-	-	-	-	14	60	112	156	190	211	210	202	177	148	100	47	10	-	-	-	-	50,827	-
8/31/2033	2033	8	31	-	377	(0.2)	366	129.9	47,511	-	-	-	-	-	-	-	9	56	105	147	179	201	201	184	170	139	96	41	5	-	-	-	-	47,511	-
9/30/2033	2033	9	30	-	377	(0.2)	366	124.6	45,532	-	-	-	-	-	-	-	7	56	118	166	190	198	198	193	165	130	75	22	0	-	-	-	-	45,532	-
10/31/2033	2033	10	31	-	377	(0.2)	365	127.9	46,732	-	-	-	-	-	-	-	2	51	114	161	190	220	216	196	168	123	58	9	-	-	-	-	-	46,732	-
11/30/2033	2033	11	30	-	377	(0.2)	365	115.0	41,995	-	-	-	-	-	-	-	43	98	148	183	209	198	197	158	112	54	-	-	-	-	-	-	-	41,995	-
12/31/2033	2033	12	31	-	377	(0.2)	365	107.8	39,342	-	-	-	-	-	-	-	24	84	135	166	196	192	179	146	97	50	-	-	-	-	-	-	-	39,342	-
1/31/2034	2034	1	31	-	377	(0.2)	365	111.3	40,624	-	-	-	-	-	-	-	16	69	127	169	187	189	179	171	118	72	13	-	-	-	-	-	-	40,624	-
2/28/2034	2034	2	28	-	377	(0.2)	365	111.1	40,539	-	-	-	-	-	-	-	20	70	140	178	201	208	205	176	137	86	28	-	-	-	-	-	-	40,539	-
3/31/2034	2034	3	31	-	377	(0.2)	365	147.4	53,738	-	-	-	-	-	-	-	1	40	104	172	209	233	233	237	205	158	102	39	-	-	-	-	-	53,738	-
4/30/2034	2034	4	30	-	377	(0.2)	364	146.3	53,305	-	-	-	-	-	-	-	10	56	133	183	218	234	233	219	195	154	99	41	2	-	-	-	-	53,305	-
5/31/2034	2034	5	31	-	377	(0.2)	364	149.0	54,266	-	-	-	-	-	-	-	18	70	129	172	206	224	232	219	186	147	99	43	7	-	-	-	-	54,266	-
6/30/2034	2034	6	30	-	377	(0.2)	364	129.5	47,166	-	-	-	-	-	-	-	18	64	118	162	188	211	194	178	164	134	88	42	9	-	-	-	-	47,166	-
7/31/2034	2034	7	31	-	377	(0.2)	364	138.9	50,574	-	-	-	-	-	-	-	14	60	112	155	189	210	209	201	176	147	100	47	10	-	-	-	-	50,574	-
8/31/2034	2034	8	31	-	377	(0.2)	364	129.9	47,275	-	-	-	-	-	-	-	8	56	105	147	178	200	200	183	169	138	95	40	5	-	-	-	-	47,275	-
9/30/2034	2034	9	30	-	377	(0.2)	364	124.6	45,306	-	-	-	-	-	-	-	7	56	117	166	189	197	197	192	164	129	74	22	0	-	-	-	-	45,306	-
10/31/2034	2034	10	31	-	377	(0.2)	364	127.9	46,499	-	-	-	-	-	-	-	2	51	113	160	189	218	215	195	167	122	58	9	-	-	-	-	-	46,499	-
11/30/2034	2034	11	30	-	377	(0.2)	363	115.0	41,786	-	-	-	-	-	-	-	43	98	147	182	207	197	196	158	112	54	-	-	-	-	-	-	-	41,786	-
12/31/2034	2034	12	31	-	377	(0.2)	363	107.8	39,146	-	-	-	-	-	-	-	24	84	135	165	195	191	178	145	97	50	-	-	-	-	-	-	-	39,146	-
1/31/2035	2035	1	31	-	377	(0.2)	363	111.3	40,421	-	-	-	-	-	-	-	16	69	127	168	186	188	178	170	118	72	13	-	-	-	-	-	-	40,421	-
2/28/2035	2035	2	28	-	377	(0.2)	363	111.1	40,337	-	-	-	-	-	-	-	20	69	140	177	200	206	204	175	136	86	28	-	-	-	-	-	-	40,337	-
3/31/2035	2035	3	31	-	377	(0.2)	363	147.4	53,471	-	-	-	-	-	-	-	1	40	103	172	208	232	232	236	204	157	101	39	-	-	-	-	-	53,471	-
4/30/2035	2035	4	30	-	377	(0.2)	363	146.3	53,040	-	-	-	-	-	-	-	10	55	133	182	217	233	231	218	194	153	99	41	2	-	-	-	-	53,040	-
5/31/2035	2035	5	31	-	377	(0.2)	363	149.0	53,996	-	-	-	-	-	-	-	18	70	128	171	205	223	230	217	185	147	99	43	7	-	-	-	-	53,996	-
6/30/2035	2035	6	30	-	377	(0.2)	362	129.5	46,931	-	-	-	-	-	-	-	18	64	118	161	187	210	194	177	163	134	88	42	9	-	-	-	-	46,931	-
7/31/2035	2035	7	31	-	377	(0.2)	362	138.9	50,322	-	-	-	-	-	-	-	14	60	111	155	188	209	208	200	175	147	99	47	10	-	-	-	-	50,322	-
8/31/2035	2035	8	31	-	377	(0.2)	362	129.9	47,039	-	-	-	-	-	-	-	8	55	104	146	178	199	199	182	168	138	95	40	5	-	-	-	-	47,039	-
9/30/2035	2035	9	30	-	377	(0.2)	362	124.6	45,080	-	-	-	-	-	-	-	7	55	117	165	188	196	196	191	163	129	74	22	0	-	-	-	-	45,080	-
10/31/2035	2035	10	31	-	377	(0.2)	362	127.9	46,268	-	-	-	-	-	-	-	2	51	113	160	188	217	214	194	167	122	57	9	-	-	-	-	-	46,268	-
11/30/2035	2035	11	30	-	377	(0.2)	362	115.0	41,578	-	-	-	-	-	-	-	42	97	147	181	206	196	195	157	111	54	-	-	-	-	-	-	-	41,578	-
12/31/2035	2035	12	31	-	377	(0.2)	361	107.8	38,951	-	-	-	-	-	-	-	23	83	134	164	194	190	177	144	96	50	-	-	-	-	-	-	-	38,951	-
1/31/2036	2036	1	31	-	377	(0.2)	361	111.3	40,220	-	-	-	-	-	-	-	15	68	126	167	185	187	177	169	117	71	13	-	-	-	-	-	-	40,220	-
2/29/2036	2036	2	29	-	377	(0.2)	361	111.1	40,137	-	-	-	-	-	-	-	19	67	134	170	192	198	196	168	131	82	27	-	-	-	-	-	-	40,137	-
3/31/2036	2036	3	31	-	377	(0.2)	361	147.4	53,205	-	-	-	-	-	-	-	1	40	103	171	207	231	231	235	203	156	101	38	-	-	-	-	-	53,205	-
4/30/2036	2036	4	30	-	377	(0.2)	361	146.3	52,776	-	-	-	-	-	-	-	10	55	132	181	216	232	230	217	193	152	98	41	2	-	-	-	-	52,776	-
5/31/2036	2036	5	31	-	377	(0.2)	361	149.0	53,728	-	-	-	-	-	-	-	18	70	127	170	204	222	229	216	184	146	98	42	7	-	-	-	-	53,728	-
6/30/2036	2036	6	30	-	377	(0.1)	361	129.5	46,698	-	-	-	-	-	-	-	18	64	117	160	186	209	193	176	162	133	87	42	9	-	-	-	-	46,698	-
7/31/2036	2036	7	31	-	377	(0.1)	360	138.9	50,072	-	-	-	-	-	-	-	14	60	111	154	187	208	207	199	174	146	99	46	10	-	-	-	-	50,072	-
8/31/2036	2036	8	31	-	377	(0.1)	360	129.9	46,805	-	-	-	-	-	-	-	8	55	104	145	177	198	198	181	167	137	94	40	5	-	-	-	-	46,805	-
9/30/2036	2036	9	30	-	377	(0.1)	360	124.6	44,856	-	-	-	-	-	-	-	7	55	116	164	187	195	195	190	162	128	73	22	0	-	-	-	-	44,856	-
10/31/2036	2036	10	31	-	377	(0.1)	360	127.9	46,038	-	-	-	-	-	-	-	2	50	112	159	187	216	213	193	166	121	57	9	-	-	-	-	-	46,038	-
11/30/2036	2036	11	30	-	377	(0.1)	360	115.0	41,371	-	-	-	-	-	-	-	42	97	146	180	205	195	194	156	111	53	-	-	-	-	-	-	-	41,371	-
12/31/2036	2036	12	31	-	377	(0.1)	360	107.8	38,757	-	-	-	-	-	-	-	23	83	133	164	193	189	176	144	96	49	-	-	-	-	-	-	-	38,757	-
1/31/2037	2037	1	31	-	377	(0.1)	360	111.3	40,020	-	-	-	-	-	-	-	15	68	125	167	184	186	176	168	117	71	13	-	-	-	-	-	-	40,020	-
2/28/2037	2037	2	28	-	377	(0.1)	359	111.1	39,937	-	-	-	-	-	-	-	19	69	138	175	198	204	202	173	135	85	27	-	-	-	-	-	-	39,937	-
3/31/2037	2037	3	31	-	377	(0.1)	359	147.4	52,940	-	-	-	-	-	-	-	1	40	102	170	206	230	230	233	202	155	100	38	-	-	-	-	-	52,940	-
4/30/2037	2037	4	30	-	377	(0.1)	359	146.3	52,513	-	-	-	-	-	-	-	10	55	131	180	215	231	229	216	192	152	98	41	2	-	-	-	-	52,513	-
5/31/2037	2037	5	31	-	377	(0.1)	359	149.0	53,460	-	-	-	-	-	-	-	18	69	127	170	203	221	228	215	183	145	98	42	7	-	-	-	-	53,460	-
6/30/2037	2037	6	30	-	377	(0.1)	359	129.5	46,465	-	-	-	-	-	-	-	18	63	117	160	185	208	192	175	161	132	87	42	8	-	-	-	-	46,465	-
7/31/2037	2037	7	31	-	377	(0.1)	359	138.9	49,822	-	-	-	-	-	-	-	14	59	110	153	186	207	206	198	173	145	98	46	10	-	-	-	-	49,822	-
8/31/2037	2037	8	31	-	377	(0.1)	358	129.9	46,572	-	-	-	-	-	-	-	8	55	103	144	176	197	197	180	167	136	94	40	5	-	-	-	-	46,572	-
9/30/2037	2037	9	30	-	377	(0.1)	358	124.6	44,632	-	-	-	-	-	-	-	7	55	116	163	187	194	194	189	162	127	73	22	0	-	-	-	-	44,632	-
10/31/2037	2037	10	31	-	377	(0.1)	358	127.9	45,808	-	-	-	-	-	-	-	2	50	112	158	186	215	212	192	165	120	57	9	-	-	-	-	-	45,808	-
11/30/2037	2037	11	30	-	377	(0.1)	358	115.0	41,165	-	-	-	-	-	-	-	42	96	145	179	204	194	193	155	110	53	-	-	-	-	-	-	-	41,165	-
12/31/2037	2037	12	31	-	377	(0.1)	358	107.8	38,564	-	-	-	-	-	-	-	23	83	133	163	192	188	176	143	95	49	-	-	-	-	-	-	-	38,564	-
1/31/2038	2038	1	31	-	377	(0.1)	358	111.3	39,821	-	-	-	-	-	-	-	15	68	125	166	183	185	175	168	116	70	13	-	-	-	-	-	-	39,821	-
2/28/2038	2038	2	28	-	377	(0.1)	358	111.1	39,738	-	-	-	-	-	-	-	19	68	137	174	197	203	201	172	134	85	27	-	-	-	-	-	-	39,738	-
3/31/2038	2038	3	31	-	377	(0.1)	357	147.4	52,676	-	-	-	-	-	-	-	1	40	102	169	205	229	229	232	201	155	100	38	-	-	-	-	-	52,676	-
4/30/2038	2038	4	30	-	377	(0.1)	357	146.3	52,252	-	-	-	-	-	-	-	10	55	131	179	214	230	228	215	191	151	97	40	2	-	-	-	-	52,252	-
5/31/2038	2038	5	31	-	377	(0.1)	357	149.0	53,194	-	-	-	-	-	-	-	18	69	126	169	202	219	227	214	182	144	97	42	7	-	-	-	-	53,194	-
6/30/2038	2038	6	30	-	377	(0.1)	357	129.5	46,234	-	-	-	-	-	-	-	18	63	116	159	184	207	191	174	161	132	87	42	8	-	-	-	-	46,234	-
7/31/2038	2038	7	31	-	377	(0.1)	357	138.9	49,574	-	-	-	-	-	-	-	14	59	110	152	185	206	205	197	173	144	98	46	10	-	-	-	-	49,574	-
8/31/2038	2038	8	31	-	377	(0.1)	357	129.9	46,341	-	-	-	-	-	-	-	8	55	103	144	175	196	196	179	166	136	93	40	5	-	-	-	-	46,341	-
9/30/2038	2038	9	30	-	377	(0.1)	357	124.6	44,410	-	-	-	-	-	-	-	7	55	115	162	186	193	193	188	161	127	73	22	0	-	-	-	-	44,410	-
10/31/2038	2038	10	31	-	377	(0.1)	356	127.9	45,580	-	-	-	-	-	-	-	2	50	111	157	185	214	210	191	164	120	57	8	-	-	-	-	-	45,580	-
11/30/2038	2038	11	30	-	377	(0.1)	356	115.0	40,960	-	-	-	-	-	-	-	42	96	144	178	203	193	192	154	109	53	-	-	-	-	-	-	-	40,960	-

12/31/2038	2038	12	31	-	377	(0.1)	356	107.8	38,373	-	-	-	-	-	-	-	23	82	132	162	191	187	175	142	95	49	-	-	-	-	-	-	-	38,373	-
1/31/2039	2039	1	31	-	377	(0.1)	356	111.3	39,623	-	-	-	-	-	-	-	15	67	124	165	182	185	175	167	116	70	13	-	-	-	-	-	-	39,623	-
2/28/2039	2039	2	28	-	377	(0.1)	356	111.1	39,540	-	-	-	-	-	-	-	19	68	137	173	196	202	200	171	134	84	27	-	-	-	-	-	-	39,540	-
3/31/2039	2039	3	31	-	377	(0.1)	356	147.4	52,414	-	-	-	-	-	-	-	1	39	101	168	204	228	228	231	200	154	99	38	-	-	-	-	-	52,414	-
4/30/2039	2039	4	30	-	377	(0.1)	355	146.3	51,991	-	-	-	-	-	-	-	10	54	130	178	213	228	227	214	190	150	97	40	2	-	-	-	-	51,991	-
5/31/2039	2039	5	31	-	377	(0.1)	355	149.0	52,929	-	-	-	-	-	-	-	18	69	125	168	201	218	226	213	181	144	97	42	6	-	-	-	-	52,929	-
6/30/2039	2039	6	30	-	377	(0.1)	355	129.5	46,004	-	-	-	-	-	-	-	18	63	115	158	183	206	190	173	160	131	86	41	8	-	-	-	-	46,004	-
7/31/2039	2039	7	31	-	377	(0.1)	355	138.9	49,328	-	-	-	-	-	-	-	14	59	109	152	184	205	204	196	172	144	97	46	10	-	-	-	-	49,328	-
8/31/2039	2039	8	31	-	377	(0.1)	355	129.9	46,110	-	-	-	-	-	-	-	8	54	102	143	174	195	195	178	165	135	93	39	5	-	-	-	-	46,110	-
9/30/2039	2039	9	30	-	377	(0.1)	355	124.6	44,189	-	-	-	-	-	-	-	7	54	114	161	185	192	192	187	160	126	72	22	0	-	-	-	-	44,189	-
10/31/2039	2039	10	31	-	377	(0.1)	355	127.9	45,354	-	-	-	-	-	-	-	2	50	111	156	184	213	209	190	163	119	56	8	-	-	-	-	-	45,354	-
11/30/2039	2039	11	30	-	377	(0.1)	354	115.0	40,756	-	-	-	-	-	-	-	42	95	144	177	202	192	191	154	109	52	-	-	-	-	-	-	-	40,756	-
12/31/2039	2039	12	31	-	377	(0.1)	354	107.8	38,182	-	-	-	-	-	-	-	23	82	131	161	190	186	174	141	94	49	-	-	-	-	-	-	-	38,182	-
1/31/2040	2040	1	31	-	377	(0.1)	354	111.3	39,425	-	-	-	-	-	-	-	15	67	123	164	182	184	174	166	115	70	13	-	-	-	-	-	-	39,425	-
2/29/2040	2040	2	29	-	377	(0.1)	354	111.1	39,344	-	-	-	-	-	-	-	19	65	131	166	189	194	192	165	128	81	26	-	-	-	-	-	-	39,344	-
3/31/2040	2040	3	31	-	377	(0.1)	354	147.4	52,153	-	-	-	-	-	-	-	1	39	101	167	203	226	226	230	199	153	99	38	-	-	-	-	-	52,153	-
4/30/2040	2040	4	30	-	377	(0.1)	354	146.3	51,733	-	-	-	-	-	-	-	10	54	129	178	212	227	226	213	189	149	96	40	2	-	-	-	-	51,733	-
5/31/2040	2040	5	31	-	377	(0.1)	354	149.0	52,666	-	-	-	-	-	-	-	17	68	125	167	200	217	225	212	180	143	96	42	6	-	-	-	-	52,666	-
6/30/2040	2040	6	30	-	377	(0.1)	353	129.5	45,775	-	-	-	-	-	-	-	18	62	115	157	183	205	189	172	159	130	86	41	8	-	-	-	-	45,775	-
7/31/2040	2040	7	31	-	377	(0.1)	353	138.9	49,082	-	-	-	-	-	-	-	14	58	108	151	183	204	203	195	171	143	97	45	10	-	-	-	-	49,082	-
8/31/2040	2040	8	31	-	377	(0.1)	353	129.9	45,880	-	-	-	-	-	-	-	8	54	102	142	173	195	194	177	164	134	93	39	5	-	-	-	-	45,880	-
9/30/2040	2040	9	30	-	377	(0.1)	353	124.6	43,969	-	-	-	-	-	-	-	7	54	114	161	184	191	191	187	159	126	72	22	0	-	-	-	-	43,969	-
10/31/2040	2040	10	31	-	377	(0.1)	353	127.9	45,128	-	-	-	-	-	-	-	2	49	110	156	183	212	208	189	162	119	56	8	-	-	-	-	-	45,128	-
11/30/2040	2040	11	30	-	377	(0.1)	353	115.0	40,553	-	-	-	-	-	-	-	41	95	143	176	201	191	190	153	108	52	-	-	-	-	-	-	-	40,553	-
12/31/2040	2040	12	31	-	377	(0.1)	353	107.8	37,992	-	-	-	-	-	-	-	23	81	131	160	189	185	173	141	94	48	-	-	-	-	-	-	-	37,992	-
1/31/2041	2041	1	31	-	377	(0.1)	352	111.3	39,229	-	-	-	-	-	-	-	15	67	123	163	181	183	173	165	114	69	13	-	-	-	-	-	-	39,229	-
2/28/2041	2041	2	28	-	377	(0.1)	352	111.1	39,148	-	-	-	-	-	-	-	19	67	135	171	194	200	198	170	132	83	27	-	-	-	-	-	-	39,148	-
3/31/2041	2041	3	31	-	377	(0.1)	352	147.4	51,894	-	-	-	-	-	-	-	1	39	100	167	202	225	225	229	198	152	98	37	-	-	-	-	-	51,894	-
4/30/2041	2041	4	30	-	377	(0.1)	352	146.3	51,475	-	-	-	-	-	-	-	9	54	129	177	211	226	225	212	188	149	96	40	2	-	-	-	-	51,475	-
5/31/2041	2041	5	31	-	377	(0.1)	352	149.0	52,404	-	-	-	-	-	-	-	17	68	124	166	199	216	224	211	180	142	96	41	6	-	-	-	-	52,404	-
6/30/2041	2041	6	30	-	377	(0.1)	352	129.5	45,547	-	-	-	-	-	-	-	18	62	114	156	182	204	188	172	158	130	85	41	8	-	-	-	-	45,547	-
7/31/2041	2041	7	31	-	377	(0.1)	352	138.9	48,838	-	-	-	-	-	-	-	14	58	108	150	182	203	202	194	170	142	96	45	10	-	-	-	-	48,838	-
8/31/2041	2041	8	31	-	377	(0.1)	351	129.9	45,652	-	-	-	-	-	-	-	8	54	101	142	172	194	193	177	163	134	92	39	4	-	-	-	-	45,652	-
9/30/2041	2041	9	30	-	377	(0.1)	351	124.6	43,751	-	-	-	-	-	-	-	7	54	113	160	183	190	190	186	158	125	72	22	0	-	-	-	-	43,751	-
10/31/2041	2041	10	31	-	377	(0.1)	351	127.9	44,903	-	-	-	-	-	-	-	2	49	110	155	182	211	207	189	162	118	56	8	-	-	-	-	-	44,903	-
11/30/2041	2041	11	30	-	377	(0.1)	351	115.0	40,352	-	-	-	-	-	-	-	41	94	142	176	200	191	189	152	108	52	-	-	-	-	-	-	-	40,352	-
12/31/2041	2041	12	31	-	377	(0.1)	351	107.8	37,802	-	-	-	-	-	-	-	23	81	130	160	188	184	172	140	93	48	-	-	-	-	-	-	-	37,802	-
1/31/2042	2042	1	31	-	377	(0.1)	351	111.3	39,034	-	-	-	-	-	-	-	15	66	122	162	180	182	172	164	114	69	13	-	-	-	-	-	-	39,034	-
2/28/2042	2042	2	28	-	377	(0.1)	350	111.1	38,953	-	-	-	-	-	-	-	19	67	135	171	193	199	197	169	132	83	27	-	-	-	-	-	-	38,953	-
3/31/2042	2042	3	31	-	377	(0.1)	350	147.4	51,635	-	-	-	-	-	-	-	1	39	100	166	201	224	224	228	197	152	98	37	-	-	-	-	-	51,635	-
4/30/2042	2042	4	30	-	377	(0.1)	350	146.3	51,219	-	-	-	-	-	-	-	9	54	128	176	209	225	224	210	187	148	95	40	2	-	-	-	-	51,219	-
5/31/2042	2042	5	31	-	377	(0.1)	350	149.0	52,143	-	-	-	-	-	-	-	17	68	124	165	198	215	222	210	179	142	95	41	6	-	-	-	-	52,143	-
6/30/2042	2042	6	30	-	377	(0.1)	350	129.5	45,320	-	-	-	-	-	-	-	18	62	114	156	181	203	187	171	157	129	85	41	8	-	-	-	-	45,320	-
7/31/2042	2042	7	31	-	377	(0.1)	350	138.9	48,595	-	-	-	-	-	-	-	14	58	107	149	182	202	201	193	169	142	96	45	10	-	-	-	-	48,595	-
8/31/2042	2042	8	31	-	377	(0.1)	350	129.9	45,425	-	-	-	-	-	-	-	8	54	101	141	171	193	192	176	162	133	92	39	4	-	-	-	-	45,425	-
9/30/2042	2042	9	30	-	377	(0.1)	349	124.6	43,533	-	-	-	-	-	-	-	7	54	113	159	182	189	189	185	158	124	71	21	0	-	-	-	-	43,533	-
10/31/2042	2042	10	31	-	377	(0.1)	349	127.9	44,680	-	-	-	-	-	-	-	2	49	109	154	181	210	206	188	161	117	56	8	-	-	-	-	-	44,680	-
11/30/2042	2042	11	30	-	377	(0.1)	349	115.0	40,151	-	-	-	-	-	-	-	41	94	142	175	199	190	188	151	107	52	-	-	-	-	-	-	-	40,151	-
12/31/2042	2042	12	31	-	377	(0.1)	349	107.8	37,614	-	-	-	-	-	-	-	23	81	129	159	187	183	171	139	93	48	-	-	-	-	-	-	-	37,614	-
1/31/2043	2043	1	31	-	377	(0.1)	349	111.3	38,840	-	-	-	-	-	-	-	15	66	122	162	179	181	171	163	113	69	12	-	-	-	-	-	-	38,840	-
2/28/2043	2043	2	28	-	377	(0.1)	349	111.1	38,759	-	-	-	-	-	-	-	19	67	134	170	192	198	196	168	131	82	27	-	-	-	-	-	-	38,759	-
3/31/2043	2043	3	31	-	377	(0.1)	349	147.4	51,378	-	-	-	-	-	-	-	1	39	99	165	200	223	223	226	196	151	97	37	-	-	-	-	-	51,378	-
4/30/2043	2043	4	30	-	377	(0.1)	348	146.3	50,964	-	-	-	-	-	-	-	9	53	127	175	208	224	222	209	186	147	95	39	2	-	-	-	-	50,964	-
5/31/2043	2043	5	31	-	377	(0.1)	348	149.0	51,883	-	-	-	-	-	-	-	17	67	123	165	197	214	221	209	178	141	95	41	6	-	-	-	-	51,883	-
6/30/2043	2043	6	30	-	377	(0.1)	348	129.5	45,095	-	-	-	-	-	-	-	18	62	113	155	180	202	186	170	157	128	84	41	8	-	-	-	-	45,095	-
7/31/2043	2043	7	31	-	377	(0.1)	348	138.9	48,353	-	-	-	-	-	-	-	14	58	107	149	181	201	200	192	168	141	95	45	10	-	-	-	-	48,353	-
8/31/2043	2043	8	31	-	377	(0.1)	348	129.9	45,199	-	-	-	-	-	-	-	8	53	100	140	171	192	191	175	162	132	91	39	4	-	-	-	-	45,199	-
9/30/2043	2043	9	30	-	377	(0.1)	348	124.6	43,316	-	-	-	-	-	-	-	7	53	112	158	181	188	188	184	157	124	71	21	0	-	-	-	-	43,316	-
10/31/2043	2043	10	31	-	377	(0.1)	348	127.9	44,457	-	-	-	-	-	-	-	2	49	108	153	180	209	205	187	160	117	55	8	-	-	-	-	-	44,457	-
11/30/2043	2043	11	30	-	377	(0.1)	347	115.0	39,951	-	-	-	-	-	-	-	41	93	141	174	198	189	187	151	107	51	-	-	-	-	-	-	-	39,951	-
12/31/2043	2043	12	31	-	377	(0.1)	347	107.8	37,427	-	-	-	-	-	-	-	22	80	129	158	186	183	170	139	92	48	-	-	-	-	-	-	-	37,427	-
1/31/2044	2044	1	31	-	377	(0.1)	347	111.3	38,646	-	-	-	-	-	-	-	15	66	121	161	178	180	170	163	113	68	12	-	-	-	-	-	-	38,646	-
2/29/2044	2044	2	29	-	377	(0.1)	347	111.1	38,566	-	-	-	-	-	-	-	18	64	129	163	185	191	188	161	126	79	26	-	-	-	-	-	-	38,566	-
3/31/2044	2044	3	31	-	377	(0.1)	347	147.4	51,123	-	-	-	-	-	-	-	1	39	99	164	199	222	222	225	195	150	97	37	-	-	-	-	-	51,123	-
4/30/2044	2044	4	30	-	377	(0.1)	347	146.3	50,710	-	-	-	-	-	-	-	9	53	127	174	207	223	221	208	185	146	94	39	2	-	-	-	-	50,710	-
5/31/2044	2044	5	31	-	377	(0.1)	347	149.0	51,625	-	-	-	-	-	-	-	17	67	122	164	196	213	220	208	177	140	94	41	6	-	-	-	-	51,625	-
6/30/2044	2044	6	30	-	377	(0.1)	346	129.5	44,870	-	-	-	-	-	-	-	18	61	113	154	179	201	185	169	156	128	84	40	8	-	-	-	-	44,870	-
7/31/2044	2044	7	31	-	377	(0.1)	346	138.9	48,112	-	-	-	-	-	-	-	14	57	106	148	180	200	199	191	167	140	95	45	10	-	-	-	-	48,112	-
8/31/2044	2044	8	31	-	377	(0.1)	346	129.9	44,974	-	-	-	-	-	-	-	8	53	100	140	170	191	190	174	161	132	91	38	4	-	-	-	-	44,974	-
9/30/2044	2044	9	30	-	377	(0.1)	346	124.6	43,100	-	-	-	-	-	-	-	7	53	112	157	180	187	187	183	156	123	71	21	0	-	-	-	-	43,100	-
10/31/2044	2044	10	31	-	377	(0.1)	346	127.9	44,236	-	-	-	-	-	-	-	2	48	108	153	180	208	204	186	159	116	55	8	-	-	-	-	-	44,236	-
11/30/2044	2044	11	30	-	377	(0.1)	346	115.0	39,752	-	-	-	-	-	-	-	41	93	140	173	197	188	186	150	106	51	-	-	-	-	-	-	-	39,752	-
12/31/2044	2044	12	31	-	377	(0.1)	346	107.8	37,241	-	-	-	-	-	-	-	22	80	128	157	185	182	170	138	92	47	-	-	-	-	-	-	-	37,241	-
1/31/2045	2045	1	31	-	377	(0.1)	345	111.3	38,454	-	-	-	-	-	-	-	15	65	120	160	177	179	169	162	112	68	12	-	-	-	-	-	-	38,454	-
2/28/2045	2045	2	28	-	377	(0.1)	345	111.1	38,374	-	-	-	-	-	-	-	19	66	133	168	191	196	194	166	130	82	26	-	-	-	-	-	-	38,374	-
3/31/2045	2045	3	31	-	377	(0.1)	345	147.4	50,868	-	-	-	-	-	-	-	1	38	98	163	198	221	221	224	194	149	96	37	-	-	-	-	-	50,868	-
4/30/2045	2045	4	30	-	377	(0.1)	345	146.3	50,458	-	-	-	-	-	-	-	9	53	126	173	206	222	220	207	184	146	94	39	2	-	-	-	-	50,458	-
5/31/2045	2045	5	31	-	377	(0.1)	345	149.0	51,368	-	-	-	-	-	-	-	17	67	122	163	195	212	219	207	176	139	94	40	6	-	-	-	-	51,368	-
6/30/2045	2045	6	30	-	377	(0.1)	345	129.5	44,647	-	-	-	-	-	-	-	17	61	112	153	178	200	184	168	155	127	84	40	8	-	-	-	-	44,647	-
7/31/2045	2045	7	31	-	377	(0.1)	345	138.9	47,873	-	-	-	-	-	-	-	14	57	106	147	179	199	198	190	167	140	94	44	10	-	-	-	-	47,873	-
8/31/2045	2045	8	31	-	377	(0.1)	344	129.9	44,750	-	-	-	-	-	-	-	8	53	99	139	169	190	189	173	160	131	90	38	4	-	-	-	-	44,750	-
9/30/2045	2045	9	30	-	377	(0.1)	344	124.6	42,886	-	-	-	-	-	-	-	6	53	111	157	179	186	186	182	155	123	70	21	0	-	-	-	-	42,886	-
10/31/2045	2045	10	31	-	377	(0.1)	344	127.9	44,016	-	-	-	-	-	-	-	2	48	107	152	179	207	203	185	158	116	55	8	-	-	-	-	-	44,016	-
11/30/2045	2045	11	30	-	377	(0.1)	344	115.0	39,554	-	-	-	-	-	-	-	40	92	139	172	196	187	185	149	106	51	-	-	-	-	-	-	-	39,554	-
12/31/2045	2045	12	31	-	377	(0.1)	344	107.8	37,055	-	-	-	-	-	-	-	22	79	128	156	184	181	169	137	91	47	-	-	-	-	-	-	-	37,055	-
1/31/2046	2046	1	31	-	377	(0.1)	344	111.3	38,263	-	-	-	-	-	-	-	15	65	120	159	176	178	169	161	112	68	12	-	-	-	-	-	-	38,263	-
2/28/2046	2046	2	28	-	377	(0.1)	344	111.1	38,183	-	-	-	-	-	-	-	19	66	132	167	190	195	193	166	129	81	26	-	-	-	-	-	-	38,183	-
3/31/2046	2046	3	31	-	377	(0.1)	343	147.4	50,615	-	-	-	-	-	-	-	1	38	98	162	197	220	220	223	193	149	96	36	-	-	-	-	-	50,615	-
4/30/2046	2046	4	30	-	377	(0.1)	343	146.3	50,207	-	-	-	-	-	-	-	9	53	125	172	205	221	219	206	183	145	93	39	2	-	-	-	-	50,207	-
5/31/2046	2046	5	31	-	377	(0.1)	343	149.0	51,113	-	-	-	-	-	-	-	17	66	121	162	194	211	218	206	175	139	93	40	6	-	-	-	-	51,113	-
6/30/2046	2046	6	30	-	377	(0.1)	343	129.5	44,425	-	-	-	-	-	-	-	17	61	112	153	177	199	183	167	154	126	83	40	8	-	-	-	-	44,425	-
7/31/2046	2046	7	31	-	377	(0.1)	343	138.9	47,634	-	-	-	-	-	-	-	13	57	105	146	178	198	197	189	166	139	94	44	10	-	-	-	-	47,634	-
8/31/2046	2046	8	31	-	377	(0.1)	343	129.9	44,527	-	-	-	-	-	-	-	8	53	99	138	168	189	188	172	159	130	90	38	4	-	-	-	-	44,527	-
9/30/2046	2046	9	30	-	377	(0.1)	343	124.6	42,673	-	-	-	-	-	-	-	6	53	110	156	178	185	185	181	154	122	70	21	0	-	-	-	-	42,673	-
10/31/2046	2046	10	31	-	377	(0.1)	342	127.9	43,797	-	-	-	-	-	-	-	2	48	107	151	178	206	202	184	158	115	54	8	-	-	-	-	-	43,797	-
11/30/2046	2046	11	30	-	377	(0.1)	342	115.0	39,357	-	-	-	-	-	-	-	40	92	139	171	195	186	184	148	105	51	-	-	-	-	-	-	-	39,357	-
12/31/2046	2046	12	31	-	377	(0.1)	342	107.8	36,871	-	-	-	-	-	-	-	22	79	127	156	183	180	168	137	91	47	-	-	-	-	-	-	-	36,871	-
1/31/2047	2047	1	31	-	377	(0.1)	342	111.3	38,072	-	-	-	-	-	-	-	15	65	119	158	175	177	168	160	111	67	12	-	-	-	-	-	-	38,072	-
2/28/2047	2047	2	28	-	377	(0.1)	342	111.1	37,993	-	-	-	-	-	-	-	19	65	131	166	189	194	192	165	128	81	26	-	-	-	-	-	-	37,993	-
3/31/2047	2047	3	31	-	377	(0.1)	342	147.4	50,363	-	-	-	-	-	-	-	1	38	97	162	196	219	219	222	192	148	95	36	-	-	-	-	-	50,363	-
4/30/2047	2047	4	30	-	377	(0.1)	342	146.3	49,957	-	-	-	-	-	-	-	9	52	125	171	204	219	218	205	182	144	93	39	2	-	-	-	-	49,957	-
5/31/2047	2047	5	31	-	377	(0.1)	341	149.0	50,858	-	-	-	-	-	-	-	17	66	121	161	193	210	217	205	174	138	93	40	6	-	-	-	-	50,858	-
6/30/2047	2047	6	30	-	377	(0.1)	341	129.5	44,204	-	-	-	-	-	-	-	17	60	111	152	176	198	182	167	154	126	83	40	8	-	-	-	-	44,204	-
7/31/2047	2047	7	31	-	377	(0.1)	341	138.9	47,397	-	-	-	-	-	-	-	13	56	105	146	177	197	196	188	165	138	93	44	10	-	-	-	-	47,397	-
8/31/2047	2047	8	31	-	377	(0.1)	341	129.9	44,306	-	-	-	-	-	-	-	8	52	98	137	167	188	187	171	158	130	89	38	4	-	-	-	-	44,306	-
9/30/2047	2047	9	30	-	377	(0.1)	341	124.6	42,460	-	-	-	-	-	-	-	6	52	110	155	177	184	184	180	154	121	70	21	0	-	-	-	-	42,460	-
10/31/2047	2047	10	31	-	377	(0.1)	341	127.9	43,579	-	-	-	-	-	-	-	2	48	106	150	177	205	201	183	157	115	54	8	-	-	-	-	-	43,579	-
11/30/2047	2047	11	30	-	377	(0.1)	341	115.0	39,161	-	-	-	-	-	-	-	40	91	138	170	194	185	183	148	105	50	-	-	-	-	-	-	-	39,161	-
12/31/2047	2047	12	31	-	377	(0.1)	340	107.8	36,687	-	-	-	-	-	-	-	22	79	126	155	183	179	167	136	91	47	-	-	-	-	-	-	-	36,687	-

1/31/2048	2048	1	31	-	377	(0.1)	340	111.3	37,883	-	-	-	-	-	-	-	15	64	119	158	174	176	167	159	110	67	12	-	-	-	-	-	-	37,883	-
2/29/2048	2048	2	29	-	377	(0.1)	340	111.1	37,804	-	-	-	-	-	-	-	18	63	126	160	181	187	184	158	123	78	25	-	-	-	-	-	-	37,804	-
3/31/2048	2048	3	31	-	377	(0.1)	340	147.4	50,112	-	-	-	-	-	-	-	1	38	97	161	195	218	218	221	191	147	95	36	-	-	-	-	-	50,112	-
4/30/2048	2048	4	30	-	377	(0.1)	340	146.3	49,708	-	-	-	-	-	-	-	9	52	124	171	203	218	217	204	182	144	92	39	2	-	-	-	-	49,708	-
5/31/2048	2048	5	31	-	377	(0.1)	340	149.0	50,605	-	-	-	-	-	-	-	17	66	120	161	192	209	216	204	173	137	92	40	6	-	-	-	-	50,605	-
6/30/2048	2048	6	30	-	377	(0.1)	340	129.5	43,984	-	-	-	-	-	-	-	17	60	110	151	175	197	181	166	153	125	82	40	8	-	-	-	-	43,984	-
7/31/2048	2048	7	31	-	377	(0.1)	339	138.9	47,161	-	-	-	-	-	-	-	13	56	104	145	176	196	195	188	164	137	93	44	10	-	-	-	-	47,161	-
8/31/2048	2048	8	31	-	377	(0.1)	339	129.9	44,085	-	-	-	-	-	-	-	8	52	98	137	166	187	186	170	158	129	89	38	4	-	-	-	-	44,085	-
9/30/2048	2048	9	30	-	377	(0.1)	339	124.6	42,249	-	-	-	-	-	-	-	6	52	109	154	177	183	183	179	153	121	69	21	0	-	-	-	-	42,249	-
10/31/2048	2048	10	31	-	377	(0.1)	339	127.9	43,362	-	-	-	-	-	-	-	2	47	106	150	176	204	200	182	156	114	54	8	-	-	-	-	-	43,362	-
11/30/2048	2048	11	30	-	377	(0.1)	339	115.0	38,966	-	-	-	-	-	-	-	40	91	137	170	193	184	183	147	104	50	-	-	-	-	-	-	-	38,966	-
12/31/2048	2048	12	31	-	377	(0.1)	339	107.8	36,505	-	-	-	-	-	-	-	22	78	126	154	182	178	166	135	90	47	-	-	-	-	-	-	-	36,505	-
1/31/2049	2049	1	31	-	377	(0.1)	339	111.3	37,694	-	-	-	-	-	-	-	14	64	118	157	174	176	166	159	110	67	12	-	-	-	-	-	-	37,694	-
2/28/2049	2049	2	28	-	377	(0.1)	338	111.1	37,616	-	-	-	-	-	-	-	18	65	130	165	187	193	190	163	127	80	26	-	-	-	-	-	-	37,616	-
3/31/2049	2049	3	31	-	377	(0.1)	338	147.4	49,863	-	-	-	-	-	-	-	1	38	96	160	194	217	216	220	190	146	94	36	-	-	-	-	-	49,863	-
4/30/2049	2049	4	30	-	377	(0.1)	338	146.3	49,461	-	-	-	-	-	-	-	9	52	124	170	202	217	216	203	181	143	92	38	2	-	-	-	-	49,461	-
5/31/2049	2049	5	31	-	377	(0.1)	338	149.0	50,353	-	-	-	-	-	-	-	17	65	119	160	191	208	215	203	172	137	92	40	6	-	-	-	-	50,353	-
6/30/2049	2049	6	30	-	377	(0.1)	338	129.5	43,765	-	-	-	-	-	-	-	17	60	110	150	175	196	180	165	152	125	82	39	8	-	-	-	-	43,765	-
7/31/2049	2049	7	31	-	377	(0.1)	338	138.9	46,927	-	-	-	-	-	-	-	13	56	104	144	175	195	194	187	163	137	92	43	10	-	-	-	-	46,927	-
8/31/2049	2049	8	31	-	377	(0.1)	338	129.9	43,866	-	-	-	-	-	-	-	8	52	97	136	166	186	185	170	157	128	88	37	4	-	-	-	-	43,866	-
9/30/2049	2049	9	30	-	377	(0.1)	337	124.6	42,039	-	-	-	-	-	-	-	6	52	109	154	176	182	182	178	152	120	69	21	0	-	-	-	-	42,039	-
10/31/2049	2049	10	31	-	377	(0.1)	337	127.9	43,146	-	-	-	-	-	-	-	2	47	105	149	175	203	199	181	155	113	54	8	-	-	-	-	-	43,146	-
11/30/2049	2049	11	30	-	377	(0.1)	337	115.0	38,773	-	-	-	-	-	-	-	40	91	137	169	193	183	182	146	104	50	-	-	-	-	-	-	-	38,773	-
12/31/2049	2049	12	31	-	377	(0.1)	337	107.8	36,323	-	-	-	-	-	-	-	22	78	125	153	181	177	165	135	90	46	-	-	-	-	-	-	-	36,323	-
1/31/2050	2050	1	31	-	377	(0.1)	337	111.3	37,507	-	-	-	-	-	-	-	14	64	117	156	173	175	165	158	109	66	12	-	-	-	-	-	-	37,507	-
2/28/2050	2050	2	28	-	377	(0.1)	337	111.1	37,429	-	-	-	-	-	-	-	18	64	129	164	186	192	189	162	127	80	26	-	-	-	-	-	-	37,429	-
3/31/2050	2050	3	31	-	377	(0.1)	337	147.4	49,615	-	-	-	-	-	-	-	1	37	96	159	193	215	215	219	189	146	94	36	-	-	-	-	-	49,615	-
4/30/2050	2050	4	30	-	377	(0.1)	337	146.3	49,215	-	-	-	-	-	-	-	9	51	123	169	201	216	215	202	180	142	91	38	2	-	-	-	-	49,215	-
5/31/2050	2050	5	31	-	377	(0.1)	336	149.0	50,103	-	-	-	-	-	-	-	17	65	119	159	190	207	214	202	172	136	91	39	6	-	-	-	-	50,103	-
6/30/2050	2050	6	30	-	377	(0.1)	336	129.5	43,547	-	-	-	-	-	-	-	17	59	109	150	174	195	180	164	151	124	81	39	8	-	-	-	-	43,547	-
7/31/2050	2050	7	31	-	377	(0.1)	336	138.9	46,693	-	-	-	-	-	-	-	13	56	103	143	174	194	193	186	163	136	92	43	9	-	-	-	-	46,693	-
8/31/2050	2050	8	31	-	377	(0.1)	336	129.9	43,647	-	-	-	-	-	-	-	8	51	97	135	165	185	185	169	156	128	88	37	4	-	-	-	-	43,647	-
9/30/2050	2050	9	30	-	377	(0.1)	336	124.6	41,829	-	-	-	-	-	-	-	6	51	108	153	175	182	182	177	151	119	69	21	0	-	-	-	-	41,829	-
10/31/2050	2050	10	31	-	377	(0.1)	336	127.9	42,931	-	-	-	-	-	-	-	2	47	105	148	174	202	198	180	155	113	53	8	-	-	-	-	-	42,931	-
11/30/2050	2050	11	30	-	377	(0.1)	336	115.0	38,580	-	-	-	-	-	-	-	39	90	136	168	192	182	181	145	103	50	-	-	-	-	-	-	-	38,580	-
12/31/2050	2050	12	31	-	377	(0.1)	335	107.8	36,142	-	-	-	-	-	-	-	22	77	124	153	180	176	165	134	89	46	-	-	-	-	-	-	-	36,142	-
1/31/2051	2051	1	31	-	377	(0.1)	335	111.3	37,320	-	-	-	-	-	-	-	14	63	117	155	172	174	164	157	109	66	12	-	-	-	-	-	-	37,320	-
2/28/2051	2051	2	28	-	377	(0.1)	335	111.1	37,242	-	-	-	-	-	-	-	18	64	129	163	185	191	188	161	126	79	26	-	-	-	-	-	-	37,242	-
3/31/2051	2051	3	31	-	377	(0.1)	335	147.4	49,368	-	-	-	-	-	-	-	1	37	95	158	192	214	214	218	188	145	93	36	-	-	-	-	-	49,368	-
4/30/2051	2051	4	30	-	377	(0.1)	335	146.3	48,970	-	-	-	-	-	-	-	9	51	122	168	200	215	214	201	179	141	91	38	2	-	-	-	-	48,970	-
5/31/2051	2051	5	31	-	377	(0.1)	335	149.0	49,853	-	-	-	-	-	-	-	16	65	118	158	189	206	213	201	171	135	91	39	6	-	-	-	-	49,853	-
6/30/2051	2051	6	30	-	377	(0.1)	335	129.5	43,330	-	-	-	-	-	-	-	17	59	109	149	173	194	179	163	150	123	81	39	8	-	-	-	-	43,330	-
7/31/2051	2051	7	31	-	377	(0.1)	334	138.9	46,461	-	-	-	-	-	-	-	13	55	103	143	174	193	192	185	162	135	92	43	9	-	-	-	-	46,461	-
8/31/2051	2051	8	31	-	377	(0.1)	334	129.9	43,430	-	-	-	-	-	-	-	8	51	96	135	164	184	184	168	155	127	88	37	4	-	-	-	-	43,430	-
9/30/2051	2051	9	30	-	377	(0.1)	334	124.6	41,621	-	-	-	-	-	-	-	6	51	108	152	174	181	181	177	151	119	68	21	0	-	-	-	-	41,621	-
10/31/2051	2051	10	31	-	377	(0.1)	334	127.9	42,718	-	-	-	-	-	-	-	2	47	104	147	173	201	197	179	154	112	53	8	-	-	-	-	-	42,718	-
11/30/2051	2051	11	30	-	377	(0.1)	334	115.0	38,388	-	-	-	-	-	-	-	39	90	135	167	191	181	180	145	103	49	-	-	-	-	-	-	-	38,388	-
12/31/2051	2051	12	31	-	377	(0.1)	334	107.8	35,963	-	-	-	-	-	-	-	22	77	124	152	179	175	164	133	89	46	-	-	-	-	-	-	-	35,963	-
1/31/2052	2052	1	31	-	377	(0.1)	334	111.3	37,134	-	-	-	-	-	-	-	14	63	116	155	171	173	164	156	108	66	12	-	-	-	-	-	-	37,134	-
2/29/2052	2052	2	29	-	377	(0.1)	333	111.1	37,057	-	-	-	-	-	-	-	17	62	124	157	178	183	181	155	121	76	25	-	-	-	-	-	-	37,057	-
3/31/2052	2052	3	31	-	377	(0.1)	333	147.4	49,122	-	-	-	-	-	-	-	1	37	95	158	191	213	213	217	188	144	93	35	-	-	-	-	-	49,122	-
4/30/2052	2052	4	30	-	377	(0.1)	333	146.3	48,726	-	-	-	-	-	-	-	9	51	122	167	199	214	213	200	178	141	91	38	2	-	-	-	-	48,726	-
5/31/2052	2052	5	31	-	377	(0.1)	333	149.0	49,605	-	-	-	-	-	-	-	16	64	118	157	188	205	212	200	170	135	91	39	6	-	-	-	-	49,605	-
6/30/2052	2052	6	30	-	377	(0.1)	333	129.5	43,114	-	-	-	-	-	-	-	17	59	108	148	172	193	178	162	150	123	81	39	8	-	-	-	-	43,114	-
7/31/2052	2052	7	31	-	377	(0.1)	333	138.9	46,230	-	-	-	-	-	-	-	13	55	102	142	173	192	191	184	161	135	91	43	9	-	-	-	-	46,230	-
8/31/2052	2052	8	31	-	377	(0.1)	333	129.9	43,214	-	-	-	-	-	-	-	8	51	96	134	163	183	183	167	155	127	87	37	4	-	-	-	-	43,214	-
9/30/2052	2052	9	30	-	377	(0.1)	332	124.6	41,414	-	-	-	-	-	-	-	6	51	107	151	173	180	180	176	150	118	68	20	0	-	-	-	-	41,414	-
10/31/2052	2052	10	31	-	377	(0.1)	332	127.9	42,505	-	-	-	-	-	-	-	2	46	104	147	173	200	196	178	153	112	53	8	-	-	-	-	-	42,505	-
11/30/2052	2052	11	30	-	377	(0.1)	332	115.0	38,196	-	-	-	-	-	-	-	39	89	135	166	190	180	179	144	102	49	-	-	-	-	-	-	-	38,196	-
12/31/2052	2052	12	31	-	377	(0.1)	332	107.8	35,784	-	-	-	-	-	-	-	22	77	123	151	178	175	163	133	88	46	-	-	-	-	-	-	-	35,784	-
1/31/2053	2053	1	31	-	377	(0.1)	332	111.3	36,949	-	-	-	-	-	-	-	14	63	116	154	170	172	163	155	108	65	12	-	-	-	-	-	-	36,949	-
2/28/2053	2053	2	28	-	377	(0.1)	332	111.1	36,873	-	-	-	-	-	-	-	18	63	128	161	183	189	186	160	125	78	25	-	-	-	-	-	-	36,873	-
3/31/2053	2053	3	31	-	377	(0.1)	332	147.4	48,878	-	-	-	-	-	-	-	1	37	94	157	190	212	212	215	187	143	92	35	-	-	-	-	-	48,878	-
4/30/2053	2053	4	30	-	377	(0.1)	332	146.3	48,484	-	-	-	-	-	-	-	9	51	121	166	198	213	212	199	177	140	90	38	2	-	-	-	-	48,484	-
5/31/2053	2053	5	31	-	377	(0.1)	331	149.0	49,358	-	-	-	-	-	-	-	16	64	117	157	187	204	211	199	169	134	90	39	6	-	-	-	-	49,358	-
6/30/2053	2053	6	30	-	377	(0.1)	331	129.5	42,900	-	-	-	-	-	-	-	17	59	108	147	171	192	177	162	149	122	80	39	8	-	-	-	-	42,900	-
7/31/2053	2053	7	31	-	377	(0.1)	331	138.9	45,999	-	-	-	-	-	-	-	13	55	102	141	172	191	190	183	160	134	91	43	9	-	-	-	-	45,999	-
8/31/2053	2053	8	31	-	377	(0.1)	331	129.9	42,999	-	-	-	-	-	-	-	8	51	95	133	162	182	182	166	154	126	87	37	4	-	-	-	-	42,999	-
9/30/2053	2053	9	30	-	377	(0.1)	331	124.6	41,208	-	-	-	-	-	-	-	6	51	107	151	172	179	179	175	149	118	68	20	0	-	-	-	-	41,208	-
10/31/2053	2053	10	31	-	377	(0.1)	331	127.9	42,294	-	-	-	-	-	-	-	2	46	103	146	172	199	195	178	152	111	53	8	-	-	-	-	-	42,294	-
11/30/2053	2053	11	30	-	377	(0.1)	331	115.0	38,006	-	-	-	-	-	-	-	39	89	134	165	189	179	178	143	102	49	-	-	-	-	-	-	-	38,006	-
12/31/2053	2053	12	31	-	377	(0.1)	330	107.8	35,605	-	-	-	-	-	-	-	21	76	123	150	177	174	162	132	88	45	-	-	-	-	-	-	-	35,605	-

Florida Power & Light Company
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Ten-Year Site Plan
Staff's Third Data Request
Request No. 12
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FPL & GULF 000008
20220000-OT

Location: 700 universe blvd, juno beach florida
Output: 1,539 kWh/kWdc
PVWatts NCF: 17.6% 21%

Month	1	2	3	4	5	6	7	8	9	10	11	12
Days	31	28	31	30	31	30	31	31	30	31	30	31

Hour Ending	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-
8	4.3%	5.4%	0.3%	2.7%	4.9%	5.1%	3.9%	2.3%	1.9%	0.6%	11.7%	6.5%	4.1%
9	18.9%	19.1%	11.1%	15.3%	19.3%	17.7%	16.5%	15.3%	15.3%	14.0%	26.9%	23.1%	17.7%
10	34.8%	38.4%	28.4%	36.6%	35.3%	32.5%	30.7%	28.8%	32.3%	31.2%	40.5%	37.1%	33.8%
11	46.3%	48.7%	47.3%	50.2%	47.3%	44.5%	42.7%	40.3%	45.5%	44.1%	50.0%	45.5%	46.0%
12	51.2%	55.2%	57.4%	59.8%	56.5%	51.6%	51.9%	49.0%	52.1%	51.9%	57.1%	53.6%	53.9%
13	51.9%	56.9%	64.0%	64.2%	61.4%	58.0%	57.7%	55.1%	54.1%	60.1%	54.3%	52.6%	57.5%
14	49.1%	56.2%	64.0%	63.8%	63.6%	53.4%	57.5%	54.9%	54.1%	59.1%	53.9%	49.1%	56.5%
15	46.8%	48.2%	65.0%	60.1%	60.0%	48.8%	55.3%	50.2%	52.8%	53.7%	43.3%	39.9%	52.1%
16	32.5%	37.6%	56.3%	53.4%	51.0%	45.0%	48.4%	46.5%	45.1%	46.0%	30.7%	26.6%	43.3%
17	19.7%	23.7%	43.3%	42.2%	40.4%	36.8%	40.5%	38.0%	35.6%	33.6%	14.8%	13.7%	31.9%
18	3.6%	7.6%	27.9%	27.2%	27.2%	24.2%	27.4%	26.2%	20.4%	15.9%	-	-	17.4%
19	-	-	10.6%	11.3%	11.7%	11.7%	12.9%	11.1%	6.1%	2.4%	-	-	6.5%
20	-	-	-	0.6%	1.8%	2.4%	2.8%	1.3%	0.0%	-	-	-	0.8%
21	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
	15.0%	16.5%	19.8%	20.3%	20.0%	18.0%	18.7%	17.5%	17.3%	17.2%	16.0%	14.5%	17.6%

Hour Ending	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-
8	1.3	1.5	0.1	0.8	1.5	1.5	1.2	0.7	0.6	0.2	3.5	2.0	15
9	5.9	5.3	3.4	4.6	6.0	5.3	5.1	4.7	4.6	4.3	8.1	7.2	65
10	10.8	10.8	8.8	11.0	10.9	9.8	9.5	8.9	9.7	9.7	12.2	11.5	124
11	14.4	13.6	14.7	15.1	14.6	13.4	13.2	12.5	13.7	13.7	15.0	14.1	168
12	15.9	15.4	17.8	17.9	17.5	15.5	16.1	15.2	15.6	16.1	17.1	16.6	197
13	16.1	15.9	19.8	19.3	19.0	17.4	17.9	17.1	16.2	18.6	16.3	16.3	210
14	15.2	15.7	19.8	19.1	19.7	16.0	17.8	17.0	16.2	18.3	16.2	15.2	206
15	14.5	13.5	20.1	18.0	18.6	14.6	17.1	15.6	15.9	16.6	13.0	12.4	190
16	10.1	10.5	17.4	16.0	15.8	13.5	15.0	14.4	13.5	14.3	9.2	8.2	158
17	6.1	6.6	13.4	12.7	12.5	11.1	12.6	11.8	10.7	10.4	4.4	4.3	117
18	1.1	2.1	8.6	8.2	8.4	7.3	8.5	8.1	6.1	4.9	-	-	63
19	-	-	3.3	3.4	3.6	3.5	4.0	3.4	1.8	0.7	-	-	24
20	-	-	-	0.2	0.6	0.7	0.9	0.4	0.0	-	-	-	3
21	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
	111	111	147	146	149	130	139	130	125	128	115	108	1,539

17.56%

	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	0	1	2	2	1	1	1	0	-	-	7
8	1	2	3	5	6	5	5	5	5	4	4	2	46
9	6	5	9	11	11	10	10	9	10	10	8	7	105
10	11	11	15	15	15	13	13	12	14	14	12	12	156
11	14	14	18	18	18	15	16	15	16	16	15	14	189
12	16	15	20	19	19	17	18	17	16	19	17	17	210
13	16	16	20	19	20	16	18	17	16	18	16	16	209
14	15	16	20	18	19	15	17	16	16	17	16	15	199
15	15	13	17	16	16	13	15	14	14	14	13	12	173
16	10	11	13	13	13	11	13	12	11	10	9	8	133
17	6	7	9	8	8	7	8	8	6	5	4	4	82
18	1	2	3	3	4	3	4	3	2	1	-	-	27
19	-	-	-	0	1	1	1	0	0	-	-	-	3
20	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
	111	111	147	146	149	130	139	130	125	128	115	108	1,539

17.56%

Florida Power & Light Company
Docket No. 20220000-OT
Ten-Year Site Plan
Staff's Third Data Request
Request No. 12
Attachment 1 of 1
Tab 8 of 19

PVWatts: Hourly PV Performance Data

Requested Location:	700 universe blvd, juno beach florida
Location:	Lat, Lon: 26.85, -80.06
Lat (deg N):	26.85
Long (deg W):	80.06
Elev (m):	3.458333
DC System Size (kW):	1
Module Type:	Standard
Array Type:	Fixed (roof mount)
Array Tilt (deg):	20
Array Azimuth (deg):	**180**
System Losses:	14.925
Invert Efficiency:	96
DC to AC Size Ratio:	1.2
Average Cost of Electricity Purchased from Utility ($/kWh):	0.104
Capacity Factor (%)	17.6

Month	Day	Hour	Beam Irradianc	Diffuse Irradiance (W/m^2)	Ambient Temperature (C)	Wind Speed (m/s)	Plane of Array Irradiance (W/m^2)	Cell Temperature (C)	DC Array Output (W)	AC System Output (W)
1.0	1.0	-	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	1.0	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	2.0	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	3.0	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	4.0	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	5.0	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	6.0	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	7.0	159.0	24.0	21.0	3.0	74.5	21.2	56.2	50.0
1.0	1.0	8.0	586.0	65.0	22.0	4.0	339.4	29.1	265.8	254.6
1.0	1.0	9.0	758.0	83.0	22.0	4.0	575.1	35.7	455.5	438.3
1.0	1.0	10.0	837.0	94.0	23.0	4.0	755.8	41.7	588.8	566.7
1.0	1.0	11.0	870.0	101.0	23.0	4.0	864.4	44.7	665.5	640.2
1.0	1.0	12.0	189.0	310.0	24.0	4.0	504.1	37.4	403.6	388.2
1.0	1.0	13.0	33.0	250.0	24.0	4.0	288.2	31.1	238.1	227.7
1.0	1.0	14.0	461.0	191.0	24.0	4.0	565.4	37.3	450.6	433.6
1.0	1.0	15.0	194.0	164.0	23.0	3.0	292.9	31.3	239.0	228.5
1.0	1.0	16.0	531.0	60.0	22.0	3.0	287.4	29.2	221.5	211.5
1.0	1.0	17.0	-	-	21.0	3.0	-	21.0	-	-
1.0	1.0	18.0	-	-	21.0	3.0	-	21.0	-	-
1.0	1.0	19.0	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	20.0	-	-	20.0	2.0	-	20.0	-	-
1.0	1.0	21.0	-	-	20.0	2.0	-	20.0	-	-
1.0	1.0	22.0	-	-	20.0	2.0	-	20.0	-	-
1.0	1.0	23.0	-	-	20.0	2.0	-	20.0	-	-
1.0	2.0	-	-	-	19.0	2.0	-	19.0	-	-
1.0	2.0	1.0	-	-	19.0	2.0	-	19.0	-	-
1.0	2.0	2.0	-	-	19.0	2.0	-	19.0	-	-
1.0	2.0	3.0	-	-	19.0	2.0	-	19.0	-	-
1.0	2.0	4.0	-	-	19.0	2.0	-	19.0	-	-
1.0	2.0	5.0	-	-	18.0	2.0	-	18.0	-	-
1.0	2.0	6.0	-	-	18.0	1.0	-	18.0	-	-
1.0	2.0	7.0	218.0	22.0	19.0	1.0	87.9	19.6	65.2	58.9
1.0	2.0	8.0	626.0	59.0	20.0	1.0	349.3	30.8	270.6	259.3
1.0	2.0	9.0	785.0	76.0	22.0	1.0	583.4	42.3	446.8	429.9
1.0	2.0	10.0	854.0	87.0	23.0	2.0	760.4	46.2	578.8	557.1
1.0	2.0	11.0	885.0	95.0	24.0	2.0	864.2	50.7	644.8	620.4
1.0	2.0	12.0	444.0	260.0	24.0	2.0	692.0	46.3	529.2	509.3
1.0	2.0	13.0	590.0	190.0	25.0	2.0	719.3	47.4	546.4	525.9
1.0	2.0	14.0	361.0	215.0	25.0	1.0	509.5	44.8	391.1	376.1
1.0	2.0	15.0	682.0	93.0	24.0	1.0	519.5	43.0	395.0	379.9
1.0	2.0	16.0	467.0	68.0	23.0	-	271.6	38.1	201.6	192.1
1.0	2.0	17.0	35.0	10.0	23.0	-	20.0	25.0	15.1	9.8
1.0	2.0	18.0	-	-	23.0	-	-	23.0	-	-
1.0	2.0	19.0	-	-	23.0	-	-	23.0	-	-
1.0	2.0	20.0	-	-	22.0	-	-	22.0	-	-
1.0	2.0	21.0	-	-	22.0	1.0	-	22.0	-	-
1.0	2.0	22.0	-	-	21.0	1.0	-	21.0	-	-
1.0	2.0	23.0	-	-	20.0	2.0	-	20.0	-	-
1.0	3.0	-	-	-	20.0	2.0	-	20.0	-	-
1.0	3.0	1.0	-	-	20.0	2.0	-	20.0	-	-
1.0	3.0	2.0	-	-	19.0	2.0	-	19.0	-	-
1.0	3.0	3.0	-	-	19.0	2.0	-	19.0	-	-
1.0	3.0	4.0	-	-	19.0	2.0	-	19.0	-	-
1.0	3.0	5.0	-	-	19.0	2.0	-	19.0	-	-

1.0	3.0	6.0	-	-	19.0	1.0	-	19.0	-	-
1.0	3.0	7.0	151.0	22.0	20.0	1.0	69.4	20.1	52.5	46.4
1.0	3.0	8.0	554.0	68.0	21.0	1.0	327.4	30.9	254.4	243.5
1.0	3.0	9.0	723.0	89.0	23.0	2.0	561.4	39.4	436.5	420.1
1.0	3.0	10.0	800.0	103.0	24.0	3.0	737.4	43.9	568.0	546.6
1.0	3.0	11.0	842.0	107.0	24.0	3.0	848.0	47.3	644.2	619.8
1.0	3.0	12.0	855.0	108.0	25.0	3.0	882.7	49.5	663.4	638.2
1.0	3.0	13.0	831.0	109.0	25.0	2.0	832.2	51.2	619.0	595.6
1.0	3.0	14.0	777.0	104.0	25.0	2.0	705.1	47.5	532.3	512.4
1.0	3.0	15.0	680.0	91.0	25.0	1.0	517.4	45.0	389.5	374.5
1.0	3.0	16.0	478.0	66.0	24.0	1.0	274.9	34.9	207.3	197.6
1.0	3.0	17.0	-	11.0	23.0	1.0	10.4	22.8	9.0	3.7
1.0	3.0	18.0	-	-	23.0	1.0	-	23.0	-	-
1.0	3.0	19.0	-	-	23.0	1.0	-	23.0	-	-
1.0	3.0	20.0	-	-	22.0	1.0	-	22.0	-	-
1.0	3.0	21.0	-	-	22.0	1.0	-	22.0	-	-
1.0	3.0	22.0	-	-	22.0	1.0	-	22.0	-	-
1.0	3.0	23.0	-	-	22.0	1.0	-	22.0	-	-
1.0	4.0	-	-	-	21.0	2.0	-	21.0	-	-
1.0	4.0	1.0	-	-	21.0	2.0	-	21.0	-	-
1.0	4.0	2.0	-	-	21.0	2.0	-	21.0	-	-
1.0	4.0	3.0	-	-	21.0	2.0	-	21.0	-	-
1.0	4.0	4.0	-	-	21.0	2.0	-	21.0	-	-
1.0	4.0	5.0	-	-	20.0	1.0	-	20.0	-	-
1.0	4.0	6.0	-	-	20.0	1.0	-	20.0	-	-
1.0	4.0	7.0	180.0	21.0	21.0	1.0	77.0	21.3	57.2	51.0
1.0	4.0	8.0	583.0	59.0	22.0	1.0	329.4	32.0	253.7	242.8
1.0	4.0	9.0	748.0	75.0	23.0	1.0	558.4	42.3	427.5	411.3
1.0	4.0	10.0	235.0	246.0	23.0	1.0	446.8	40.0	352.3	338.6
1.0	4.0	11.0	242.0	288.0	24.0	1.0	519.4	42.7	404.7	389.3
1.0	4.0	12.0	173.0	313.0	24.0	1.0	493.7	42.2	385.7	370.9
1.0	4.0	13.0	791.0	116.0	24.0	1.0	807.7	52.1	597.9	575.4
1.0	4.0	14.0	740.0	110.0	24.0	1.0	688.7	50.0	513.2	494.0
1.0	4.0	15.0	641.0	96.0	24.0	1.0	501.2	43.4	380.7	366.1
1.0	4.0	16.0	423.0	71.0	23.0	1.0	257.8	33.2	196.9	187.5
1.0	4.0	17.0	30.0	10.0	22.0	1.0	18.9	22.0	14.7	9.4
1.0	4.0	18.0	-	-	22.0	2.0	-	22.0	-	-
1.0	4.0	19.0	-	-	21.0	1.0	-	21.0	-	-
1.0	4.0	20.0	-	-	21.0	1.0	-	21.0	-	-
1.0	4.0	21.0	-	-	21.0	1.0	-	21.0	-	-
1.0	4.0	22.0	-	-	21.0	1.0	-	21.0	-	-
1.0	4.0	23.0	-	-	21.0	1.0	-	21.0	-	-
1.0	5.0	-	-	-	20.0	1.0	-	20.0	-	-
1.0	5.0	1.0	-	-	20.0	1.0	-	20.0	-	-
1.0	5.0	2.0	-	-	20.0	1.0	-	20.0	-	-
1.0	5.0	3.0	-	-	20.0	1.0	-	20.0	-	-
1.0	5.0	4.0	-	-	20.0	2.0	-	20.0	-	-
1.0	5.0	5.0	-	-	20.0	2.0	-	20.0	-	-
1.0	5.0	6.0	-	-	20.0	2.0	-	20.0	-	-
1.0	5.0	7.0	153.0	21.0	21.0	2.0	68.1	21.1	51.0	44.9
1.0	5.0	8.0	2.0	89.0	22.0	3.0	89.4	22.9	76.8	70.2
1.0	5.0	9.0	-	124.0	23.0	3.0	121.0	24.9	103.0	95.8
1.0	5.0	10.0	33.0	221.0	23.0	3.0	255.1	28.7	213.1	203.3
1.0	5.0	11.0	48.0	270.0	24.0	3.0	323.4	32.0	265.9	254.7
1.0	5.0	12.0	4.0	195.0	24.0	3.0	194.4	28.8	162.5	154.0
1.0	5.0	13.0	-	122.0	24.0	3.0	117.1	26.2	99.1	92.0
1.0	5.0	14.0	-	63.0	24.0	3.0	59.9	24.3	51.1	45.0
1.0	5.0	15.0	46.0	162.0	23.0	3.0	196.5	26.9	165.0	156.5
1.0	5.0	16.0	571.0	53.0	23.0	2.0	300.2	31.1	229.2	219.0
1.0	5.0	17.0	-	15.0	22.0	2.0	14.2	21.8	12.3	6.9
1.0	5.0	18.0	-	-	22.0	2.0	-	22.0	-	-
1.0	5.0	19.0	-	-	22.0	2.0	-	22.0	-	-
1.0	5.0	20.0	-	-	22.0	2.0	-	22.0	-	-
1.0	5.0	21.0	-	-	22.0	2.0	-	22.0	-	-
1.0	5.0	22.0	-	-	21.0	2.0	-	21.0	-	-
1.0	5.0	23.0	-	-	21.0	2.0	-	21.0	-	-
1.0	6.0	-	-	-	21.0	2.0	-	21.0	-	-
1.0	6.0	1.0	-	-	21.0	2.0	-	21.0	-	-
1.0	6.0	2.0	-	-	21.0	2.0	-	21.0	-	-
1.0	6.0	3.0	-	-	21.0	1.0	-	21.0	-	-
1.0	6.0	4.0	-	-	21.0	1.0	-	21.0	-	-
1.0	6.0	5.0	-	-	21.0	1.0	-	21.0	-	-
1.0	6.0	6.0	-	-	21.0	1.0	-	21.0	-	-
1.0	6.0	7.0	-	10.0	22.0	1.0	9.5	19.8	8.2	3.0
1.0	6.0	8.0	172.0	98.0	23.0	2.0	187.4	26.8	152.8	144.5
1.0	6.0	9.0	812.0	61.0	24.0	2.0	577.0	40.3	445.8	429.0
1.0	6.0	10.0	869.0	73.0	25.0	2.0	750.1	47.8	566.0	544.8
1.0	6.0	11.0	890.0	82.0	25.0	2.0	854.9	51.4	635.6	611.6
1.0	6.0	12.0	881.0	92.0	25.0	3.0	883.0	49.5	663.5	638.3
1.0	6.0	13.0	764.0	134.0	25.0	3.0	811.2	47.8	614.7	591.5
1.0	6.0	14.0	681.0	137.0	25.0	4.0	677.7	42.4	525.9	506.2

1.0	6.0	15.0	570.0	120.0	24.0	4.0	487.3	36.5	384.3	369.5
1.0	6.0	16.0	346.0	86.0	23.0	3.0	245.3	29.7	192.7	183.4
1.0	6.0	17.0	17.0	10.0	23.0	3.0	14.3	22.5	11.4	6.1
1.0	6.0	18.0	-	-	23.0	3.0	-	23.0	-	-
1.0	6.0	19.0	-	-	23.0	3.0	-	23.0	-	-
1.0	6.0	20.0	-	-	22.0	2.0	-	22.0	-	-
1.0	6.0	21.0	-	-	22.0	2.0	-	22.0	-	-
1.0	6.0	22.0	-	-	22.0	2.0	-	22.0	-	-
1.0	6.0	23.0	-	-	22.0	2.0	-	22.0	-	-
1.0	7.0	-	-	-	22.0	2.0	-	22.0	-	-
1.0	7.0	1.0	-	-	22.0	1.0	-	22.0	-	-
1.0	7.0	2.0	-	-	21.0	1.0	-	21.0	-	-
1.0	7.0	3.0	-	-	21.0	1.0	-	21.0	-	-
1.0	7.0	4.0	-	-	21.0	1.0	-	21.0	-	-
1.0	7.0	5.0	-	-	21.0	1.0	-	21.0	-	-
1.0	7.0	6.0	-	-	21.0	2.0	-	21.0	-	-
1.0	7.0	7.0	62.0	21.0	21.0	2.0	41.5	20.2	32.8	27.1
1.0	7.0	8.0	17.0	93.0	22.0	3.0	100.3	23.1	85.5	78.8
1.0	7.0	9.0	564.0	126.0	22.0	3.0	499.1	34.2	399.3	384.0
1.0	7.0	10.0	713.0	125.0	23.0	3.0	699.1	41.8	544.7	524.3
1.0	7.0	11.0	290.0	287.0	23.0	3.0	570.3	39.1	452.5	435.5
1.0	7.0	12.0	109.0	312.0	24.0	4.0	425.0	34.7	345.0	331.5
1.0	7.0	13.0	33.0	255.0	24.0	4.0	293.5	31.0	242.5	232.0
1.0	7.0	14.0	209.0	245.0	23.0	4.0	423.2	32.8	345.7	332.1
1.0	7.0	15.0	161.0	174.0	23.0	5.0	286.2	29.0	236.6	226.2
1.0	7.0	16.0	290.0	86.0	23.0	4.0	223.3	27.9	177.9	169.0
1.0	7.0	17.0	-	13.0	22.0	4.0	12.3	21.3	10.7	5.4
1.0	7.0	18.0	-	-	22.0	4.0	-	22.0	-	-
1.0	7.0	19.0	-	-	22.0	3.0	-	22.0	-	-
1.0	7.0	20.0	-	-	22.0	3.0	-	22.0	-	-
1.0	7.0	21.0	-	-	22.0	3.0	-	22.0	-	-
1.0	7.0	22.0	-	-	22.0	3.0	-	22.0	-	-
1.0	7.0	23.0	-	-	22.0	3.0	-	22.0	-	-
1.0	8.0	-	-	-	21.0	3.0	-	21.0	-	-
1.0	8.0	1.0	-	-	21.0	3.0	-	21.0	-	-
1.0	8.0	2.0	-	-	21.0	3.0	-	21.0	-	-
1.0	8.0	3.0	-	-	21.0	3.0	-	21.0	-	-
1.0	8.0	4.0	-	-	21.0	3.0	-	21.0	-	-
1.0	8.0	5.0	-	-	21.0	3.0	-	21.0	-	-
1.0	8.0	6.0	-	-	21.0	2.0	-	21.0	-	-
1.0	8.0	7.0	210.0	19.0	22.0	2.0	80.6	22.5	58.4	52.2
1.0	8.0	8.0	-	17.0	23.0	3.0	16.1	21.9	13.9	8.5
1.0	8.0	9.0	-	54.0	24.0	3.0	51.3	23.7	43.9	37.9
1.0	8.0	10.0	-	64.0	24.0	3.0	60.8	24.1	51.9	45.9
1.0	8.0	11.0	12.0	221.0	25.0	3.0	228.5	29.8	190.0	180.8
1.0	8.0	12.0	99.0	310.0	25.0	3.0	413.9	35.4	334.9	321.6
1.0	8.0	13.0	268.0	289.0	25.0	3.0	552.3	39.6	437.1	420.5
1.0	8.0	14.0	773.0	102.0	25.0	3.0	706.8	44.1	543.6	523.2
1.0	8.0	15.0	702.0	85.0	25.0	3.0	530.5	40.0	410.2	394.5
1.0	8.0	16.0	537.0	60.0	24.0	3.0	297.8	32.3	227.4	217.2
1.0	8.0	17.0	101.0	15.0	23.0	3.0	45.0	23.5	33.2	27.5
1.0	8.0	18.0	-	-	23.0	3.0	-	23.0	-	-
1.0	8.0	19.0	-	-	23.0	3.0	-	23.0	-	-
1.0	8.0	20.0	-	-	23.0	3.0	-	23.0	-	-
1.0	8.0	21.0	-	-	23.0	4.0	-	23.0	-	-
1.0	8.0	22.0	-	-	23.0	4.0	-	23.0	-	-
1.0	8.0	23.0	-	-	23.0	3.0	-	23.0	-	-
1.0	9.0	-	-	-	23.0	3.0	-	23.0	-	-
1.0	9.0	1.0	-	-	23.0	3.0	-	23.0	-	-
1.0	9.0	2.0	-	-	23.0	3.0	-	23.0	-	-
1.0	9.0	3.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	4.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	5.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	6.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	7.0	200.0	21.0	23.0	5.0	80.5	23.5	58.5	52.3
1.0	9.0	8.0	617.0	57.0	24.0	5.0	338.8	30.4	262.1	251.0
1.0	9.0	9.0	775.0	76.0	25.0	5.0	574.4	37.3	450.8	433.8
1.0	9.0	10.0	835.0	92.0	25.0	5.0	751.6	41.8	585.2	563.2
1.0	9.0	11.0	875.0	98.0	26.0	5.0	868.4	45.8	665.1	639.8
1.0	9.0	12.0	888.0	98.0	26.0	5.0	898.9	46.7	685.7	659.5
1.0	9.0	13.0	871.0	98.0	26.0	4.0	860.6	48.0	651.5	626.8
1.0	9.0	14.0	829.0	92.0	25.0	4.0	739.0	44.0	568.5	547.2
1.0	9.0	15.0	737.0	82.0	25.0	4.0	549.5	39.2	426.7	410.5
1.0	9.0	16.0	575.0	59.0	24.0	4.0	313.4	31.9	239.6	229.1
1.0	9.0	17.0	131.0	16.0	23.0	4.0	55.6	23.7	40.7	34.8
1.0	9.0	18.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	19.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	20.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	21.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	22.0	-	-	23.0	4.0	-	23.0	-	-
1.0	9.0	23.0	-	-	22.0	4.0	-	22.0	-	-

1.0	10.0	-	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	1.0	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	2.0	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	3.0	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	4.0	-	-	21.0	4.0	-	21.0	-	-
1.0	10.0	5.0	-	-	21.0	4.0	-	21.0	-	-
1.0	10.0	6.0	-	-	21.0	4.0	-	21.0	-	-
1.0	10.0	7.0	252.0	20.0	22.0	4.0	91.2	22.8	65.2	58.8
1.0	10.0	8.0	664.0	53.0	23.0	4.0	352.0	30.5	271.6	260.2
1.0	10.0	9.0	803.0	72.0	24.0	5.0	586.9	36.6	462.0	444.7
1.0	10.0	10.0	134.0	255.0	24.0	5.0	379.8	32.5	311.0	298.5
1.0	10.0	11.0	92.0	295.0	25.0	5.0	388.8	33.3	317.7	305.0
1.0	10.0	12.0	884.0	106.0	25.0	5.0	912.2	44.9	702.3	675.4
1.0	10.0	13.0	863.0	107.0	25.0	4.0	865.5	47.1	658.2	633.2
1.0	10.0	14.0	821.0	100.0	25.0	4.0	743.6	44.1	571.8	550.4
1.0	10.0	15.0	737.0	87.0	24.0	4.0	556.8	38.3	434.4	417.9
1.0	10.0	16.0	-	58.0	23.0	4.0	55.6	24.5	47.4	41.4
1.0	10.0	17.0	106.0	18.0	23.0	4.0	50.5	22.8	37.8	32.0
1.0	10.0	18.0	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	19.0	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	20.0	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	21.0	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	22.0	-	-	22.0	4.0	-	22.0	-	-
1.0	10.0	23.0	-	-	21.0	4.0	-	21.0	-	-
1.0	11.0	-	-	-	21.0	4.0	-	21.0	-	-
1.0	11.0	1.0	-	-	21.0	4.0	-	21.0	-	-
1.0	11.0	2.0	-	-	21.0	4.0	-	21.0	-	-
1.0	11.0	3.0	-	-	21.0	4.0	-	21.0	-	-
1.0	11.0	4.0	-	-	22.0	4.0	-	22.0	-	-
1.0	11.0	5.0	-	-	22.0	4.0	-	22.0	-	-
1.0	11.0	6.0	-	-	22.0	3.0	-	22.0	-	-
1.0	11.0	7.0	154.0	22.0	22.0	3.0	68.4	22.3	50.9	44.8
1.0	11.0	8.0	-	7.0	23.0	3.0	6.6	21.6	5.7	0.5
1.0	11.0	9.0	-	73.0	24.0	3.0	69.4	24.2	59.2	53.0
1.0	11.0	10.0	230.0	251.0	25.0	3.0	448.1	35.7	361.0	347.0
1.0	11.0	11.0	-	175.0	25.0	3.0	170.5	29.6	141.9	133.9
1.0	11.0	12.0	900.0	94.0	25.0	3.0	907.0	48.0	687.2	660.9
1.0	11.0	13.0	817.0	122.0	25.0	3.0	844.7	48.7	637.0	612.9
1.0	11.0	14.0	598.0	160.0	24.0	4.0	646.2	40.8	506.1	487.2
1.0	11.0	15.0	368.0	155.0	24.0	4.0	398.3	34.2	319.3	306.5
1.0	11.0	16.0	560.0	64.0	23.0	3.0	315.0	31.3	242.4	231.9
1.0	11.0	17.0	-	24.0	22.0	3.0	23.5	22.0	20.2	14.8
1.0	11.0	18.0	-	-	22.0	3.0	-	22.0	-	-
1.0	11.0	19.0	-	-	22.0	3.0	-	22.0	-	-
1.0	11.0	20.0	-	-	22.0	3.0	-	22.0	-	-
1.0	11.0	21.0	-	-	22.0	3.0	-	22.0	-	-
1.0	11.0	22.0	-	-	22.0	3.0	-	22.0	-	-
1.0	11.0	23.0	-	-	22.0	3.0	-	22.0	-	-
1.0	12.0	-	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	1.0	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	2.0	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	3.0	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	4.0	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	5.0	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	6.0	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	7.0	237.0	20.0	22.0	3.0	87.1	22.7	62.5	56.2
1.0	12.0	8.0	132.0	100.0	23.0	3.0	166.2	26.1	136.5	128.6
1.0	12.0	9.0	207.0	181.0	24.0	3.0	324.2	31.7	264.5	253.3
1.0	12.0	10.0	830.0	99.0	24.0	3.0	756.5	43.7	583.5	561.5
1.0	12.0	11.0	879.0	102.0	25.0	3.0	878.5	49.1	661.2	636.0
1.0	12.0	12.0	893.0	103.0	25.0	3.0	912.3	50.3	682.7	656.7
1.0	12.0	13.0	893.0	96.0	25.0	3.0	875.1	49.5	657.2	632.2
1.0	12.0	14.0	859.0	89.0	24.0	3.0	763.0	45.6	582.4	560.5
1.0	12.0	15.0	782.0	77.0	24.0	3.0	573.9	40.3	443.1	426.4
1.0	12.0	16.0	623.0	58.0	23.0	2.0	335.8	33.9	254.5	243.6
1.0	12.0	17.0	180.0	19.0	22.0	2.0	71.2	23.7	51.5	45.4
1.0	12.0	18.0	-	-	22.0	2.0	-	22.0	-	-
1.0	12.0	19.0	-	-	22.0	2.0	-	22.0	-	-
1.0	12.0	20.0	-	-	21.0	2.0	-	21.0	-	-
1.0	12.0	21.0	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	22.0	-	-	21.0	3.0	-	21.0	-	-
1.0	12.0	23.0	-	-	21.0	3.0	-	21.0	-	-
1.0	13.0	-	-	-	21.0	3.0	-	21.0	-	-
1.0	13.0	1.0	-	-	21.0	3.0	-	21.0	-	-
1.0	13.0	2.0	-	-	21.0	4.0	-	21.0	-	-
1.0	13.0	3.0	-	-	21.0	4.0	-	21.0	-	-
1.0	13.0	4.0	-	-	21.0	4.0	-	21.0	-	-
1.0	13.0	5.0	-	-	21.0	4.0	-	21.0	-	-
1.0	13.0	6.0	-	-	21.0	4.0	-	21.0	-	-
1.0	13.0	7.0	226.0	21.0	22.0	4.0	85.5	22.7	61.7	55.4
1.0	13.0	8.0	650.0	57.0	23.0	4.0	351.1	30.5	271.1	259.8

1.0	13.0	9.0	802.0	76.0	24.0	4.0	590.4	38.1	461.6	444.2
1.0	13.0	10.0	867.0	89.0	24.0	3.0	773.6	44.9	592.7	570.4
1.0	13.0	11.0	891.0	99.0	25.0	2.0	879.8	52.1	651.6	626.9
1.0	13.0	12.0	890.0	105.0	25.0	2.0	913.1	53.4	672.0	646.4
1.0	13.0	13.0	806.0	134.0	25.0	2.0	851.2	51.9	631.3	607.4
1.0	13.0	14.0	322.0	237.0	25.0	2.0	511.0	42.1	398.3	383.1
1.0	13.0	15.0	11.0	153.0	24.0	2.0	158.2	29.3	131.7	123.9
1.0	13.0	16.0	502.0	77.0	23.0	3.0	306.7	30.2	238.9	228.4
1.0	13.0	17.0	-	26.0	22.0	3.0	25.7	22.0	22.2	16.7
1.0	13.0	18.0	-	-	22.0	3.0	-	22.0	-	-
1.0	13.0	19.0	-	-	22.0	4.0	-	22.0	-	-
1.0	13.0	20.0	-	-	21.0	4.0	-	21.0	-	-
1.0	13.0	21.0	-	-	21.0	3.0	-	21.0	-	-
1.0	13.0	22.0	-	-	21.0	3.0	-	21.0	-	-
1.0	13.0	23.0	-	-	21.0	3.0	-	21.0	-	-
1.0	14.0	-	-	-	21.0	3.0	-	21.0	-	-
1.0	14.0	1.0	-	-	21.0	3.0	-	21.0	-	-
1.0	14.0	2.0	-	-	21.0	2.0	-	21.0	-	-
1.0	14.0	3.0	-	-	21.0	2.0	-	21.0	-	-
1.0	14.0	4.0	-	-	20.0	2.0	-	20.0	-	-
1.0	14.0	5.0	-	-	20.0	2.0	-	20.0	-	-
1.0	14.0	6.0	-	-	20.0	3.0	-	20.0	-	-
1.0	14.0	7.0	197.0	21.0	22.0	3.0	78.6	22.5	57.3	51.1
1.0	14.0	8.0	164.0	99.0	23.0	3.0	178.2	26.4	145.5	137.4
1.0	14.0	9.0	40.0	172.0	23.0	3.0	203.5	27.5	170.6	161.9
1.0	14.0	10.0	230.0	254.0	24.0	3.0	451.4	35.3	364.5	350.3
1.0	14.0	11.0	470.0	248.0	24.0	3.0	691.7	42.4	539.5	519.3
1.0	14.0	12.0	350.0	297.0	25.0	3.0	644.5	42.9	501.7	482.9
1.0	14.0	13.0	-	66.0	25.0	3.0	62.7	27.3	52.8	46.7
1.0	14.0	14.0	358.0	231.0	24.0	3.0	532.1	36.9	425.6	409.5
1.0	14.0	15.0	739.0	86.0	24.0	3.0	563.0	39.3	437.6	421.1
1.0	14.0	16.0	13.0	92.0	23.0	3.0	97.2	25.9	81.9	75.2
1.0	14.0	17.0	168.0	20.0	22.0	3.0	70.2	22.5	51.6	45.5
1.0	14.0	18.0	-	-	22.0	3.0	-	22.0	-	-
1.0	14.0	19.0	-	-	22.0	2.0	-	22.0	-	-
1.0	14.0	20.0	-	-	21.0	2.0	-	21.0	-	-
1.0	14.0	21.0	-	-	21.0	2.0	-	21.0	-	-
1.0	14.0	22.0	-	-	21.0	2.0	-	21.0	-	-
1.0	14.0	23.0	-	-	21.0	2.0	-	21.0	-	-
1.0	15.0	-	-	-	21.0	2.0	-	21.0	-	-
1.0	15.0	1.0	-	-	20.0	3.0	-	20.0	-	-
1.0	15.0	2.0	-	-	20.0	3.0	-	20.0	-	-
1.0	15.0	3.0	-	-	20.0	3.0	-	20.0	-	-
1.0	15.0	4.0	-	-	20.0	2.0	-	20.0	-	-
1.0	15.0	5.0	-	-	20.0	2.0	-	20.0	-	-
1.0	15.0	6.0	-	-	20.0	3.0	-	20.0	-	-
1.0	15.0	7.0	265.0	19.0	22.0	3.0	91.6	23.0	64.7	58.4
1.0	15.0	8.0	674.0	50.0	23.0	4.0	351.1	30.5	270.3	259.0
1.0	15.0	9.0	815.0	66.0	23.0	4.0	587.0	37.0	461.1	443.8
1.0	15.0	10.0	262.0	249.0	24.0	4.0	479.9	36.0	385.9	371.1
1.0	15.0	11.0	244.0	303.0	24.0	4.0	538.6	37.2	431.6	415.3
1.0	15.0	12.0	919.0	86.0	24.0	3.0	919.6	48.5	694.9	668.4
1.0	15.0	13.0	540.0	221.0	24.0	3.0	722.3	44.7	556.8	535.9
1.0	15.0	14.0	853.0	87.0	24.0	3.0	761.2	45.0	582.9	561.0
1.0	15.0	15.0	776.0	77.0	24.0	3.0	575.2	40.4	444.5	427.7
1.0	15.0	16.0	607.0	61.0	23.0	3.0	336.3	32.5	257.6	246.6
1.0	15.0	17.0	189.0	21.0	22.0	3.0	76.5	23.5	55.6	49.5
1.0	15.0	18.0	-	-	22.0	3.0	-	22.0	-	-
1.0	15.0	19.0	-	-	22.0	3.0	-	22.0	-	-
1.0	15.0	20.0	-	-	21.0	3.0	-	21.0	-	-
1.0	15.0	21.0	-	-	21.0	3.0	-	21.0	-	-
1.0	15.0	22.0	-	-	21.0	3.0	-	21.0	-	-
1.0	15.0	23.0	-	-	21.0	3.0	-	21.0	-	-
1.0	16.0	-	-	-	21.0	2.0	-	21.0	-	-
1.0	16.0	1.0	-	-	21.0	2.0	-	21.0	-	-
1.0	16.0	2.0	-	-	21.0	2.0	-	21.0	-	-
1.0	16.0	3.0	-	-	21.0	2.0	-	21.0	-	-
1.0	16.0	4.0	-	-	20.0	2.0	-	20.0	-	-
1.0	16.0	5.0	-	-	20.0	2.0	-	20.0	-	-
1.0	16.0	6.0	-	-	20.0	2.0	-	20.0	-	-
1.0	16.0	7.0	-	8.0	22.0	2.0	7.6	20.5	6.6	1.4
1.0	16.0	8.0	689.0	49.0	23.0	2.0	356.1	32.0	272.0	260.7
1.0	16.0	9.0	826.0	65.0	24.0	3.0	592.6	39.5	459.7	442.4
1.0	16.0	10.0	873.0	81.0	24.0	3.0	765.3	44.7	586.9	564.8
1.0	16.0	11.0	894.0	91.0	25.0	3.0	875.9	49.1	659.4	634.4
1.0	16.0	12.0	887.0	100.0	25.0	3.0	908.5	50.2	680.3	654.4
1.0	16.0	13.0	847.0	109.0	25.0	3.0	862.9	49.2	649.3	624.7
1.0	16.0	14.0	786.0	110.0	25.0	3.0	737.6	45.9	562.6	541.5
1.0	16.0	15.0	690.0	100.0	25.0	3.0	551.7	40.7	426.5	410.4
1.0	16.0	16.0	492.0	79.0	24.0	3.0	307.8	32.6	237.7	227.2
1.0	16.0	17.0	102.0	23.0	23.0	3.0	57.2	23.9	43.6	37.6

1.0	16.0	18.0	-	-	23.0	3.0	-	23.0	-	-
1.0	16.0	19.0	-	-	23.0	3.0	-	23.0	-	-
1.0	16.0	20.0	-	-	22.0	3.0	-	22.0	-	-
1.0	16.0	21.0	-	-	22.0	3.0	-	22.0	-	-
1.0	16.0	22.0	-	-	22.0	3.0	-	22.0	-	-
1.0	16.0	23.0	-	-	22.0	3.0	-	22.0	-	-
1.0	17.0	-	-	-	21.0	3.0	-	21.0	-	-
1.0	17.0	1.0	-	-	21.0	2.0	-	21.0	-	-
1.0	17.0	2.0	-	-	21.0	2.0	-	21.0	-	-
1.0	17.0	3.0	-	-	21.0	2.0	-	21.0	-	-
1.0	17.0	4.0	-	-	20.0	2.0	-	20.0	-	-
1.0	17.0	5.0	-	-	20.0	2.0	-	20.0	-	-
1.0	17.0	6.0	-	-	20.0	2.0	-	20.0	-	-
1.0	17.0	7.0	262.0	19.0	22.0	3.0	90.4	22.9	63.8	57.5
1.0	17.0	8.0	649.0	53.0	23.0	3.0	343.4	31.0	264.0	252.9
1.0	17.0	9.0	793.0	71.0	24.0	4.0	579.4	37.8	453.6	436.5
1.0	17.0	10.0	864.0	80.0	25.0	5.0	757.9	41.9	589.7	567.5
1.0	17.0	11.0	898.0	85.0	25.0	5.0	873.5	44.9	672.2	646.6
1.0	17.0	12.0	82.0	317.0	25.0	5.0	406.2	34.8	329.6	316.5
1.0	17.0	13.0	136.0	312.0	26.0	4.0	456.5	37.0	366.3	352.1
1.0	17.0	14.0	279.0	252.0	26.0	4.0	496.9	38.1	395.5	380.4
1.0	17.0	15.0	718.0	92.0	25.0	4.0	561.5	38.8	438.1	421.6
1.0	17.0	16.0	-	57.0	24.0	3.0	54.2	25.8	46.0	40.0
1.0	17.0	17.0	151.0	24.0	23.0	3.0	69.9	23.3	52.0	46.0
1.0	17.0	18.0	-	-	22.0	5.0	-	22.0	-	-
1.0	17.0	19.0	-	-	20.0	6.0	-	20.0	-	-
1.0	17.0	20.0	-	-	18.0	7.0	-	18.0	-	-
1.0	17.0	21.0	-	-	17.0	6.0	-	17.0	-	-
1.0	17.0	22.0	-	-	17.0	6.0	-	17.0	-	-
1.0	17.0	23.0	-	-	16.0	6.0	-	16.0	-	-
1.0	18.0	-	-	-	16.0	6.0	-	16.0	-	-
1.0	18.0	1.0	-	-	15.0	7.0	-	15.0	-	-
1.0	18.0	2.0	-	-	15.0	6.0	-	15.0	-	-
1.0	18.0	3.0	-	-	14.0	6.0	-	14.0	-	-
1.0	18.0	4.0	-	-	13.0	6.0	-	13.0	-	-
1.0	18.0	5.0	-	-	13.0	5.0	-	13.0	-	-
1.0	18.0	6.0	-	-	13.0	5.0	-	13.0	-	-
1.0	18.0	7.0	169.0	24.0	14.0	5.0	73.2	14.2	56.2	50.0
1.0	18.0	8.0	533.0	80.0	16.0	5.0	324.9	22.0	263.3	252.2
1.0	18.0	9.0	665.0	119.0	17.0	5.0	556.2	28.8	456.2	439.0
1.0	18.0	10.0	827.0	108.0	18.0	5.0	767.0	35.0	618.0	594.7
1.0	18.0	11.0	848.0	123.0	19.0	5.0	880.9	39.0	698.6	671.8
1.0	18.0	12.0	849.0	130.0	20.0	5.0	917.8	41.1	720.8	693.1
1.0	18.0	13.0	854.0	119.0	20.0	5.0	883.3	40.4	695.6	669.0
1.0	18.0	14.0	806.0	115.0	21.0	5.0	761.7	38.7	602.9	580.2
1.0	18.0	15.0	720.0	101.0	20.0	5.0	574.4	33.2	461.0	443.6
1.0	18.0	16.0	430.0	80.0	20.0	5.0	282.4	26.3	225.7	215.6
1.0	18.0	17.0	133.0	27.0	20.0	5.0	69.9	20.8	53.6	47.4
1.0	18.0	18.0	-	-	20.0	5.0	-	20.0	-	-
1.0	18.0	19.0	-	-	20.0	5.0	-	20.0	-	-
1.0	18.0	20.0	-	-	20.0	5.0	-	20.0	-	-
1.0	18.0	21.0	-	-	20.0	5.0	-	20.0	-	-
1.0	18.0	22.0	-	-	20.0	5.0	-	20.0	-	-
1.0	18.0	23.0	-	-	20.0	4.0	-	20.0	-	-
1.0	19.0	-	-	-	20.0	4.0	-	20.0	-	-
1.0	19.0	1.0	-	-	20.0	3.0	-	20.0	-	-
1.0	19.0	2.0	-	-	20.0	3.0	-	20.0	-	-
1.0	19.0	3.0	-	-	20.0	3.0	-	20.0	-	-
1.0	19.0	4.0	-	-	20.0	3.0	-	20.0	-	-
1.0	19.0	5.0	-	-	20.0	3.0	-	20.0	-	-
1.0	19.0	6.0	-	-	20.0	3.0	-	20.0	-	-
1.0	19.0	7.0	-	10.0	20.0	3.0	9.5	18.6	8.3	3.0
1.0	19.0	8.0	204.0	99.0	21.0	3.0	199.6	24.7	163.6	155.1
1.0	19.0	9.0	-	117.0	22.0	4.0	113.4	23.8	97.0	90.0
1.0	19.0	10.0	-	144.0	22.0	4.0	139.4	24.2	119.0	111.5
1.0	19.0	11.0	91.0	305.0	22.0	4.0	398.5	30.8	329.6	316.6
1.0	19.0	12.0	4.0	193.0	23.0	4.0	191.9	27.4	161.4	152.9
1.0	19.0	13.0	62.0	294.0	22.0	4.0	361.1	30.0	299.9	287.7
1.0	19.0	14.0	-	122.0	22.0	4.0	117.2	24.4	100.0	92.9
1.0	19.0	15.0	-	108.0	22.0	4.0	104.1	23.3	89.2	82.4
1.0	19.0	16.0	-	43.0	21.0	4.0	40.8	20.7	35.4	29.6
1.0	19.0	17.0	120.0	27.0	21.0	3.0	66.8	21.2	51.5	45.4
1.0	19.0	18.0	-	-	21.0	3.0	-	21.0	-	-
1.0	19.0	19.0	-	-	21.0	3.0	-	21.0	-	-
1.0	19.0	20.0	-	-	21.0	2.0	-	21.0	-	-
1.0	19.0	21.0	-	-	21.0	2.0	-	21.0	-	-
1.0	19.0	22.0	-	-	20.0	1.0	-	20.0	-	-
1.0	19.0	23.0	-	-	20.0	1.0	-	20.0	-	-
1.0	20.0	-	-	-	20.0	1.0	-	20.0	-	-
1.0	20.0	1.0	-	-	20.0	-	-	20.0	-	-
1.0	20.0	2.0	-	-	20.0	-	-	20.0	-	-

1.0	20.0	3.0	-	-	20.0	-	-	20.0	-	-
1.0	20.0	4.0	-	-	20.0	1.0	-	20.0	-	-
1.0	20.0	5.0	-	-	20.0	1.0	-	20.0	-	-
1.0	20.0	6.0	-	-	20.0	1.0	-	20.0	-	-
1.0	20.0	7.0	141.0	23.0	20.0	2.0	65.3	20.2	49.2	43.2
1.0	20.0	8.0	180.0	101.0	21.0	2.0	191.7	25.2	157.3	148.9
1.0	20.0	9.0	719.0	91.0	22.0	3.0	559.0	36.1	441.9	425.3
1.0	20.0	10.0	827.0	95.0	23.0	3.0	753.7	43.4	582.4	560.5
1.0	20.0	11.0	542.0	225.0	23.0	3.0	731.3	43.4	567.4	546.1
1.0	20.0	12.0	867.0	107.0	24.0	3.0	910.7	48.9	687.0	660.8
1.0	20.0	13.0	843.0	111.0	24.0	3.0	868.0	48.4	656.1	631.2
1.0	20.0	14.0	790.0	109.0	23.0	3.0	746.0	44.2	574.4	552.8
1.0	20.0	15.0	94.0	192.0	22.0	4.0	259.2	29.1	215.2	205.3
1.0	20.0	16.0	271.0	103.0	22.0	4.0	235.0	27.1	189.8	180.7
1.0	20.0	17.0	132.0	27.0	21.0	3.0	69.4	21.9	52.9	46.8
1.0	20.0	18.0	-	-	21.0	3.0	-	21.0	-	-
1.0	20.0	19.0	-	-	21.0	3.0	-	21.0	-	-
1.0	20.0	20.0	-	-	21.0	2.0	-	21.0	-	-
1.0	20.0	21.0	-	-	21.0	2.0	-	21.0	-	-
1.0	20.0	22.0	-	-	21.0	2.0	-	21.0	-	-
1.0	20.0	23.0	-	-	21.0	2.0	-	21.0	-	-
1.0	21.0	-	-	-	21.0	2.0	-	21.0	-	-
1.0	21.0	1.0	-	-	21.0	2.0	-	21.0	-	-
1.0	21.0	2.0	-	-	21.0	1.0	-	21.0	-	-
1.0	21.0	3.0	-	-	21.0	1.0	-	21.0	-	-
1.0	21.0	4.0	-	-	20.0	1.0	-	20.0	-	-
1.0	21.0	5.0	-	-	20.0	1.0	-	20.0	-	-
1.0	21.0	6.0	-	-	21.0	1.0	-	21.0	-	-
1.0	21.0	7.0	98.0	24.0	21.0	1.0	52.3	20.8	40.1	34.3
1.0	21.0	8.0	201.0	101.0	22.0	2.0	200.4	26.4	163.1	154.5
1.0	21.0	9.0	601.0	116.0	22.0	2.0	514.0	36.5	406.3	390.8
1.0	21.0	10.0	715.0	137.0	23.0	2.0	718.5	44.7	551.7	531.0
1.0	21.0	11.0	356.0	289.0	23.0	2.0	631.3	43.0	491.0	472.5
1.0	21.0	12.0	19.0	256.0	24.0	2.0	270.4	33.2	221.2	211.2
1.0	21.0	13.0	87.0	309.0	24.0	2.0	399.5	35.4	323.1	310.2
1.0	21.0	14.0	98.0	266.0	24.0	1.0	354.4	36.9	284.3	272.6
1.0	21.0	15.0	-	111.0	23.0	1.0	107.1	26.9	90.3	83.4
1.0	21.0	16.0	-	7.0	22.0	1.0	6.6	20.4	5.8	0.6
1.0	21.0	17.0	-	-	22.0	1.0	-	22.0	-	-
1.0	21.0	18.0	-	-	22.0	1.0	-	22.0	-	-
1.0	21.0	19.0	-	-	21.0	1.0	-	21.0	-	-
1.0	21.0	20.0	-	-	21.0	2.0	-	21.0	-	-
1.0	21.0	21.0	-	-	21.0	2.0	-	21.0	-	-
1.0	21.0	22.0	-	-	20.0	3.0	-	20.0	-	-
1.0	21.0	23.0	-	-	20.0	3.0	-	20.0	-	-
1.0	22.0	-	-	-	20.0	4.0	-	20.0	-	-
1.0	22.0	1.0	-	-	20.0	4.0	-	20.0	-	-
1.0	22.0	2.0	-	-	20.0	5.0	-	20.0	-	-
1.0	22.0	3.0	-	-	20.0	5.0	-	20.0	-	-
1.0	22.0	4.0	-	-	20.0	5.0	-	20.0	-	-
1.0	22.0	5.0	-	-	20.0	5.0	-	20.0	-	-
1.0	22.0	6.0	-	-	20.0	5.0	-	20.0	-	-
1.0	22.0	7.0	59.0	24.0	20.0	5.0	43.4	19.5	34.7	29.0
1.0	22.0	8.0	390.0	84.0	20.0	5.0	266.8	24.7	215.0	205.2
1.0	22.0	9.0	619.0	112.0	21.0	5.0	521.1	31.9	421.2	405.2
1.0	22.0	10.0	401.0	230.0	21.0	6.0	565.6	32.2	463.1	445.7
1.0	22.0	11.0	372.0	286.0	22.0	6.0	642.1	34.8	520.4	500.9
1.0	22.0	12.0	425.0	288.0	22.0	6.0	704.9	36.2	567.6	546.3
1.0	22.0	13.0	522.0	237.0	21.0	6.0	730.8	35.9	589.2	567.0
1.0	22.0	14.0	335.0	250.0	21.0	7.0	540.1	31.0	445.2	428.4
1.0	22.0	15.0	-	16.0	20.0	6.0	15.2	20.0	13.2	7.9
1.0	22.0	16.0	14.0	102.0	20.0	6.0	107.5	20.9	92.8	85.9
1.0	22.0	17.0	-	19.0	20.0	6.0	18.0	19.2	15.7	10.3
1.0	22.0	18.0	-	-	20.0	6.0	-	20.0	-	-
1.0	22.0	19.0	-	-	19.0	6.0	-	19.0	-	-
1.0	22.0	20.0	-	-	19.0	5.0	-	19.0	-	-
1.0	22.0	21.0	-	-	19.0	5.0	-	19.0	-	-
1.0	22.0	22.0	-	-	19.0	5.0	-	19.0	-	-
1.0	22.0	23.0	-	-	19.0	5.0	-	19.0	-	-
1.0	23.0	-	-	-	18.0	4.0	-	18.0	-	-
1.0	23.0	1.0	-	-	18.0	4.0	-	18.0	-	-
1.0	23.0	2.0	-	-	18.0	4.0	-	18.0	-	-
1.0	23.0	3.0	-	-	18.0	4.0	-	18.0	-	-
1.0	23.0	4.0	-	-	18.0	4.0	-	18.0	-	-
1.0	23.0	5.0	-	-	18.0	4.0	-	18.0	-	-
1.0	23.0	6.0	-	-	18.0	4.0	-	18.0	-	-
1.0	23.0	7.0	-	16.0	18.0	4.0	15.2	16.7	13.4	8.1
1.0	23.0	8.0	163.0	104.0	19.0	4.0	182.2	22.0	152.0	143.8
1.0	23.0	9.0	669.0	100.0	20.0	4.0	539.1	32.4	434.5	418.0
1.0	23.0	10.0	717.0	132.0	21.0	4.0	715.7	38.7	566.8	545.5
1.0	23.0	11.0	550.0	225.0	21.0	3.0	740.1	41.6	579.8	558.0

1.0	23.0	12.0	917.0	104.0	22.0	3.0	950.0	48.0	720.1	692.4
1.0	23.0	13.0	196.0	322.0	22.0	3.0	520.2	37.6	416.1	400.3
1.0	23.0	14.0	357.0	246.0	21.0	3.0	553.3	36.0	444.9	428.1
1.0	23.0	15.0	-	113.0	21.0	3.0	109.0	24.2	93.1	86.1
1.0	23.0	16.0	640.0	67.0	20.0	3.0	367.1	28.6	288.3	276.5
1.0	23.0	17.0	261.0	28.0	19.0	3.0	101.6	21.3	74.2	67.7
1.0	23.0	18.0	-	-	18.0	3.0	-	18.0	-	-
1.0	23.0	19.0	-	-	18.0	3.0	-	18.0	-	-
1.0	23.0	20.0	-	-	18.0	2.0	-	18.0	-	-
1.0	23.0	21.0	-	-	17.0	2.0	-	17.0	-	-
1.0	23.0	22.0	-	-	17.0	2.0	-	17.0	-	-
1.0	23.0	23.0	-	-	17.0	2.0	-	17.0	-	-
1.0	24.0	-	-	-	17.0	2.0	-	17.0	-	-
1.0	24.0	1.0	-	-	17.0	2.0	-	17.0	-	-
1.0	24.0	2.0	-	-	17.0	2.0	-	17.0	-	-
1.0	24.0	3.0	-	-	17.0	2.0	-	17.0	-	-
1.0	24.0	4.0	-	-	16.0	2.0	-	16.0	-	-
1.0	24.0	5.0	-	-	16.0	2.0	-	16.0	-	-
1.0	24.0	6.0	-	-	16.0	2.0	-	16.0	-	-
1.0	24.0	7.0	283.0	22.0	18.0	3.0	97.1	19.2	69.6	63.2
1.0	24.0	8.0	677.0	59.0	19.0	3.0	363.1	27.5	284.2	272.5
1.0	24.0	9.0	828.0	78.0	20.0	3.0	611.3	36.1	483.0	464.8
1.0	24.0	10.0	903.0	89.0	21.0	3.0	803.5	42.9	622.5	599.0
1.0	24.0	11.0	935.0	96.0	21.0	3.0	926.3	46.6	706.6	679.5
1.0	24.0	12.0	943.0	100.0	21.0	4.0	970.5	45.8	744.3	715.5
1.0	24.0	13.0	929.0	100.0	21.0	4.0	930.7	44.9	716.4	688.8
1.0	24.0	14.0	888.0	96.0	21.0	4.0	814.6	42.1	634.0	610.1
1.0	24.0	15.0	807.0	87.0	20.0	3.0	620.6	37.8	487.3	469.0
1.0	24.0	16.0	645.0	69.0	19.0	3.0	372.7	29.6	291.7	279.8
1.0	24.0	17.0	267.0	29.0	18.0	3.0	104.0	20.4	76.3	69.7
1.0	24.0	18.0	-	-	18.0	2.0	-	18.0	-	-
1.0	24.0	19.0	-	-	18.0	2.0	-	18.0	-	-
1.0	24.0	20.0	-	-	18.0	2.0	-	18.0	-	-
1.0	24.0	21.0	-	-	18.0	2.0	-	18.0	-	-
1.0	24.0	22.0	-	-	18.0	2.0	-	18.0	-	-
1.0	24.0	23.0	-	-	18.0	2.0	-	18.0	-	-
1.0	25.0	-	-	-	18.0	2.0	-	18.0	-	-
1.0	25.0	1.0	-	-	17.0	2.0	-	17.0	-	-
1.0	25.0	2.0	-	-	17.0	3.0	-	17.0	-	-
1.0	25.0	3.0	-	-	17.0	3.0	-	17.0	-	-
1.0	25.0	4.0	-	-	17.0	3.0	-	17.0	-	-
1.0	25.0	5.0	-	-	17.0	3.0	-	17.0	-	-
1.0	25.0	6.0	-	-	17.0	2.0	-	17.0	-	-
1.0	25.0	7.0	177.0	24.0	19.0	2.0	73.9	19.6	54.9	48.7
1.0	25.0	8.0	582.0	73.0	20.0	2.0	338.3	28.7	264.8	253.6
1.0	25.0	9.0	764.0	92.0	21.0	2.0	589.7	38.3	461.2	443.8
1.0	25.0	10.0	844.0	105.0	22.0	2.0	782.1	45.8	596.8	574.4
1.0	25.0	11.0	880.0	113.0	22.0	2.0	905.3	50.0	678.5	652.6
1.0	25.0	12.0	883.0	119.0	23.0	2.0	946.2	52.5	700.0	673.2
1.0	25.0	13.0	837.0	134.0	23.0	2.0	896.4	51.3	667.1	641.7
1.0	25.0	14.0	794.0	127.0	23.0	2.0	780.5	47.9	589.5	567.4
1.0	25.0	15.0	716.0	111.0	22.0	1.0	593.2	45.0	449.7	432.8
1.0	25.0	16.0	556.0	84.0	21.0	1.0	350.4	35.0	268.7	257.4
1.0	25.0	17.0	191.0	33.0	21.0	1.0	89.8	24.2	66.7	60.3
1.0	25.0	18.0	-	-	21.0	1.0	-	21.0	-	-
1.0	25.0	19.0	-	-	20.0	1.0	-	20.0	-	-
1.0	25.0	20.0	-	-	20.0	1.0	-	20.0	-	-
1.0	25.0	21.0	-	-	20.0	1.0	-	20.0	-	-
1.0	25.0	22.0	-	-	20.0	1.0	-	20.0	-	-
1.0	25.0	23.0	-	-	20.0	1.0	-	20.0	-	-
1.0	26.0	-	-	-	20.0	1.0	-	20.0	-	-
1.0	26.0	1.0	-	-	19.0	1.0	-	19.0	-	-
1.0	26.0	2.0	-	-	18.0	1.0	-	18.0	-	-
1.0	26.0	3.0	-	-	18.0	1.0	-	18.0	-	-
1.0	26.0	4.0	-	-	17.0	2.0	-	17.0	-	-
1.0	26.0	5.0	-	-	17.0	2.0	-	17.0	-	-
1.0	26.0	6.0	-	-	17.0	2.0	-	17.0	-	-
1.0	26.0	7.0	226.0	24.0	18.0	2.0	86.3	18.9	63.3	56.9
1.0	26.0	8.0	617.0	69.0	19.0	3.0	348.9	27.1	274.8	263.3
1.0	26.0	9.0	778.0	90.0	20.0	2.0	594.6	37.5	466.7	449.2
1.0	26.0	10.0	857.0	102.0	21.0	2.0	789.7	45.1	605.0	582.2
1.0	26.0	11.0	893.0	110.0	22.0	2.0	914.6	50.3	684.4	658.2
1.0	26.0	12.0	901.0	114.0	23.0	2.0	958.4	52.9	707.7	680.5
1.0	26.0	13.0	906.0	105.0	23.0	2.0	919.8	52.0	682.0	656.0
1.0	26.0	14.0	869.0	100.0	23.0	2.0	807.8	48.8	607.3	584.5
1.0	26.0	15.0	794.0	89.0	22.0	2.0	617.8	42.1	475.1	457.2
1.0	26.0	16.0	643.0	70.0	21.0	1.0	375.3	36.0	285.2	273.4
1.0	26.0	17.0	288.0	30.0	20.0	1.0	109.8	24.1	78.8	72.2
1.0	26.0	18.0	-	-	20.0	2.0	-	20.0	-	-
1.0	26.0	19.0	-	-	19.0	2.0	-	19.0	-	-
1.0	26.0	20.0	-	-	19.0	2.0	-	19.0	-	-

1.0	26.0	21.0	-	-	19.0	2.0	-	19.0	-	-
1.0	26.0	22.0	-	-	19.0	2.0	-	19.0	-	-
1.0	26.0	23.0	-	-	19.0	1.0	-	19.0	-	-
1.0	27.0	-	-	-	19.0	1.0	-	19.0	-	-
1.0	27.0	1.0	-	-	19.0	1.0	-	19.0	-	-
1.0	27.0	2.0	-	-	19.0	1.0	-	19.0	-	-
1.0	27.0	3.0	-	-	19.0	1.0	-	19.0	-	-
1.0	27.0	4.0	-	-	19.0	1.0	-	19.0	-	-
1.0	27.0	5.0	-	-	18.0	1.0	-	18.0	-	-
1.0	27.0	6.0	-	-	18.0	2.0	-	18.0	-	-
1.0	27.0	7.0	252.0	24.0	20.0	2.0	91.7	21.3	65.9	59.5
1.0	27.0	8.0	631.0	65.0	21.0	2.0	350.7	30.2	271.8	260.4
1.0	27.0	9.0	780.0	86.0	22.0	3.0	592.1	37.5	464.8	447.4
1.0	27.0	10.0	860.0	96.0	23.0	3.0	786.3	44.3	604.8	582.1
1.0	27.0	11.0	892.0	104.0	23.0	3.0	901.9	47.9	683.7	657.6
1.0	27.0	12.0	899.0	107.0	23.0	4.0	943.4	47.0	719.0	691.4
1.0	27.0	13.0	896.0	102.0	24.0	4.0	909.4	47.3	691.6	665.2
1.0	27.0	14.0	857.0	97.0	23.0	4.0	796.7	43.5	615.7	592.5
1.0	27.0	15.0	782.0	87.0	23.0	4.0	609.5	38.8	476.7	458.8
1.0	27.0	16.0	633.0	69.0	22.0	3.0	370.9	32.5	286.9	275.1
1.0	27.0	17.0	288.0	30.0	21.0	3.0	109.8	23.6	79.0	72.3
1.0	27.0	18.0	-	-	20.0	3.0	-	20.0	-	-
1.0	27.0	19.0	-	-	20.0	4.0	-	20.0	-	-
1.0	27.0	20.0	-	-	20.0	4.0	-	20.0	-	-
1.0	27.0	21.0	-	-	20.0	4.0	-	20.0	-	-
1.0	27.0	22.0	-	-	20.0	4.0	-	20.0	-	-
1.0	27.0	23.0	-	-	20.0	4.0	-	20.0	-	-
1.0	28.0	-	-	-	20.0	4.0	-	20.0	-	-
1.0	28.0	1.0	-	-	20.0	5.0	-	20.0	-	-
1.0	28.0	2.0	-	-	20.0	5.0	-	20.0	-	-
1.0	28.0	3.0	-	-	20.0	5.0	-	20.0	-	-
1.0	28.0	4.0	-	-	20.0	5.0	-	20.0	-	-
1.0	28.0	5.0	-	-	20.0	5.0	-	20.0	-	-
1.0	28.0	6.0	-	-	20.0	5.0	-	20.0	-	-
1.0	28.0	7.0	210.0	25.0	21.0	5.0	83.3	21.7	60.7	54.5
1.0	28.0	8.0	605.0	66.0	22.0	5.0	340.9	28.5	266.7	255.5
1.0	28.0	9.0	762.0	85.0	23.0	5.0	580.4	35.4	460.4	443.1
1.0	28.0	10.0	831.0	99.0	24.0	5.0	768.2	41.2	600.6	578.0
1.0	28.0	11.0	864.0	106.0	24.0	5.0	887.4	44.2	685.7	659.5
1.0	28.0	12.0	870.0	111.0	24.0	5.0	923.1	45.2	710.0	682.7
1.0	28.0	13.0	854.0	110.0	24.0	4.0	889.6	46.7	678.5	652.6
1.0	28.0	14.0	813.0	106.0	24.0	4.0	773.8	43.9	597.0	574.5
1.0	28.0	15.0	735.0	95.0	23.0	4.0	591.8	38.3	464.3	446.8
1.0	28.0	16.0	580.0	75.0	22.0	4.0	354.8	31.0	277.2	265.7
1.0	28.0	17.0	229.0	33.0	22.0	3.0	98.1	24.2	71.9	65.4
1.0	28.0	18.0	-	-	22.0	3.0	-	22.0	-	-
1.0	28.0	19.0	-	-	21.0	3.0	-	21.0	-	-
1.0	28.0	20.0	-	-	21.0	4.0	-	21.0	-	-
1.0	28.0	21.0	-	-	21.0	4.0	-	21.0	-	-
1.0	28.0	22.0	-	-	21.0	3.0	-	21.0	-	-
1.0	28.0	23.0	-	-	21.0	3.0	-	21.0	-	-
1.0	29.0	-	-	-	21.0	3.0	-	21.0	-	-
1.0	29.0	1.0	-	-	21.0	3.0	-	21.0	-	-
1.0	29.0	2.0	-	-	21.0	3.0	-	21.0	-	-
1.0	29.0	3.0	-	-	21.0	3.0	-	21.0	-	-
1.0	29.0	4.0	-	-	21.0	3.0	-	21.0	-	-
1.0	29.0	5.0	-	-	21.0	3.0	-	21.0	-	-
1.0	29.0	6.0	-	-	21.0	3.0	-	21.0	-	-
1.0	29.0	7.0	-	13.0	22.0	3.0	12.3	20.9	10.7	5.4
1.0	29.0	8.0	60.0	108.0	23.0	4.0	137.4	24.9	115.1	107.7
1.0	29.0	9.0	6.0	159.0	24.0	4.0	160.1	26.9	134.9	127.1
1.0	29.0	10.0	187.0	277.0	24.0	4.0	444.0	34.0	361.1	347.0
1.0	29.0	11.0	8.0	215.0	25.0	4.0	217.5	30.2	180.5	171.6
1.0	29.0	12.0	-	122.0	25.0	4.0	116.9	27.0	98.5	91.4
1.0	29.0	13.0	3.0	189.0	25.0	4.0	186.6	28.5	156.1	147.7
1.0	29.0	14.0	791.0	116.0	24.0	4.0	769.1	41.9	599.6	577.0
1.0	29.0	15.0	39.0	192.0	24.0	4.0	223.3	30.3	184.8	175.7
1.0	29.0	16.0	586.0	75.0	23.0	4.0	358.5	31.0	280.2	268.6
1.0	29.0	17.0	253.0	34.0	22.0	3.0	104.7	24.4	76.2	69.6
1.0	29.0	18.0	-	-	22.0	3.0	-	22.0	-	-
1.0	29.0	19.0	-	-	22.0	3.0	-	22.0	-	-
1.0	29.0	20.0	-	-	22.0	4.0	-	22.0	-	-
1.0	29.0	21.0	-	-	21.0	4.0	-	21.0	-	-
1.0	29.0	22.0	-	-	21.0	4.0	-	21.0	-	-
1.0	29.0	23.0	-	-	21.0	4.0	-	21.0	-	-
1.0	30.0	-	-	-	21.0	4.0	-	21.0	-	-
1.0	30.0	1.0	-	-	21.0	4.0	-	21.0	-	-
1.0	30.0	2.0	-	-	21.0	4.0	-	21.0	-	-
1.0	30.0	3.0	-	-	21.0	4.0	-	21.0	-	-
1.0	30.0	4.0	-	-	21.0	4.0	-	21.0	-	-
1.0	30.0	5.0	-	-	21.0	4.0	-	21.0	-	-

1.0	30.0	6.0	-	-	21.0	4.0	-	21.0	-	-
1.0	30.0	7.0	163.0	29.0	22.0	5.0	75.7	22.5	56.4	50.2
1.0	30.0	8.0	568.0	74.0	23.0	6.0	334.3	28.7	262.1	251.0
1.0	30.0	9.0	748.0	93.0	24.0	7.0	583.8	34.3	466.1	448.6
1.0	30.0	10.0	840.0	100.0	24.0	7.0	778.4	38.3	617.7	594.4
1.0	30.0	11.0	880.0	107.0	25.0	7.0	899.0	41.8	703.3	676.4
1.0	30.0	12.0	895.0	108.0	25.0	7.0	945.8	42.8	736.6	708.1
1.0	30.0	13.0	889.0	106.0	25.0	6.0	913.0	44.0	706.3	679.2
1.0	30.0	14.0	851.0	101.0	25.0	6.0	801.7	41.7	625.6	601.9
1.0	30.0	15.0	777.0	90.0	25.0	5.0	614.2	39.3	479.6	461.6
1.0	30.0	16.0	633.0	71.0	24.0	5.0	376.4	32.5	291.7	279.8
1.0	30.0	17.0	294.0	34.0	23.0	4.0	114.9	25.4	82.4	75.6
1.0	30.0	18.0	-	-	23.0	4.0	-	23.0	-	-
1.0	30.0	19.0	-	-	22.0	4.0	-	22.0	-	-
1.0	30.0	20.0	-	-	22.0	4.0	-	22.0	-	-
1.0	30.0	21.0	-	-	22.0	5.0	-	22.0	-	-
1.0	30.0	22.0	-	-	22.0	5.0	-	22.0	-	-
1.0	30.0	23.0	-	-	22.0	5.0	-	22.0	-	-
1.0	31.0	-	-	-	22.0	5.0	-	22.0	-	-
1.0	31.0	1.0	-	-	22.0	5.0	-	22.0	-	-
1.0	31.0	2.0	-	-	22.0	5.0	-	22.0	-	-
1.0	31.0	3.0	-	-	22.0	5.0	-	22.0	-	-
1.0	31.0	4.0	-	-	22.0	5.0	-	22.0	-	-
1.0	31.0	5.0	-	-	22.0	5.0	-	22.0	-	-
1.0	31.0	6.0	-	-	22.0	5.0	-	22.0	-	-
1.0	31.0	7.0	163.0	28.0	22.0	4.0	74.1	22.6	55.1	48.9
1.0	31.0	8.0	-	40.0	21.0	4.0	37.9	20.5	33.0	27.2
1.0	31.0	9.0	-	69.0	20.0	5.0	65.5	20.1	57.1	50.9
1.0	31.0	10.0	19.0	224.0	20.0	6.0	235.9	23.6	202.0	192.5
1.0	31.0	11.0	113.0	330.0	20.0	5.0	444.5	29.1	370.7	356.4
1.0	31.0	12.0	-	132.0	20.0	5.0	126.7	22.4	109.1	101.8
1.0	31.0	13.0	42.0	297.0	20.0	5.0	345.2	26.6	291.4	279.5
1.0	31.0	14.0	259.0	281.0	20.0	5.0	518.5	31.0	427.7	411.5
1.0	31.0	15.0	482.0	163.0	20.0	4.0	502.4	32.4	407.5	392.0
1.0	31.0	16.0	600.0	77.0	19.0	3.0	369.0	29.1	291.4	279.5
1.0	31.0	17.0	-	25.0	19.0	3.0	23.7	19.1	20.7	15.2
1.0	31.0	18.0	-	-	18.0	3.0	-	18.0	-	-
1.0	31.0	19.0	-	-	18.0	4.0	-	18.0	-	-
1.0	31.0	20.0	-	-	18.0	3.0	-	18.0	-	-
1.0	31.0	21.0	-	-	18.0	3.0	-	18.0	-	-
1.0	31.0	22.0	-	-	18.0	3.0	-	18.0	-	-
1.0	31.0	23.0	-	-	17.0	3.0	-	17.0	-	-
2.0	1.0	-	-	-	17.0	3.0	-	17.0	-	-
2.0	1.0	1.0	-	-	17.0	3.0	-	17.0	-	-
2.0	1.0	2.0	-	-	17.0	3.0	-	17.0	-	-
2.0	1.0	3.0	-	-	17.0	3.0	-	17.0	-	-
2.0	1.0	4.0	-	-	17.0	3.0	-	17.0	-	-
2.0	1.0	5.0	-	-	17.0	3.0	-	17.0	-	-
2.0	1.0	6.0	-	-	17.0	3.0	-	17.0	-	-
2.0	1.0	7.0	254.0	27.0	18.0	3.0	93.9	18.8	68.4	62.0
2.0	1.0	8.0	63.0	111.0	19.0	4.0	141.7	21.2	120.7	113.2
2.0	1.0	9.0	764.0	91.0	20.0	3.0	591.0	34.8	470.8	453.1
2.0	1.0	10.0	834.0	105.0	20.0	3.0	781.6	41.3	611.0	588.0
2.0	1.0	11.0	871.0	112.0	21.0	3.0	906.0	46.0	693.6	667.0
2.0	1.0	12.0	878.0	116.0	22.0	3.0	949.4	48.5	718.1	690.5
2.0	1.0	13.0	828.0	133.0	22.0	4.0	898.8	45.1	691.6	665.2
2.0	1.0	14.0	8.0	203.0	21.0	4.0	205.3	27.2	172.8	164.0
2.0	1.0	15.0	702.0	114.0	21.0	4.0	597.0	34.8	477.3	459.4
2.0	1.0	16.0	550.0	88.0	20.0	3.0	358.7	30.1	283.0	271.3
2.0	1.0	17.0	227.0	39.0	19.0	3.0	103.9	21.3	78.0	71.3
2.0	1.0	18.0	-	-	19.0	3.0	-	19.0	-	-
2.0	1.0	19.0	-	-	19.0	3.0	-	19.0	-	-
2.0	1.0	20.0	-	-	19.0	3.0	-	19.0	-	-
2.0	1.0	21.0	-	-	19.0	3.0	-	19.0	-	-
2.0	1.0	22.0	-	-	19.0	3.0	-	19.0	-	-
2.0	1.0	23.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	-	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	1.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	2.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	3.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	4.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	5.0	-	-	18.0	3.0	-	18.0	-	-
2.0	2.0	6.0	-	-	18.0	3.0	-	18.0	-	-
2.0	2.0	7.0	159.0	30.0	19.0	3.0	75.1	19.6	56.9	50.7
2.0	2.0	8.0	524.0	82.0	20.0	3.0	324.8	27.4	257.2	246.2
2.0	2.0	9.0	683.0	110.0	21.0	3.0	564.1	35.7	447.9	431.0
2.0	2.0	10.0	761.0	127.0	21.0	3.0	752.9	41.4	588.3	566.2
2.0	2.0	11.0	799.0	138.0	22.0	3.0	872.6	46.0	668.0	642.6
2.0	2.0	12.0	819.0	138.0	22.0	3.0	921.3	47.7	699.8	673.0
2.0	2.0	13.0	801.0	138.0	22.0	3.0	881.8	46.8	672.5	646.9
2.0	2.0	14.0	764.0	130.0	22.0	3.0	772.3	43.9	596.3	573.9

2.0	2.0	15.0	685.0	115.0	21.0	3.0	588.3	37.8	463.6	446.1
2.0	2.0	16.0	-	69.0	20.0	3.0	65.8	22.1	56.8	50.6
2.0	2.0	17.0	-	21.0	20.0	3.0	19.9	18.9	17.4	12.0
2.0	2.0	18.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	19.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	20.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	21.0	-	-	19.0	3.0	-	19.0	-	-
2.0	2.0	22.0	-	-	19.0	2.0	-	19.0	-	-
2.0	2.0	23.0	-	-	19.0	2.0	-	19.0	-	-
2.0	3.0	-	-	-	19.0	2.0	-	19.0	-	-
2.0	3.0	1.0	-	-	19.0	2.0	-	19.0	-	-
2.0	3.0	2.0	-	-	19.0	1.0	-	19.0	-	-
2.0	3.0	3.0	-	-	19.0	1.0	-	19.0	-	-
2.0	3.0	4.0	-	-	19.0	1.0	-	19.0	-	-
2.0	3.0	5.0	-	-	19.0	1.0	-	19.0	-	-
2.0	3.0	6.0	-	-	19.0	1.0	-	19.0	-	-
2.0	3.0	7.0	-	14.0	19.0	1.0	13.3	16.9	11.7	6.4
2.0	3.0	8.0	-	76.0	20.0	2.0	73.2	20.2	63.7	57.4
2.0	3.0	9.0	14.0	171.0	21.0	1.0	177.2	25.5	150.2	142.0
2.0	3.0	10.0	72.0	273.0	22.0	1.0	339.7	33.0	277.9	266.3
2.0	3.0	11.0	498.0	261.0	22.0	-	741.6	52.7	548.2	527.7
2.0	3.0	12.0	481.0	284.0	22.0	-	770.6	56.5	558.3	537.4
2.0	3.0	13.0	36.0	295.0	22.0	-	337.2	41.8	264.2	253.0
2.0	3.0	14.0	-	132.0	22.0	-	126.9	29.5	105.7	98.4
2.0	3.0	15.0	-	74.0	22.0	-	70.3	24.1	60.1	53.8
2.0	3.0	16.0	291.0	117.0	22.0	-	264.4	32.2	209.6	199.9
2.0	3.0	17.0	144.0	44.0	21.0	-	86.4	25.7	65.8	59.4
2.0	3.0	18.0	-	-	21.0	1.0	-	21.0	-	-
2.0	3.0	19.0	-	-	20.0	1.0	-	20.0	-	-
2.0	3.0	20.0	-	-	20.0	2.0	-	20.0	-	-
2.0	3.0	21.0	-	-	20.0	3.0	-	20.0	-	-
2.0	3.0	22.0	-	-	19.0	3.0	-	19.0	-	-
2.0	3.0	23.0	-	-	19.0	4.0	-	19.0	-	-
2.0	4.0	-	-	-	19.0	4.0	-	19.0	-	-
2.0	4.0	1.0	-	-	19.0	4.0	-	19.0	-	-
2.0	4.0	2.0	-	-	18.0	5.0	-	18.0	-	-
2.0	4.0	3.0	-	-	18.0	5.0	-	18.0	-	-
2.0	4.0	4.0	-	-	18.0	5.0	-	18.0	-	-
2.0	4.0	5.0	-	-	18.0	5.0	-	18.0	-	-
2.0	4.0	6.0	-	-	17.0	6.0	-	17.0	-	-
2.0	4.0	7.0	-	10.0	17.0	6.0	9.5	16.0	8.4	3.1
2.0	4.0	8.0	-	56.0	17.0	6.0	53.2	16.7	47.0	41.0
2.0	4.0	9.0	-	41.0	17.0	6.0	38.9	16.5	34.4	28.7
2.0	4.0	10.0	-	155.0	18.0	6.0	149.9	19.8	130.7	122.9
2.0	4.0	11.0	38.0	295.0	18.0	6.0	338.6	23.8	289.6	277.8
2.0	4.0	12.0	107.0	357.0	18.0	6.0	472.0	26.9	397.9	382.7
2.0	4.0	13.0	193.0	352.0	18.0	6.0	552.5	28.8	461.4	444.1
2.0	4.0	14.0	120.0	302.0	18.0	6.0	411.4	26.1	347.9	334.3
2.0	4.0	15.0	85.0	216.0	18.0	6.0	279.2	23.1	238.7	228.3
2.0	4.0	16.0	32.0	122.0	17.0	6.0	140.0	19.0	121.5	114.0
2.0	4.0	17.0	252.0	45.0	17.0	6.0	116.1	18.3	88.4	81.6
2.0	4.0	18.0	-	-	17.0	6.0	-	17.0	-	-
2.0	4.0	19.0	-	-	17.0	6.0	-	17.0	-	-
2.0	4.0	20.0	-	-	17.0	6.0	-	17.0	-	-
2.0	4.0	21.0	-	-	17.0	7.0	-	17.0	-	-
2.0	4.0	22.0	-	-	17.0	7.0	-	17.0	-	-
2.0	4.0	23.0	-	-	17.0	6.0	-	17.0	-	-
2.0	5.0	-	-	-	17.0	6.0	-	17.0	-	-
2.0	5.0	1.0	-	-	17.0	6.0	-	17.0	-	-
2.0	5.0	2.0	-	-	17.0	6.0	-	17.0	-	-
2.0	5.0	3.0	-	-	17.0	6.0	-	17.0	-	-
2.0	5.0	4.0	-	-	16.0	6.0	-	16.0	-	-
2.0	5.0	5.0	-	-	16.0	6.0	-	16.0	-	-
2.0	5.0	6.0	-	-	16.0	6.0	-	16.0	-	-
2.0	5.0	7.0	24.0	31.0	17.0	6.0	36.8	16.4	31.3	25.6
2.0	5.0	8.0	266.0	109.0	18.0	6.0	236.2	21.5	196.0	186.6
2.0	5.0	9.0	-	150.0	18.0	6.0	146.3	20.1	127.4	119.7
2.0	5.0	10.0	64.0	272.0	19.0	6.0	332.0	24.7	282.6	270.9
2.0	5.0	11.0	16.0	252.0	19.0	6.0	262.3	23.6	224.5	214.5
2.0	5.0	12.0	-	165.0	19.0	6.0	159.4	21.4	137.9	129.9
2.0	5.0	13.0	118.0	346.0	20.0	6.0	467.2	28.5	390.8	375.8
2.0	5.0	14.0	-	132.0	20.0	6.0	126.8	22.1	109.3	102.1
2.0	5.0	15.0	-	100.0	20.0	6.0	95.6	20.9	82.9	76.2
2.0	5.0	16.0	-	41.0	19.0	6.0	38.9	18.6	34.1	28.3
2.0	5.0	17.0	-	10.0	19.0	5.0	9.5	17.8	8.3	3.1
2.0	5.0	18.0	-	-	19.0	5.0	-	19.0	-	-
2.0	5.0	19.0	-	-	19.0	6.0	-	19.0	-	-
2.0	5.0	20.0	-	-	19.0	6.0	-	19.0	-	-
2.0	5.0	21.0	-	-	19.0	6.0	-	19.0	-	-
2.0	5.0	22.0	-	-	19.0	6.0	-	19.0	-	-
2.0	5.0	23.0	-	-	19.0	5.0	-	19.0	-	-

2.0	6.0	-	-	-	19.0	5.0	-	19.0	-	-
2.0	6.0	1.0	-	-	19.0	5.0	-	19.0	-	-
2.0	6.0	2.0	-	-	19.0	5.0	-	19.0	-	-
2.0	6.0	3.0	-	-	19.0	4.0	-	19.0	-	-
2.0	6.0	4.0	-	-	19.0	4.0	-	19.0	-	-
2.0	6.0	5.0	-	-	19.0	4.0	-	19.0	-	-
2.0	6.0	6.0	-	-	19.0	4.0	-	19.0	-	-
2.0	6.0	7.0	-	27.0	20.0	5.0	25.9	19.1	22.6	17.1
2.0	6.0	8.0	-	66.0	21.0	5.0	63.0	21.0	54.6	48.4
2.0	6.0	9.0	750.0	102.0	21.0	6.0	600.7	32.1	485.5	467.3
2.0	6.0	10.0	819.0	120.0	22.0	6.0	792.4	37.9	630.2	606.4
2.0	6.0	11.0	220.0	343.0	22.0	6.0	564.7	33.7	460.6	443.2
2.0	6.0	12.0	24.0	287.0	22.0	6.0	306.1	28.0	256.7	245.7
2.0	6.0	13.0	469.0	282.0	22.0	6.0	745.5	36.4	599.7	577.1
2.0	6.0	14.0	188.0	301.0	22.0	6.0	474.8	31.8	390.5	375.6
2.0	6.0	15.0	764.0	92.0	21.0	6.0	617.6	33.2	497.9	479.3
2.0	6.0	16.0	640.0	81.0	20.0	5.0	397.3	28.9	314.9	302.3
2.0	6.0	17.0	5.0	40.0	20.0	5.0	40.6	20.4	35.1	29.3
2.0	6.0	18.0	-	-	20.0	5.0	-	20.0	-	-
2.0	6.0	19.0	-	-	20.0	5.0	-	20.0	-	-
2.0	6.0	20.0	-	-	20.0	5.0	-	20.0	-	-
2.0	6.0	21.0	-	-	20.0	6.0	-	20.0	-	-
2.0	6.0	22.0	-	-	20.0	6.0	-	20.0	-	-
2.0	6.0	23.0	-	-	20.0	5.0	-	20.0	-	-
2.0	7.0	-	-	-	20.0	5.0	-	20.0	-	-
2.0	7.0	1.0	-	-	20.0	5.0	-	20.0	-	-
2.0	7.0	2.0	-	-	19.0	5.0	-	19.0	-	-
2.0	7.0	3.0	-	-	19.0	5.0	-	19.0	-	-
2.0	7.0	4.0	-	-	19.0	5.0	-	19.0	-	-
2.0	7.0	5.0	-	-	19.0	5.0	-	19.0	-	-
2.0	7.0	6.0	-	-	19.0	5.0	-	19.0	-	-
2.0	7.0	7.0	203.0	36.0	20.0	5.0	90.1	20.5	67.3	60.9
2.0	7.0	8.0	125.0	120.0	20.0	5.0	182.5	22.9	153.0	144.7
2.0	7.0	9.0	747.0	107.0	21.0	5.0	605.3	33.6	485.7	467.5
2.0	7.0	10.0	839.0	115.0	21.0	5.0	804.1	39.0	636.2	612.1
2.0	7.0	11.0	881.0	120.0	22.0	5.0	933.0	43.3	724.7	696.8
2.0	7.0	12.0	895.0	121.0	22.0	5.0	973.7	44.5	752.2	723.1
2.0	7.0	13.0	897.0	113.0	22.0	5.0	941.9	43.8	729.6	701.5
2.0	7.0	14.0	448.0	250.0	22.0	4.0	648.9	39.1	514.1	494.8
2.0	7.0	15.0	179.0	226.0	21.0	4.0	359.8	30.3	296.8	284.7
2.0	7.0	16.0	652.0	77.0	21.0	4.0	399.5	30.4	314.2	301.7
2.0	7.0	17.0	326.0	42.0	20.0	4.0	130.9	22.8	95.5	88.5
2.0	7.0	18.0	-	-	20.0	4.0	-	20.0	-	-
2.0	7.0	19.0	-	-	20.0	4.0	-	20.0	-	-
2.0	7.0	20.0	-	-	20.0	3.0	-	20.0	-	-
2.0	7.0	21.0	-	-	20.0	3.0	-	20.0	-	-
2.0	7.0	22.0	-	-	20.0	3.0	-	20.0	-	-
2.0	7.0	23.0	-	-	20.0	3.0	-	20.0	-	-
2.0	8.0	-	-	-	20.0	3.0	-	20.0	-	-
2.0	8.0	1.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	2.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	3.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	4.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	5.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	6.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	7.0	364.0	28.0	20.0	3.0	116.3	21.4	81.0	74.3
2.0	8.0	8.0	-	42.0	21.0	4.0	39.8	20.7	34.6	28.8
2.0	8.0	9.0	836.0	75.0	22.0	4.0	625.5	36.1	495.3	476.7
2.0	8.0	10.0	17.0	230.0	22.0	4.0	239.8	28.3	200.8	191.4
2.0	8.0	11.0	161.0	351.0	22.0	4.0	521.0	34.1	424.2	408.1
2.0	8.0	12.0	164.0	369.0	22.0	4.0	549.8	35.6	444.4	427.6
2.0	8.0	13.0	893.0	112.0	22.0	3.0	938.9	47.1	715.1	687.7
2.0	8.0	14.0	868.0	103.0	22.0	3.0	832.4	45.6	637.2	613.1
2.0	8.0	15.0	810.0	89.0	21.0	3.0	647.4	39.5	505.7	486.8
2.0	8.0	16.0	688.0	71.0	21.0	3.0	410.5	32.7	319.1	306.4
2.0	8.0	17.0	394.0	38.0	20.0	3.0	143.6	23.6	102.5	95.4
2.0	8.0	18.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	19.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	20.0	-	-	19.0	3.0	-	19.0	-	-
2.0	8.0	21.0	-	-	19.0	2.0	-	19.0	-	-
2.0	8.0	22.0	-	-	18.0	2.0	-	18.0	-	-
2.0	8.0	23.0	-	-	18.0	2.0	-	18.0	-	-
2.0	9.0	-	-	-	18.0	2.0	-	18.0	-	-
2.0	9.0	1.0	-	-	18.0	2.0	-	18.0	-	-
2.0	9.0	2.0	-	-	18.0	2.0	-	18.0	-	-
2.0	9.0	3.0	-	-	18.0	2.0	-	18.0	-	-
2.0	9.0	4.0	-	-	18.0	2.0	-	18.0	-	-
2.0	9.0	5.0	-	-	18.0	2.0	-	18.0	-	-
2.0	9.0	6.0	-	-	18.0	2.0	-	18.0	-	-
2.0	9.0	7.0	36.0	33.0	20.0	2.0	43.8	19.2	36.3	30.6
2.0	9.0	8.0	165.0	122.0	21.0	2.0	202.0	25.4	166.6	157.9

2.0	9.0	9.0	816.0	84.0	21.0	2.0	624.0	38.7	487.8	469.5
2.0	9.0	10.0	886.0	94.0	22.0	3.0	815.8	44.2	628.5	604.8
2.0	9.0	11.0	919.0	99.0	23.0	3.0	940.4	48.9	709.2	682.0
2.0	9.0	12.0	492.0	290.0	23.0	3.0	791.9	45.6	608.4	585.5
2.0	9.0	13.0	901.0	108.0	23.0	2.0	943.5	52.0	699.9	673.1
2.0	9.0	14.0	854.0	107.0	23.0	2.0	827.1	49.4	620.6	597.2
2.0	9.0	15.0	772.0	100.0	22.0	2.0	635.4	42.6	488.9	470.6
2.0	9.0	16.0	620.0	83.0	21.0	2.0	392.6	33.8	304.5	292.2
2.0	9.0	17.0	307.0	44.0	21.0	2.0	128.6	24.8	93.7	86.7
2.0	9.0	18.0	-	-	20.0	2.0	-	20.0	-	-
2.0	9.0	19.0	-	-	20.0	2.0	-	20.0	-	-
2.0	9.0	20.0	-	-	19.0	3.0	-	19.0	-	-
2.0	9.0	21.0	-	-	19.0	3.0	-	19.0	-	-
2.0	9.0	22.0	-	-	19.0	3.0	-	19.0	-	-
2.0	9.0	23.0	-	-	18.0	3.0	-	18.0	-	-
2.0	10.0	-	-	-	18.0	3.0	-	18.0	-	-
2.0	10.0	1.0	-	-	17.0	4.0	-	17.0	-	-
2.0	10.0	2.0	-	-	17.0	4.0	-	17.0	-	-
2.0	10.0	3.0	-	-	17.0	4.0	-	17.0	-	-
2.0	10.0	4.0	-	-	16.0	4.0	-	16.0	-	-
2.0	10.0	5.0	-	-	16.0	4.0	-	16.0	-	-
2.0	10.0	6.0	-	-	16.0	4.0	-	16.0	-	-
2.0	10.0	7.0	307.0	32.0	18.0	4.0	107.7	19.0	77.4	70.8
2.0	10.0	8.0	647.0	67.0	20.0	4.0	365.9	27.9	288.0	276.2
2.0	10.0	9.0	786.0	85.0	22.0	4.0	607.1	36.5	480.0	462.0
2.0	10.0	10.0	852.0	96.0	23.0	4.0	797.4	42.8	619.0	595.6
2.0	10.0	11.0	360.0	313.0	24.0	4.0	668.9	41.2	525.4	505.7
2.0	10.0	12.0	30.0	307.0	24.0	4.0	344.1	33.0	281.8	270.2
2.0	10.0	13.0	-	65.0	25.0	4.0	61.8	26.0	52.4	46.3
2.0	10.0	14.0	734.0	153.0	25.0	5.0	784.3	41.4	614.0	590.8
2.0	10.0	15.0	671.0	132.0	24.0	5.0	606.2	38.0	478.1	460.2
2.0	10.0	16.0	567.0	96.0	24.0	5.0	382.1	32.6	299.1	286.9
2.0	10.0	17.0	93.0	48.0	23.0	6.0	74.9	24.0	59.2	53.0
2.0	10.0	18.0	-	-	21.0	6.0	-	21.0	-	-
2.0	10.0	19.0	-	-	19.0	7.0	-	19.0	-	-
2.0	10.0	20.0	-	-	17.0	7.0	-	17.0	-	-
2.0	10.0	21.0	-	-	16.0	7.0	-	16.0	-	-
2.0	10.0	22.0	-	-	15.0	7.0	-	15.0	-	-
2.0	10.0	23.0	-	-	15.0	7.0	-	15.0	-	-
2.0	11.0	-	-	-	14.0	8.0	-	14.0	-	-
2.0	11.0	1.0	-	-	13.0	8.0	-	13.0	-	-
2.0	11.0	2.0	-	-	13.0	8.0	-	13.0	-	-
2.0	11.0	3.0	-	-	12.0	8.0	-	12.0	-	-
2.0	11.0	4.0	-	-	12.0	8.0	-	12.0	-	-
2.0	11.0	5.0	-	-	12.0	7.0	-	12.0	-	-
2.0	11.0	6.0	-	-	12.0	7.0	-	12.0	-	-
2.0	11.0	7.0	366.0	34.0	12.0	7.0	121.9	13.0	89.0	82.2
2.0	11.0	8.0	706.0	70.0	13.0	7.0	395.7	19.3	324.1	311.3
2.0	11.0	9.0	834.0	92.0	13.0	6.0	646.7	25.5	539.5	519.3
2.0	11.0	10.0	889.0	110.0	14.0	6.0	844.1	31.0	694.9	668.3
2.0	11.0	11.0	924.0	117.0	15.0	6.0	968.2	34.9	784.6	754.0
2.0	11.0	12.0	939.0	118.0	16.0	5.0	1,018.5	39.5	807.0	775.3
2.0	11.0	13.0	951.0	107.0	16.0	5.0	991.3	39.0	787.0	756.2
2.0	11.0	14.0	928.0	98.0	16.0	5.0	875.3	36.4	702.2	675.3
2.0	11.0	15.0	876.0	86.0	16.0	4.0	692.1	34.1	555.6	534.7
2.0	11.0	16.0	764.0	69.0	15.0	4.0	445.5	26.6	356.5	342.6
2.0	11.0	17.0	479.0	39.0	14.0	4.0	166.2	17.8	120.8	113.2
2.0	11.0	18.0	-	-	14.0	4.0	-	14.0	-	-
2.0	11.0	19.0	-	-	14.0	5.0	-	14.0	-	-
2.0	11.0	20.0	-	-	13.0	5.0	-	13.0	-	-
2.0	11.0	21.0	-	-	13.0	6.0	-	13.0	-	-
2.0	11.0	22.0	-	-	12.0	6.0	-	12.0	-	-
2.0	11.0	23.0	-	-	12.0	6.0	-	12.0	-	-
2.0	12.0	-	-	-	12.0	6.0	-	12.0	-	-
2.0	12.0	1.0	-	-	12.0	6.0	-	12.0	-	-
2.0	12.0	2.0	-	-	12.0	6.0	-	12.0	-	-
2.0	12.0	3.0	-	-	12.0	5.0	-	12.0	-	-
2.0	12.0	4.0	-	-	12.0	5.0	-	12.0	-	-
2.0	12.0	5.0	-	-	12.0	5.0	-	12.0	-	-
2.0	12.0	6.0	-	-	13.0	5.0	-	13.0	-	-
2.0	12.0	7.0	366.0	34.0	14.0	5.0	121.6	15.2	87.9	81.0
2.0	12.0	8.0	712.0	69.0	16.0	5.0	398.1	23.7	319.5	306.7
2.0	12.0	9.0	849.0	87.0	17.0	4.0	652.1	32.8	525.4	505.7
2.0	12.0	10.0	916.0	98.0	18.0	4.0	848.8	39.2	670.9	645.4
2.0	12.0	11.0	949.0	104.0	18.0	3.0	978.1	45.2	752.3	723.2
2.0	12.0	12.0	577.0	264.0	19.0	2.0	846.3	46.3	647.7	623.1
2.0	12.0	13.0	951.0	104.0	19.0	2.0	989.7	49.7	743.4	714.7
2.0	12.0	14.0	923.0	98.0	19.0	2.0	872.8	47.1	663.2	637.9
2.0	12.0	15.0	314.0	218.0	19.0	2.0	449.4	34.6	362.4	348.3
2.0	12.0	16.0	743.0	70.0	18.0	1.0	437.6	34.1	337.9	324.6
2.0	12.0	17.0	453.0	40.0	17.0	1.0	161.2	23.4	114.8	107.4

2.0	12.0	18.0	-	-	17.0	1.0	-	17.0	-	-
2.0	12.0	19.0	-	-	16.0	1.0	-	16.0	-	-
2.0	12.0	20.0	-	-	16.0	1.0	-	16.0	-	-
2.0	12.0	21.0	-	-	16.0	2.0	-	16.0	-	-
2.0	12.0	22.0	-	-	15.0	2.0	-	15.0	-	-
2.0	12.0	23.0	-	-	15.0	1.0	-	15.0	-	-
2.0	13.0	-	-	-	15.0	1.0	-	15.0	-	-
2.0	13.0	1.0	-	-	14.0	1.0	-	14.0	-	-
2.0	13.0	2.0	-	-	14.0	1.0	-	14.0	-	-
2.0	13.0	3.0	-	-	14.0	1.0	-	14.0	-	-
2.0	13.0	4.0	-	-	15.0	1.0	-	15.0	-	-
2.0	13.0	5.0	-	-	15.0	1.0	-	15.0	-	-
2.0	13.0	6.0	-	-	15.0	1.0	-	15.0	-	-
2.0	13.0	7.0	41.0	36.0	17.0	1.0	47.8	16.0	40.1	34.2
2.0	13.0	8.0	388.0	105.0	18.0	2.0	292.2	25.1	237.0	226.6
2.0	13.0	9.0	831.0	88.0	19.0	2.0	642.9	37.7	505.6	486.7
2.0	13.0	10.0	893.0	101.0	20.0	3.0	840.3	42.9	651.9	627.1
2.0	13.0	11.0	921.0	109.0	21.0	3.0	960.1	47.6	729.4	701.2
2.0	13.0	12.0	924.0	114.0	22.0	4.0	1,003.5	47.6	762.8	733.2
2.0	13.0	13.0	910.0	113.0	22.0	4.0	963.9	46.8	735.5	707.1
2.0	13.0	14.0	873.0	108.0	21.0	4.0	849.6	43.0	659.5	634.4
2.0	13.0	15.0	804.0	98.0	21.0	4.0	659.4	38.2	519.3	499.8
2.0	13.0	16.0	675.0	80.0	20.0	3.0	418.3	32.0	327.4	314.5
2.0	13.0	17.0	388.0	44.0	19.0	3.0	149.7	22.8	108.6	101.4
2.0	13.0	18.0	-	-	18.0	3.0	-	18.0	-	-
2.0	13.0	19.0	-	-	18.0	3.0	-	18.0	-	-
2.0	13.0	20.0	-	-	17.0	3.0	-	17.0	-	-
2.0	13.0	21.0	-	-	17.0	3.0	-	17.0	-	-
2.0	13.0	22.0	-	-	17.0	3.0	-	17.0	-	-
2.0	13.0	23.0	-	-	17.0	3.0	-	17.0	-	-
2.0	14.0	-	-	-	17.0	3.0	-	17.0	-	-
2.0	14.0	1.0	-	-	17.0	3.0	-	17.0	-	-
2.0	14.0	2.0	-	-	17.0	4.0	-	17.0	-	-
2.0	14.0	3.0	-	-	17.0	4.0	-	17.0	-	-
2.0	14.0	4.0	-	-	18.0	4.0	-	18.0	-	-
2.0	14.0	5.0	-	-	18.0	4.0	-	18.0	-	-
2.0	14.0	6.0	-	-	18.0	4.0	-	18.0	-	-
2.0	14.0	7.0	279.0	39.0	20.0	4.0	107.3	21.0	77.9	71.3
2.0	14.0	8.0	613.0	83.0	21.0	5.0	371.1	28.2	293.3	281.4
2.0	14.0	9.0	276.0	214.0	21.0	5.0	412.2	29.7	339.9	326.6
2.0	14.0	10.0	833.0	120.0	22.0	5.0	814.5	39.8	642.3	617.9
2.0	14.0	11.0	873.0	126.0	23.0	5.0	943.6	44.5	728.4	700.3
2.0	14.0	12.0	889.0	128.0	23.0	4.0	994.8	48.3	753.4	724.2
2.0	14.0	13.0	876.0	127.0	24.0	4.0	956.5	48.5	723.3	695.5
2.0	14.0	14.0	843.0	120.0	24.0	4.0	839.5	45.7	642.8	618.5
2.0	14.0	15.0	772.0	109.0	23.0	3.0	652.9	41.7	505.4	486.5
2.0	14.0	16.0	636.0	88.0	22.0	3.0	409.0	33.7	318.2	305.5
2.0	14.0	17.0	337.0	49.0	21.0	3.0	141.9	24.6	103.7	96.6
2.0	14.0	18.0	-	-	20.0	3.0	-	20.0	-	-
2.0	14.0	19.0	-	-	20.0	3.0	-	20.0	-	-
2.0	14.0	20.0	-	-	20.0	3.0	-	20.0	-	-
2.0	14.0	21.0	-	-	19.0	3.0	-	19.0	-	-
2.0	14.0	22.0	-	-	19.0	2.0	-	19.0	-	-
2.0	14.0	23.0	-	-	19.0	2.0	-	19.0	-	-
2.0	15.0	-	-	-	19.0	2.0	-	19.0	-	-
2.0	15.0	1.0	-	-	19.0	2.0	-	19.0	-	-
2.0	15.0	2.0	-	-	19.0	2.0	-	19.0	-	-
2.0	15.0	3.0	-	-	19.0	2.0	-	19.0	-	-
2.0	15.0	4.0	-	-	19.0	2.0	-	19.0	-	-
2.0	15.0	5.0	-	-	19.0	1.0	-	19.0	-	-
2.0	15.0	6.0	-	-	19.0	1.0	-	19.0	-	-
2.0	15.0	7.0	280.0	39.0	20.0	1.0	107.2	21.4	77.6	71.0
2.0	15.0	8.0	617.0	80.0	22.0	2.0	370.5	31.8	287.7	275.9
2.0	15.0	9.0	766.0	100.0	23.0	2.0	616.4	41.2	476.8	458.9
2.0	15.0	10.0	229.0	305.0	23.0	2.0	509.0	39.1	403.6	388.2
2.0	15.0	11.0	829.0	143.0	24.0	2.0	923.8	51.4	687.8	661.6
2.0	15.0	12.0	847.0	144.0	24.0	2.0	974.2	54.3	714.3	686.9
2.0	15.0	13.0	799.0	162.0	24.0	2.0	925.0	53.2	682.3	656.3
2.0	15.0	14.0	762.0	153.0	24.0	2.0	813.2	49.9	609.0	586.1
2.0	15.0	15.0	688.0	136.0	23.0	2.0	626.5	43.3	481.4	463.4
2.0	15.0	16.0	559.0	105.0	22.0	2.0	390.5	34.7	303.5	291.2
2.0	15.0	17.0	289.0	53.0	21.0	2.0	134.5	24.9	99.8	92.7
2.0	15.0	18.0	-	-	21.0	2.0	-	21.0	-	-
2.0	15.0	19.0	-	-	20.0	2.0	-	20.0	-	-
2.0	15.0	20.0	-	-	20.0	2.0	-	20.0	-	-
2.0	15.0	21.0	-	-	20.0	2.0	-	20.0	-	-
2.0	15.0	22.0	-	-	20.0	2.0	-	20.0	-	-
2.0	15.0	23.0	-	-	19.0	2.0	-	19.0	-	-
2.0	16.0	-	-	-	19.0	2.0	-	19.0	-	-
2.0	16.0	1.0	-	-	19.0	2.0	-	19.0	-	-
2.0	16.0	2.0	-	-	19.0	2.0	-	19.0	-	-

2.0	16.0	3.0	-	-	18.0	1.0	-	18.0	-	-
2.0	16.0	4.0	-	-	18.0	1.0	-	18.0	-	-
2.0	16.0	5.0	-	-	18.0	1.0	-	18.0	-	-
2.0	16.0	6.0	-	-	18.0	1.0	-	18.0	-	-
2.0	16.0	7.0	300.0	39.0	20.0	1.0	111.5	21.5	80.2	73.5
2.0	16.0	8.0	622.0	79.0	21.0	1.0	372.5	32.7	288.0	276.2
2.0	16.0	9.0	760.0	100.0	22.0	1.0	613.7	43.4	469.5	451.9
2.0	16.0	10.0	822.0	117.0	23.0	1.0	805.3	51.7	596.8	574.3
2.0	16.0	11.0	858.0	125.0	24.0	1.0	932.0	57.5	671.3	645.8
2.0	16.0	12.0	868.0	129.0	24.0	1.0	979.2	59.5	697.8	671.1
2.0	16.0	13.0	858.0	127.0	24.0	1.0	943.0	58.6	675.0	649.3
2.0	16.0	14.0	833.0	117.0	24.0	1.0	830.6	55.1	604.9	582.1
2.0	16.0	15.0	772.0	103.0	24.0	1.0	646.3	48.8	482.1	464.0
2.0	16.0	16.0	86.0	147.0	23.0	1.0	191.2	31.8	155.4	147.0
2.0	16.0	17.0	348.0	48.0	22.0	1.0	144.4	26.2	104.6	97.4
2.0	16.0	18.0	-	-	22.0	2.0	-	22.0	-	-
2.0	16.0	19.0	-	-	21.0	2.0	-	21.0	-	-
2.0	16.0	20.0	-	-	21.0	2.0	-	21.0	-	-
2.0	16.0	21.0	-	-	20.0	3.0	-	20.0	-	-
2.0	16.0	22.0	-	-	19.0	3.0	-	19.0	-	-
2.0	16.0	23.0	-	-	19.0	3.0	-	19.0	-	-
2.0	17.0	-	-	-	18.0	3.0	-	18.0	-	-
2.0	17.0	1.0	-	-	18.0	3.0	-	18.0	-	-
2.0	17.0	2.0	-	-	17.0	3.0	-	17.0	-	-
2.0	17.0	3.0	-	-	17.0	3.0	-	17.0	-	-
2.0	17.0	4.0	-	-	17.0	3.0	-	17.0	-	-
2.0	17.0	5.0	-	-	17.0	2.0	-	17.0	-	-
2.0	17.0	6.0	-	-	17.0	2.0	-	17.0	-	-
2.0	17.0	7.0	377.0	36.0	18.0	3.0	125.2	19.6	88.6	81.8
2.0	17.0	8.0	689.0	69.0	20.0	3.0	392.3	29.4	307.5	295.1
2.0	17.0	9.0	818.0	87.0	22.0	3.0	638.7	38.8	499.8	481.1
2.0	17.0	10.0	869.0	104.0	23.0	3.0	830.5	45.6	635.8	611.7
2.0	17.0	11.0	899.0	112.0	24.0	2.0	950.1	53.3	700.1	673.3
2.0	17.0	12.0	904.0	117.0	25.0	2.0	994.6	55.9	723.0	695.2
2.0	17.0	13.0	872.0	127.0	25.0	1.0	957.4	60.0	679.9	653.9
2.0	17.0	14.0	822.0	127.0	25.0	1.0	833.6	56.2	603.5	580.8
2.0	17.0	15.0	725.0	125.0	25.0	-	641.4	55.6	461.7	444.3
2.0	17.0	16.0	541.0	111.0	24.0	-	386.8	44.4	286.6	274.8
2.0	17.0	17.0	243.0	59.0	24.0	-	129.6	32.1	94.6	87.7
2.0	17.0	18.0	-	-	23.0	-	-	23.0	-	-
2.0	17.0	19.0	-	-	23.0	-	-	23.0	-	-
2.0	17.0	20.0	-	-	22.0	-	-	22.0	-	-
2.0	17.0	21.0	-	-	21.0	-	-	21.0	-	-
2.0	17.0	22.0	-	-	20.0	1.0	-	20.0	-	-
2.0	17.0	23.0	-	-	20.0	1.0	-	20.0	-	-
2.0	18.0	-	-	-	20.0	2.0	-	20.0	-	-
2.0	18.0	1.0	-	-	19.0	2.0	-	19.0	-	-
2.0	18.0	2.0	-	-	19.0	3.0	-	19.0	-	-
2.0	18.0	3.0	-	-	19.0	3.0	-	19.0	-	-
2.0	18.0	4.0	-	-	18.0	4.0	-	18.0	-	-
2.0	18.0	5.0	-	-	18.0	4.0	-	18.0	-	-
2.0	18.0	6.0	-	-	18.0	4.0	-	18.0	-	-
2.0	18.0	7.0	220.0	48.0	19.0	4.0	104.3	19.9	78.9	72.2
2.0	18.0	8.0	525.0	106.0	20.0	4.0	356.7	27.6	284.9	273.2
2.0	18.0	9.0	668.0	139.0	21.0	3.0	600.0	36.7	475.7	457.8
2.0	18.0	10.0	753.0	156.0	22.0	3.0	797.7	43.6	617.0	593.8
2.0	18.0	11.0	797.0	164.0	22.0	3.0	926.0	47.5	703.8	676.8
2.0	18.0	12.0	807.0	169.0	22.0	4.0	967.4	46.6	739.0	710.5
2.0	18.0	13.0	217.0	376.0	22.0	4.0	601.5	38.1	480.1	462.1
2.0	18.0	14.0	761.0	157.0	21.0	5.0	820.0	39.3	648.9	624.3
2.0	18.0	15.0	685.0	142.0	21.0	5.0	633.2	35.7	505.9	486.9
2.0	18.0	16.0	557.0	110.0	20.0	5.0	396.1	28.9	317.0	304.3
2.0	18.0	17.0	297.0	57.0	19.0	5.0	140.8	21.6	106.4	99.2
2.0	18.0	18.0	-	-	18.0	5.0	-	18.0	-	-
2.0	18.0	19.0	-	-	18.0	4.0	-	18.0	-	-
2.0	18.0	20.0	-	-	18.0	4.0	-	18.0	-	-
2.0	18.0	21.0	-	-	18.0	4.0	-	18.0	-	-
2.0	18.0	22.0	-	-	17.0	4.0	-	17.0	-	-
2.0	18.0	23.0	-	-	17.0	4.0	-	17.0	-	-
2.0	19.0	-	-	-	17.0	4.0	-	17.0	-	-
2.0	19.0	1.0	-	-	17.0	4.0	-	17.0	-	-
2.0	19.0	2.0	-	-	17.0	4.0	-	17.0	-	-
2.0	19.0	3.0	-	-	17.0	4.0	-	17.0	-	-
2.0	19.0	4.0	-	-	17.0	4.0	-	17.0	-	-
2.0	19.0	5.0	-	-	17.0	4.0	-	17.0	-	-
2.0	19.0	6.0	-	-	17.0	4.0	-	17.0	-	-
2.0	19.0	7.0	333.0	43.0	18.0	5.0	123.4	19.3	89.6	82.8
2.0	19.0	8.0	650.0	82.0	19.0	5.0	390.8	26.6	311.6	299.1
2.0	19.0	9.0	787.0	103.0	20.0	5.0	638.4	33.8	512.8	493.6
2.0	19.0	10.0	855.0	115.0	21.0	5.0	834.4	39.7	658.3	633.3
2.0	19.0	11.0	889.0	123.0	21.0	5.0	956.2	42.8	744.7	715.9

2.0	19.0	12.0	902.0	125.0	21.0	5.0	1,004.6	44.2	777.4	747.1
2.0	19.0	13.0	883.0	129.0	21.0	5.0	972.6	43.6	754.7	725.4
2.0	19.0	14.0	854.0	120.0	21.0	5.0	855.0	40.9	671.0	645.4
2.0	19.0	15.0	55.0	231.0	20.0	4.0	273.1	27.7	228.9	218.7
2.0	19.0	16.0	259.0	143.0	19.0	4.0	280.1	25.2	231.6	221.3
2.0	19.0	17.0	393.0	50.0	18.0	3.0	158.0	21.5	116.4	109.0
2.0	19.0	18.0	-	-	18.0	3.0	-	18.0	-	-
2.0	19.0	19.0	-	-	18.0	3.0	-	18.0	-	-
2.0	19.0	20.0	-	-	17.0	3.0	-	17.0	-	-
2.0	19.0	21.0	-	-	17.0	3.0	-	17.0	-	-
2.0	19.0	22.0	-	-	17.0	3.0	-	17.0	-	-
2.0	19.0	23.0	-	-	17.0	4.0	-	17.0	-	-
2.0	20.0	-	-	-	17.0	4.0	-	17.0	-	-
2.0	20.0	1.0	-	-	17.0	4.0	-	17.0	-	-
2.0	20.0	2.0	-	-	17.0	4.0	-	17.0	-	-
2.0	20.0	3.0	-	-	17.0	4.0	-	17.0	-	-
2.0	20.0	4.0	-	-	17.0	4.0	-	17.0	-	-
2.0	20.0	5.0	-	-	17.0	4.0	-	17.0	-	-
2.0	20.0	6.0	-	-	18.0	4.0	-	18.0	-	-
2.0	20.0	7.0	361.0	42.0	19.0	4.0	128.9	20.6	92.4	85.5
2.0	20.0	8.0	675.0	78.0	20.0	5.0	398.8	27.8	315.9	303.3
2.0	20.0	9.0	809.0	96.0	21.0	5.0	646.7	35.0	516.4	497.0
2.0	20.0	10.0	277.0	308.0	21.0	5.0	561.4	33.7	457.3	440.1
2.0	20.0	11.0	900.0	117.0	22.0	5.0	961.4	43.4	746.8	717.9
2.0	20.0	12.0	911.0	119.0	22.0	4.0	1,008.3	47.7	766.1	736.3
2.0	20.0	13.0	894.0	121.0	23.0	4.0	968.6	47.9	735.0	706.7
2.0	20.0	14.0	860.0	116.0	22.0	4.0	856.8	44.2	661.4	636.3
2.0	20.0	15.0	796.0	104.0	22.0	4.0	667.4	39.3	523.0	503.4
2.0	20.0	16.0	670.0	85.0	21.0	3.0	425.4	33.2	331.9	318.8
2.0	20.0	17.0	392.0	51.0	20.0	3.0	158.9	24.1	115.8	108.4
2.0	20.0	18.0	-	-	20.0	3.0	-	20.0	-	-
2.0	20.0	19.0	-	-	20.0	3.0	-	20.0	-	-
2.0	20.0	20.0	-	-	20.0	3.0	-	20.0	-	-
2.0	20.0	21.0	-	-	20.0	3.0	-	20.0	-	-
2.0	20.0	22.0	-	-	20.0	3.0	-	20.0	-	-
2.0	20.0	23.0	-	-	20.0	3.0	-	20.0	-	-
2.0	21.0	-	-	-	20.0	3.0	-	20.0	-	-
2.0	21.0	1.0	-	-	20.0	3.0	-	20.0	-	-
2.0	21.0	2.0	-	-	19.0	3.0	-	19.0	-	-
2.0	21.0	3.0	-	-	19.0	3.0	-	19.0	-	-
2.0	21.0	4.0	-	-	19.0	3.0	-	19.0	-	-
2.0	21.0	5.0	-	-	19.0	3.0	-	19.0	-	-
2.0	21.0	6.0	-	-	19.0	3.0	-	19.0	-	-
2.0	21.0	7.0	381.0	41.0	21.0	3.0	132.7	22.8	93.7	86.7
2.0	21.0	8.0	681.0	75.0	22.0	4.0	399.3	30.8	311.9	299.3
2.0	21.0	9.0	808.0	94.0	23.0	4.0	645.3	38.5	506.4	487.4
2.0	21.0	10.0	869.0	106.0	23.0	4.0	839.0	43.8	648.3	623.7
2.0	21.0	11.0	896.0	115.0	24.0	4.0	957.2	48.1	725.3	697.4
2.0	21.0	12.0	905.0	118.0	24.0	4.0	1,003.0	49.5	754.9	725.6
2.0	21.0	13.0	893.0	118.0	25.0	4.0	965.8	49.7	725.8	697.8
2.0	21.0	14.0	859.0	114.0	24.0	3.0	854.9	48.2	646.2	621.7
2.0	21.0	15.0	792.0	104.0	24.0	3.0	665.5	43.0	511.9	492.8
2.0	21.0	16.0	664.0	86.0	23.0	3.0	424.0	35.1	327.9	314.9
2.0	21.0	17.0	202.0	59.0	22.0	3.0	115.9	24.9	88.4	81.5
2.0	21.0	18.0	-	-	21.0	3.0	-	21.0	-	-
2.0	21.0	19.0	-	-	21.0	4.0	-	21.0	-	-
2.0	21.0	20.0	-	-	20.0	4.0	-	20.0	-	-
2.0	21.0	21.0	-	-	20.0	3.0	-	20.0	-	-
2.0	21.0	22.0	-	-	20.0	3.0	-	20.0	-	-
2.0	21.0	23.0	-	-	19.0	3.0	-	19.0	-	-
2.0	22.0	-	-	-	19.0	2.0	-	19.0	-	-
2.0	22.0	1.0	-	-	19.0	2.0	-	19.0	-	-
2.0	22.0	2.0	-	-	19.0	2.0	-	19.0	-	-
2.0	22.0	3.0	-	-	19.0	2.0	-	19.0	-	-
2.0	22.0	4.0	-	-	18.0	2.0	-	18.0	-	-
2.0	22.0	5.0	-	-	18.0	1.0	-	18.0	-	-
2.0	22.0	6.0	-	-	18.0	1.0	-	18.0	-	-
2.0	22.0	7.0	286.0	47.0	20.0	1.0	117.9	21.8	86.5	79.7
2.0	22.0	8.0	585.0	92.0	21.0	1.0	374.7	32.9	291.3	279.4
2.0	22.0	9.0	722.0	117.0	22.0	1.0	616.6	43.5	472.3	454.6
2.0	22.0	10.0	730.0	164.0	23.0	-	792.6	57.3	570.3	548.9
2.0	22.0	11.0	779.0	170.0	24.0	-	921.5	63.5	641.8	617.5
2.0	22.0	12.0	799.0	170.0	25.0	-	966.2	66.5	661.4	636.2
2.0	22.0	13.0	235.0	382.0	25.0	-	624.8	55.9	454.1	437.0
2.0	22.0	14.0	568.0	228.0	25.0	-	734.0	57.3	528.7	508.9
2.0	22.0	15.0	408.0	215.0	25.0	-	519.6	50.8	385.4	370.6
2.0	22.0	16.0	547.0	102.0	24.0	1.0	384.5	38.6	293.5	281.5
2.0	22.0	17.0	-	49.0	23.0	1.0	47.3	25.0	40.3	34.4
2.0	22.0	18.0	-	-	22.0	2.0	-	22.0	-	-
2.0	22.0	19.0	-	-	21.0	2.0	-	21.0	-	-
2.0	22.0	20.0	-	-	21.0	2.0	-	21.0	-	-

2.0	22.0	21.0	-	-	21.0	2.0	-	21.0	-	-
2.0	22.0	22.0	-	-	20.0	2.0	-	20.0	-	-
2.0	22.0	23.0	-	-	20.0	2.0	-	20.0	-	-
2.0	23.0	-	-	-	20.0	2.0	-	20.0	-	-
2.0	23.0	1.0	-	-	19.0	2.0	-	19.0	-	-
2.0	23.0	2.0	-	-	19.0	2.0	-	19.0	-	-
2.0	23.0	3.0	-	-	19.0	2.0	-	19.0	-	-
2.0	23.0	4.0	-	-	19.0	1.0	-	19.0	-	-
2.0	23.0	5.0	-	-	19.0	1.0	-	19.0	-	-
2.0	23.0	6.0	-	-	19.0	-	-	19.0	-	-
2.0	23.0	7.0	215.0	54.0	21.0	-	110.0	22.8	83.1	76.4
2.0	23.0	8.0	206.0	142.0	22.0	-	247.5	31.9	198.2	188.8
2.0	23.0	9.0	573.0	159.0	23.0	1.0	560.0	41.9	433.4	417.0
2.0	23.0	10.0	548.0	229.0	24.0	2.0	709.4	45.6	543.8	523.4
2.0	23.0	11.0	766.0	176.0	24.0	2.0	917.4	52.0	681.1	655.2
2.0	23.0	12.0	769.0	187.0	24.0	3.0	962.2	50.7	719.4	691.8
2.0	23.0	13.0	771.0	176.0	24.0	3.0	928.8	50.0	696.8	670.2
2.0	23.0	14.0	467.0	269.0	24.0	4.0	693.2	42.1	541.3	521.0
2.0	23.0	15.0	671.0	145.0	23.0	4.0	630.0	39.0	495.4	476.8
2.0	23.0	16.0	564.0	109.0	23.0	4.0	400.2	33.2	314.0	301.4
2.0	23.0	17.0	199.0	62.0	22.0	4.0	118.2	24.5	90.7	83.8
2.0	23.0	18.0	-	-	21.0	4.0	-	21.0	-	-
2.0	23.0	19.0	-	-	21.0	3.0	-	21.0	-	-
2.0	23.0	20.0	-	-	21.0	3.0	-	21.0	-	-
2.0	23.0	21.0	-	-	21.0	3.0	-	21.0	-	-
2.0	23.0	22.0	-	-	20.0	3.0	-	20.0	-	-
2.0	23.0	23.0	-	-	20.0	4.0	-	20.0	-	-
2.0	24.0	-	-	-	20.0	4.0	-	20.0	-	-
2.0	24.0	1.0	-	-	20.0	4.0	-	20.0	-	-
2.0	24.0	2.0	-	-	20.0	4.0	-	20.0	-	-
2.0	24.0	3.0	-	-	20.0	4.0	-	20.0	-	-
2.0	24.0	4.0	-	-	20.0	4.0	-	20.0	-	-
2.0	24.0	5.0	-	-	20.0	4.0	-	20.0	-	-
2.0	24.0	6.0	-	-	20.0	4.0	-	20.0	-	-
2.0	24.0	7.0	-	26.0	22.0	4.0	24.6	21.0	21.4	15.9
2.0	24.0	8.0	-	71.0	23.0	5.0	67.5	23.2	57.9	51.7
2.0	24.0	9.0	221.0	242.0	24.0	5.0	400.7	31.8	327.9	314.9
2.0	24.0	10.0	831.0	122.0	24.0	5.0	829.9	42.1	647.2	622.7
2.0	24.0	11.0	185.0	387.0	24.0	4.0	581.9	39.2	462.0	444.6
2.0	24.0	12.0	346.0	378.0	25.0	4.0	746.1	43.4	579.7	557.9
2.0	24.0	13.0	299.0	374.0	25.0	4.0	686.8	42.5	536.2	516.1
2.0	24.0	14.0	97.0	330.0	25.0	4.0	420.3	35.9	339.1	325.7
2.0	24.0	15.0	178.0	256.0	24.0	3.0	391.0	34.4	316.5	303.9
2.0	24.0	16.0	293.0	147.0	24.0	3.0	300.8	31.9	240.7	230.1
2.0	24.0	17.0	274.0	65.0	23.0	3.0	143.2	26.3	107.3	100.1
2.0	24.0	18.0	-	-	22.0	3.0	-	22.0	-	-
2.0	24.0	19.0	-	-	21.0	2.0	-	21.0	-	-
2.0	24.0	20.0	-	-	21.0	2.0	-	21.0	-	-
2.0	24.0	21.0	-	-	21.0	2.0	-	21.0	-	-
2.0	24.0	22.0	-	-	20.0	2.0	-	20.0	-	-
2.0	24.0	23.0	-	-	20.0	2.0	-	20.0	-	-
2.0	25.0	-	-	-	20.0	2.0	-	20.0	-	-
2.0	25.0	1.0	-	-	20.0	1.0	-	20.0	-	-
2.0	25.0	2.0	-	-	20.0	1.0	-	20.0	-	-
2.0	25.0	3.0	-	-	20.0	2.0	-	20.0	-	-
2.0	25.0	4.0	-	-	20.0	2.0	-	20.0	-	-
2.0	25.0	5.0	-	-	20.0	2.0	-	20.0	-	-
2.0	25.0	6.0	-	-	20.0	2.0	-	20.0	-	-
2.0	25.0	7.0	-	6.0	21.0	3.0	5.7	19.3	5.0	-
2.0	25.0	8.0	-	12.0	22.0	3.0	11.4	20.5	9.9	4.6
2.0	25.0	9.0	-	90.0	22.0	3.0	85.6	22.6	73.7	67.1
2.0	25.0	10.0	114.0	329.0	23.0	4.0	431.9	32.5	354.2	340.4
2.0	25.0	11.0	-	126.0	24.0	4.0	120.6	26.7	101.8	94.7
2.0	25.0	12.0	56.0	373.0	24.0	4.0	437.7	33.7	357.1	343.2
2.0	25.0	13.0	128.0	391.0	24.0	3.0	534.3	38.2	426.2	410.1
2.0	25.0	14.0	17.0	254.0	23.0	3.0	262.9	30.3	218.0	208.1
2.0	25.0	15.0	125.0	258.0	23.0	3.0	356.5	31.9	292.4	280.5
2.0	25.0	16.0	-	117.0	22.0	3.0	113.1	24.6	96.4	89.4
2.0	25.0	17.0	-	43.0	21.0	3.0	41.0	20.7	35.6	29.8
2.0	25.0	18.0	-	-	21.0	3.0	-	21.0	-	-
2.0	25.0	19.0	-	-	21.0	3.0	-	21.0	-	-
2.0	25.0	20.0	-	-	20.0	3.0	-	20.0	-	-
2.0	25.0	21.0	-	-	20.0	3.0	-	20.0	-	-
2.0	25.0	22.0	-	-	20.0	3.0	-	20.0	-	-
2.0	25.0	23.0	-	-	20.0	4.0	-	20.0	-	-
2.0	26.0	-	-	-	19.0	4.0	-	19.0	-	-
2.0	26.0	1.0	-	-	19.0	3.0	-	19.0	-	-
2.0	26.0	2.0	-	-	19.0	3.0	-	19.0	-	-
2.0	26.0	3.0	-	-	19.0	3.0	-	19.0	-	-
2.0	26.0	4.0	-	-	19.0	3.0	-	19.0	-	-
2.0	26.0	5.0	-	-	19.0	3.0	-	19.0	-	-

2.0	26.0	6.0	-	-	19.0	3.0	-	19.0	-	-
2.0	26.0	7.0	368.0	46.0	20.0	3.0	137.3	21.9	98.9	91.8
2.0	26.0	8.0	646.0	82.0	21.0	4.0	396.0	29.7	312.3	299.8
2.0	26.0	9.0	773.0	100.0	22.0	4.0	635.5	37.3	502.4	483.6
2.0	26.0	10.0	127.0	333.0	23.0	3.0	456.0	35.8	367.8	353.6
2.0	26.0	11.0	60.0	359.0	23.0	3.0	424.3	34.4	345.0	331.4
2.0	26.0	12.0	30.0	332.0	23.0	3.0	368.1	32.8	301.7	289.5
2.0	26.0	13.0	3.0	177.0	23.0	3.0	173.6	27.3	146.0	137.9
2.0	26.0	14.0	134.0	341.0	23.0	3.0	472.3	34.7	383.2	368.5
2.0	26.0	15.0	13.0	202.0	22.0	3.0	206.0	27.6	173.0	164.2
2.0	26.0	16.0	3.0	133.0	22.0	4.0	130.8	24.3	111.6	104.2
2.0	26.0	17.0	-	55.0	21.0	4.0	53.2	21.1	46.1	40.1
2.0	26.0	18.0	-	-	21.0	4.0	-	21.0	-	-
2.0	26.0	19.0	-	-	21.0	4.0	-	21.0	-	-
2.0	26.0	20.0	-	-	21.0	4.0	-	21.0	-	-
2.0	26.0	21.0	-	-	21.0	4.0	-	21.0	-	-
2.0	26.0	22.0	-	-	21.0	4.0	-	21.0	-	-
2.0	26.0	23.0	-	-	21.0	4.0	-	21.0	-	-
2.0	27.0	-	-	-	21.0	4.0	-	21.0	-	-
2.0	27.0	1.0	-	-	21.0	4.0	-	21.0	-	-
2.0	27.0	2.0	-	-	21.0	5.0	-	21.0	-	-
2.0	27.0	3.0	-	-	21.0	5.0	-	21.0	-	-
2.0	27.0	4.0	-	-	21.0	5.0	-	21.0	-	-
2.0	27.0	5.0	-	-	21.0	4.0	-	21.0	-	-
2.0	27.0	6.0	-	-	21.0	4.0	-	21.0	-	-
2.0	27.0	7.0	-	2.0	21.0	4.0	1.9	19.4	1.7	-
2.0	27.0	8.0	-	17.0	22.0	5.0	16.1	20.9	14.0	8.6
2.0	27.0	9.0	-	70.0	22.0	6.0	66.5	22.1	57.4	51.2
2.0	27.0	10.0	-	31.0	23.0	6.0	29.5	22.5	25.4	19.8
2.0	27.0	11.0	-	65.0	23.0	7.0	61.9	23.0	53.1	47.0
2.0	27.0	12.0	70.0	389.0	24.0	7.0	468.2	31.7	385.8	371.0
2.0	27.0	13.0	242.0	393.0	24.0	7.0	643.2	35.6	519.9	500.4
2.0	27.0	14.0	45.0	306.0	24.0	8.0	349.8	29.8	290.8	278.8
2.0	27.0	15.0	14.0	203.0	24.0	7.0	207.6	27.3	174.6	165.8
2.0	27.0	16.0	-	14.0	24.0	7.0	13.3	23.4	11.4	6.1
2.0	27.0	17.0	241.0	69.0	24.0	7.0	135.8	25.4	103.2	96.0
2.0	27.0	18.0	-	-	23.0	7.0	-	23.0	-	-
2.0	27.0	19.0	-	-	23.0	7.0	-	23.0	-	-
2.0	27.0	20.0	-	-	23.0	7.0	-	23.0	-	-
2.0	27.0	21.0	-	-	23.0	7.0	-	23.0	-	-
2.0	27.0	22.0	-	-	22.0	6.0	-	22.0	-	-
2.0	27.0	23.0	-	-	22.0	6.0	-	22.0	-	-
2.0	28.0	-	-	-	22.0	6.0	-	22.0	-	-
2.0	28.0	1.0	-	-	22.0	6.0	-	22.0	-	-
2.0	28.0	2.0	-	-	22.0	6.0	-	22.0	-	-
2.0	28.0	3.0	-	-	22.0	5.0	-	22.0	-	-
2.0	28.0	4.0	-	-	21.0	5.0	-	21.0	-	-
2.0	28.0	5.0	-	-	21.0	5.0	-	21.0	-	-
2.0	28.0	6.0	-	-	21.0	4.0	-	21.0	-	-
2.0	28.0	7.0	-	41.0	21.0	4.0	39.2	20.3	34.1	28.3
2.0	28.0	8.0	-	90.0	21.0	3.0	86.1	21.7	74.4	67.9
2.0	28.0	9.0	153.0	255.0	22.0	3.0	369.4	30.6	304.5	292.2
2.0	28.0	10.0	142.0	339.0	22.0	3.0	474.7	34.4	385.6	370.8
2.0	28.0	11.0	309.0	377.0	23.0	3.0	697.5	41.6	546.8	526.3
2.0	28.0	12.0	305.0	399.0	23.0	3.0	729.8	43.2	567.8	546.5
2.0	28.0	13.0	385.0	359.0	24.0	3.0	751.8	44.8	579.8	558.0
2.0	28.0	14.0	375.0	310.0	24.0	4.0	651.7	40.7	512.9	493.7
2.0	28.0	15.0	329.0	242.0	24.0	4.0	487.1	36.4	389.6	374.7
2.0	28.0	16.0	553.0	107.0	23.0	4.0	393.8	32.7	310.0	297.5
2.0	28.0	17.0	122.0	70.0	23.0	5.0	104.0	24.9	82.3	75.6
2.0	28.0	18.0	-	-	22.0	5.0	-	22.0	-	-
2.0	28.0	19.0	-	-	22.0	4.0	-	22.0	-	-
2.0	28.0	20.0	-	-	22.0	4.0	-	22.0	-	-
2.0	28.0	21.0	-	-	22.0	4.0	-	22.0	-	-
2.0	28.0	22.0	-	-	22.0	4.0	-	22.0	-	-
2.0	28.0	23.0	-	-	22.0	4.0	-	22.0	-	-
3.0	1.0	-	-	-	21.0	4.0	-	21.0	-	-
3.0	1.0	1.0	-	-	21.0	4.0	-	21.0	-	-
3.0	1.0	2.0	-	-	21.0	4.0	-	21.0	-	-
3.0	1.0	3.0	-	-	21.0	4.0	-	21.0	-	-
3.0	1.0	4.0	-	-	21.0	4.0	-	21.0	-	-
3.0	1.0	5.0	-	-	21.0	4.0	-	21.0	-	-
3.0	1.0	6.0	-	-	22.0	5.0	-	22.0	-	-
3.0	1.0	7.0	199.0	65.0	23.0	5.0	116.4	24.2	89.0	82.1
3.0	1.0	8.0	456.0	131.0	24.0	5.0	359.7	31.0	285.7	274.0
3.0	1.0	9.0	593.0	170.0	25.0	5.0	591.7	37.8	468.1	450.5
3.0	1.0	10.0	173.0	341.0	25.0	5.0	502.6	36.3	404.5	389.0
3.0	1.0	11.0	257.0	389.0	25.0	5.0	661.9	39.6	524.3	504.6
3.0	1.0	12.0	298.0	401.0	25.0	5.0	725.3	41.4	569.5	548.1
3.0	1.0	13.0	500.0	308.0	25.0	5.0	816.1	43.5	633.6	609.6
3.0	1.0	14.0	687.0	191.0	25.0	5.0	803.2	43.5	622.7	599.2

3.0	1.0	15.0	205.0	262.0	25.0	5.0	415.1	34.8	335.3	322.0
3.0	1.0	16.0	226.0	160.0	24.0	5.0	281.3	29.9	228.4	218.2
3.0	1.0	17.0	122.0	73.0	24.0	5.0	106.8	25.7	84.5	77.7
3.0	1.0	18.0	-	-	23.0	4.0	-	23.0	-	-
3.0	1.0	19.0	-	-	23.0	4.0	-	23.0	-	-
3.0	1.0	20.0	-	-	23.0	4.0	-	23.0	-	-
3.0	1.0	21.0	-	-	23.0	4.0	-	23.0	-	-
3.0	1.0	22.0	-	-	23.0	5.0	-	23.0	-	-
3.0	1.0	23.0	-	-	23.0	5.0	-	23.0	-	-
3.0	2.0	-	-	-	23.0	5.0	-	23.0	-	-
3.0	2.0	1.0	-	-	23.0	5.0	-	23.0	-	-
3.0	2.0	2.0	-	-	22.0	5.0	-	22.0	-	-
3.0	2.0	3.0	-	-	22.0	5.0	-	22.0	-	-
3.0	2.0	4.0	-	-	22.0	5.0	-	22.0	-	-
3.0	2.0	5.0	-	-	22.0	4.0	-	22.0	-	-
3.0	2.0	6.0	-	-	22.0	4.0	-	22.0	-	-
3.0	2.0	7.0	108.0	68.0	24.0	5.0	96.1	24.8	76.2	69.6
3.0	2.0	8.0	305.0	144.0	25.0	5.0	297.4	30.6	238.7	228.2
3.0	2.0	9.0	213.0	264.0	26.0	5.0	419.7	34.8	338.8	325.4
3.0	2.0	10.0	201.0	352.0	26.0	5.0	537.8	37.7	429.8	413.5
3.0	2.0	11.0	430.0	338.0	27.0	5.0	778.9	44.3	602.3	579.6
3.0	2.0	12.0	149.0	421.0	28.0	5.0	590.3	41.7	462.7	445.3
3.0	2.0	13.0	696.0	225.0	28.0	5.0	917.4	48.5	694.1	667.5
3.0	2.0	14.0	460.0	282.0	28.0	5.0	702.9	44.5	542.3	522.0
3.0	2.0	15.0	573.0	174.0	27.0	5.0	591.9	40.6	462.4	445.0
3.0	2.0	16.0	305.0	152.0	27.0	4.0	311.3	35.0	245.4	234.8
3.0	2.0	17.0	-	34.0	26.0	4.0	32.2	26.2	27.3	21.7
3.0	2.0	18.0	-	-	25.0	4.0	-	25.0	-	-
3.0	2.0	19.0	-	-	24.0	4.0	-	24.0	-	-
3.0	2.0	20.0	-	-	24.0	3.0	-	24.0	-	-
3.0	2.0	21.0	-	-	23.0	3.0	-	23.0	-	-
3.0	2.0	22.0	-	-	23.0	3.0	-	23.0	-	-
3.0	2.0	23.0	-	-	23.0	3.0	-	23.0	-	-
3.0	3.0	-	-	-	23.0	3.0	-	23.0	-	-
3.0	3.0	1.0	-	-	23.0	3.0	-	23.0	-	-
3.0	3.0	2.0	-	-	22.0	4.0	-	22.0	-	-
3.0	3.0	3.0	-	-	22.0	4.0	-	22.0	-	-
3.0	3.0	4.0	-	-	22.0	3.0	-	22.0	-	-
3.0	3.0	5.0	-	-	22.0	3.0	-	22.0	-	-
3.0	3.0	6.0	-	-	23.0	3.0	-	23.0	-	-
3.0	3.0	7.0	246.0	56.0	24.0	3.0	120.9	25.6	89.9	83.0
3.0	3.0	8.0	46.0	152.0	25.0	3.0	174.1	28.5	144.5	136.4
3.0	3.0	9.0	332.0	242.0	26.0	3.0	484.4	38.0	384.1	369.4
3.0	3.0	10.0	343.0	318.0	27.0	3.0	629.9	43.9	487.7	469.4
3.0	3.0	11.0	313.0	381.0	28.0	3.0	706.2	47.3	537.8	517.6
3.0	3.0	12.0	160.0	424.0	28.0	2.0	604.1	47.1	460.6	443.2
3.0	3.0	13.0	300.0	387.0	28.0	2.0	701.9	49.4	528.4	508.7
3.0	3.0	14.0	392.0	309.0	28.0	1.0	665.2	52.6	491.9	473.5
3.0	3.0	15.0	298.0	252.0	28.0	-	475.9	51.6	352.2	338.5
3.0	3.0	16.0	237.0	162.0	27.0	-	288.4	42.3	220.2	210.2
3.0	3.0	17.0	205.0	71.0	26.0	1.0	127.9	30.3	96.0	89.0
3.0	3.0	18.0	-	-	24.0	3.0	-	24.0	-	-
3.0	3.0	19.0	-	-	23.0	4.0	-	23.0	-	-
3.0	3.0	20.0	-	-	21.0	5.0	-	21.0	-	-
3.0	3.0	21.0	-	-	20.0	6.0	-	20.0	-	-
3.0	3.0	22.0	-	-	20.0	5.0	-	20.0	-	-
3.0	3.0	23.0	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	-	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	1.0	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	2.0	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	3.0	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	4.0	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	5.0	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	6.0	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	7.0	243.0	69.0	19.0	4.0	131.5	20.6	101.3	94.2
3.0	4.0	8.0	-	77.0	20.0	4.0	73.2	20.6	63.6	57.3
3.0	4.0	9.0	-	71.0	21.0	4.0	67.5	21.3	58.4	52.2
3.0	4.0	10.0	-	160.0	22.0	4.0	153.9	24.5	131.2	123.4
3.0	4.0	11.0	48.0	357.0	23.0	4.0	409.3	32.1	336.6	323.3
3.0	4.0	12.0	143.0	424.0	23.0	4.0	587.3	37.2	471.1	453.4
3.0	4.0	13.0	24.0	313.0	23.0	4.0	329.7	31.4	272.1	260.7
3.0	4.0	14.0	11.0	233.0	23.0	4.0	235.8	28.3	197.5	188.1
3.0	4.0	15.0	-	35.0	22.0	4.0	33.2	21.9	28.7	23.0
3.0	4.0	16.0	8.0	142.0	22.0	4.0	141.7	24.0	120.9	113.3
3.0	4.0	17.0	-	5.0	21.0	4.0	4.7	19.9	4.1	-
3.0	4.0	18.0	-	-	20.0	3.0	-	20.0	-	-
3.0	4.0	19.0	-	-	20.0	3.0	-	20.0	-	-
3.0	4.0	20.0	-	-	19.0	3.0	-	19.0	-	-
3.0	4.0	21.0	-	-	19.0	3.0	-	19.0	-	-
3.0	4.0	22.0	-	-	19.0	3.0	-	19.0	-	-
3.0	4.0	23.0	-	-	19.0	4.0	-	19.0	-	-

3.0	5.0	-	-	-	18.0	5.0	-	18.0	-	-
3.0	5.0	1.0	-	-	17.0	6.0	-	17.0	-	-
3.0	5.0	2.0	-	-	17.0	6.0	-	17.0	-	-
3.0	5.0	3.0	-	-	16.0	6.0	-	16.0	-	-
3.0	5.0	4.0	-	-	16.0	6.0	-	16.0	-	-
3.0	5.0	5.0	-	-	17.0	5.0	-	17.0	-	-
3.0	5.0	6.0	-	-	17.0	5.0	-	17.0	-	-
3.0	5.0	7.0	191.0	62.0	17.0	5.0	111.8	18.0	88.1	81.2
3.0	5.0	8.0	-	123.0	19.0	5.0	118.7	20.4	103.1	96.0
3.0	5.0	9.0	831.0	103.0	20.0	5.0	689.6	34.3	554.1	533.3
3.0	5.0	10.0	887.0	116.0	20.0	5.0	880.0	39.8	694.7	668.1
3.0	5.0	11.0	916.0	123.0	21.0	5.0	1,004.3	44.0	777.8	747.5
3.0	5.0	12.0	925.0	127.0	21.0	5.0	1,050.1	45.3	808.1	776.3
3.0	5.0	13.0	921.0	123.0	21.0	5.0	1,012.6	44.6	782.0	751.4
3.0	5.0	14.0	892.0	118.0	20.0	5.0	892.9	40.9	701.4	674.6
3.0	5.0	15.0	836.0	106.0	20.0	5.0	705.1	36.4	561.3	540.2
3.0	5.0	16.0	732.0	87.0	19.0	4.0	460.8	30.9	364.0	349.9
3.0	5.0	17.0	496.0	55.0	18.0	4.0	188.8	22.5	137.3	129.4
3.0	5.0	18.0	-	-	17.0	3.0	-	17.0	-	-
3.0	5.0	19.0	-	-	17.0	3.0	-	17.0	-	-
3.0	5.0	20.0	-	-	17.0	3.0	-	17.0	-	-
3.0	5.0	21.0	-	-	17.0	3.0	-	17.0	-	-
3.0	5.0	22.0	-	-	16.0	3.0	-	16.0	-	-
3.0	5.0	23.0	-	-	16.0	3.0	-	16.0	-	-
3.0	6.0	-	-	-	16.0	3.0	-	16.0	-	-
3.0	6.0	1.0	-	-	16.0	3.0	-	16.0	-	-
3.0	6.0	2.0	-	-	16.0	3.0	-	16.0	-	-
3.0	6.0	3.0	-	-	16.0	3.0	-	16.0	-	-
3.0	6.0	4.0	-	-	16.0	3.0	-	16.0	-	-
3.0	6.0	5.0	-	-	16.0	3.0	-	16.0	-	-
3.0	6.0	6.0	-	-	17.0	4.0	-	17.0	-	-
3.0	6.0	7.0	516.0	49.0	18.0	4.0	181.1	20.9	130.1	122.3
3.0	6.0	8.0	761.0	77.0	19.0	4.0	455.2	29.3	360.7	346.7
3.0	6.0	9.0	867.0	93.0	20.0	4.0	705.0	37.2	558.5	537.6
3.0	6.0	10.0	925.0	102.0	21.0	4.0	898.7	43.5	696.4	669.8
3.0	6.0	11.0	951.0	108.0	22.0	4.0	1,022.8	47.9	776.3	746.1
3.0	6.0	12.0	958.0	111.0	22.0	4.0	1,066.6	49.2	804.0	772.5
3.0	6.0	13.0	949.0	109.0	22.0	4.0	1,025.1	48.4	776.1	745.8
3.0	6.0	14.0	920.0	104.0	22.0	4.0	902.4	45.4	692.6	666.1
3.0	6.0	15.0	865.0	94.0	21.0	4.0	712.6	39.6	558.3	537.3
3.0	6.0	16.0	237.0	165.0	21.0	4.0	290.9	28.8	237.5	227.1
3.0	6.0	17.0	536.0	50.0	20.0	3.0	193.7	24.6	138.1	130.1
3.0	6.0	18.0	-	-	19.0	3.0	-	19.0	-	-
3.0	6.0	19.0	-	-	19.0	3.0	-	19.0	-	-
3.0	6.0	20.0	-	-	18.0	4.0	-	18.0	-	-
3.0	6.0	21.0	-	-	18.0	4.0	-	18.0	-	-
3.0	6.0	22.0	-	-	18.0	4.0	-	18.0	-	-
3.0	6.0	23.0	-	-	18.0	4.0	-	18.0	-	-
3.0	7.0	-	-	-	18.0	4.0	-	18.0	-	-
3.0	7.0	1.0	-	-	18.0	3.0	-	18.0	-	-
3.0	7.0	2.0	-	-	19.0	3.0	-	19.0	-	-
3.0	7.0	3.0	-	-	19.0	3.0	-	19.0	-	-
3.0	7.0	4.0	-	-	19.0	3.0	-	19.0	-	-
3.0	7.0	5.0	-	-	19.0	3.0	-	19.0	-	-
3.0	7.0	6.0	-	-	19.0	3.0	-	19.0	-	-
3.0	7.0	7.0	159.0	66.0	20.0	4.0	108.6	21.1	85.8	79.0
3.0	7.0	8.0	361.0	144.0	21.0	4.0	331.5	28.0	269.1	257.8
3.0	7.0	9.0	424.0	223.0	22.0	4.0	536.2	34.7	432.0	415.6
3.0	7.0	10.0	555.0	247.0	22.0	4.0	744.8	40.3	586.9	564.9
3.0	7.0	11.0	887.0	136.0	22.0	4.0	993.2	46.8	758.2	728.8
3.0	7.0	12.0	894.0	140.0	23.0	3.0	1,035.5	51.8	769.7	739.8
3.0	7.0	13.0	894.0	132.0	23.0	3.0	998.1	51.0	744.9	716.1
3.0	7.0	14.0	787.0	156.0	23.0	2.0	850.0	50.3	635.9	611.9
3.0	7.0	15.0	594.0	172.0	23.0	2.0	608.1	42.9	469.4	451.8
3.0	7.0	16.0	702.0	90.0	22.0	2.0	449.2	36.4	345.8	332.2
3.0	7.0	17.0	474.0	56.0	21.0	2.0	183.9	26.7	131.5	123.7
3.0	7.0	18.0	-	-	20.0	2.0	-	20.0	-	-
3.0	7.0	19.0	-	-	20.0	1.0	-	20.0	-	-
3.0	7.0	20.0	-	-	20.0	1.0	-	20.0	-	-
3.0	7.0	21.0	-	-	20.0	1.0	-	20.0	-	-
3.0	7.0	22.0	-	-	20.0	1.0	-	20.0	-	-
3.0	7.0	23.0	-	-	20.0	1.0	-	20.0	-	-
3.0	8.0	-	-	-	20.0	1.0	-	20.0	-	-
3.0	8.0	1.0	-	-	20.0	1.0	-	20.0	-	-
3.0	8.0	2.0	-	-	20.0	1.0	-	20.0	-	-
3.0	8.0	3.0	-	-	19.0	1.0	-	19.0	-	-
3.0	8.0	4.0	-	-	19.0	2.0	-	19.0	-	-
3.0	8.0	5.0	-	-	19.0	2.0	-	19.0	-	-
3.0	8.0	6.0	-	-	20.0	2.0	-	20.0	-	-
3.0	8.0	7.0	514.0	50.0	21.0	3.0	183.4	24.2	130.3	122.5
3.0	8.0	8.0	748.0	77.0	22.0	3.0	451.7	33.2	351.7	338.0

3.0	8.0	9.0	855.0	93.0	23.0	3.0	699.8	41.6	542.4	522.0
3.0	8.0	10.0	901.0	108.0	24.0	3.0	887.8	48.2	671.3	645.8
3.0	8.0	11.0	927.0	115.0	24.0	3.0	1,010.3	51.9	750.8	721.7
3.0	8.0	12.0	934.0	118.0	25.0	3.0	1,052.7	54.2	772.5	742.4
3.0	8.0	13.0	921.0	118.0	25.0	3.0	1,009.8	53.3	744.6	715.8
3.0	8.0	14.0	886.0	114.0	24.0	3.0	885.2	49.1	666.3	640.9
3.0	8.0	15.0	823.0	105.0	24.0	4.0	695.6	42.1	538.3	518.1
3.0	8.0	16.0	711.0	87.0	23.0	4.0	450.3	34.6	349.4	335.8
3.0	8.0	17.0	480.0	55.0	22.0	3.0	184.2	26.9	131.3	123.5
3.0	8.0	18.0	-	-	21.0	3.0	-	21.0	-	-
3.0	8.0	19.0	-	-	21.0	3.0	-	21.0	-	-
3.0	8.0	20.0	-	-	21.0	3.0	-	21.0	-	-
3.0	8.0	21.0	-	-	20.0	3.0	-	20.0	-	-
3.0	8.0	22.0	-	-	20.0	3.0	-	20.0	-	-
3.0	8.0	23.0	-	-	20.0	3.0	-	20.0	-	-
3.0	9.0	-	-	-	20.0	3.0	-	20.0	-	-
3.0	9.0	1.0	-	-	19.0	2.0	-	19.0	-	-
3.0	9.0	2.0	-	-	19.0	2.0	-	19.0	-	-
3.0	9.0	3.0	-	-	19.0	2.0	-	19.0	-	-
3.0	9.0	4.0	-	-	19.0	2.0	-	19.0	-	-
3.0	9.0	5.0	-	-	19.0	2.0	-	19.0	-	-
3.0	9.0	6.0	-	-	20.0	3.0	-	20.0	-	-
3.0	9.0	7.0	93.0	71.0	21.0	3.0	95.4	21.8	77.6	71.0
3.0	9.0	8.0	470.0	129.0	22.0	4.0	370.0	29.9	296.2	284.2
3.0	9.0	9.0	723.0	129.0	23.0	4.0	649.9	38.6	512.1	492.9
3.0	9.0	10.0	672.0	207.0	24.0	4.0	807.4	44.1	624.1	600.5
3.0	9.0	11.0	593.0	288.0	24.0	4.0	884.8	46.3	677.1	651.3
3.0	9.0	12.0	586.0	311.0	24.0	3.0	924.2	49.7	695.0	668.4
3.0	9.0	13.0	871.0	138.0	25.0	3.0	991.1	52.4	734.2	705.8
3.0	9.0	14.0	841.0	130.0	24.0	3.0	869.5	48.6	656.1	631.2
3.0	9.0	15.0	779.0	117.0	24.0	3.0	677.7	43.4	521.1	501.6
3.0	9.0	16.0	659.0	98.0	23.0	3.0	436.2	35.5	337.8	324.5
3.0	9.0	17.0	420.0	61.0	22.0	3.0	174.8	26.6	126.6	118.9
3.0	9.0	18.0	-	-	21.0	3.0	-	21.0	-	-
3.0	9.0	19.0	-	-	21.0	3.0	-	21.0	-	-
3.0	9.0	20.0	-	-	21.0	3.0	-	21.0	-	-
3.0	9.0	21.0	-	-	21.0	3.0	-	21.0	-	-
3.0	9.0	22.0	-	-	21.0	3.0	-	21.0	-	-
3.0	9.0	23.0	-	-	20.0	3.0	-	20.0	-	-
3.0	10.0	-	-	-	20.0	2.0	-	20.0	-	-
3.0	10.0	1.0	-	-	20.0	2.0	-	20.0	-	-
3.0	10.0	2.0	-	-	20.0	2.0	-	20.0	-	-
3.0	10.0	3.0	-	-	20.0	2.0	-	20.0	-	-
3.0	10.0	4.0	-	-	20.0	2.0	-	20.0	-	-
3.0	10.0	5.0	-	-	20.0	2.0	-	20.0	-	-
3.0	10.0	6.0	-	-	20.0	2.0	-	20.0	-	-
3.0	10.0	7.0	82.0	73.0	21.0	2.0	94.7	21.8	77.6	71.0
3.0	10.0	8.0	318.0	157.0	22.0	3.0	320.4	29.3	259.4	248.4
3.0	10.0	9.0	345.0	249.0	23.0	3.0	503.3	36.0	403.3	387.9
3.0	10.0	10.0	511.0	269.0	24.0	3.0	732.3	43.6	567.6	546.3
3.0	10.0	11.0	396.0	368.0	25.0	4.0	772.2	44.5	596.8	574.4
3.0	10.0	12.0	859.0	152.0	25.0	4.0	1,024.4	50.5	767.1	737.3
3.0	10.0	13.0	821.0	166.0	25.0	4.0	973.7	49.9	731.0	702.8
3.0	10.0	14.0	775.0	162.0	25.0	4.0	850.4	46.9	647.6	623.1
3.0	10.0	15.0	710.0	145.0	24.0	4.0	661.0	41.1	514.5	495.2
3.0	10.0	16.0	592.0	117.0	23.0	4.0	422.6	33.9	330.9	317.9
3.0	10.0	17.0	356.0	70.0	22.0	4.0	166.2	25.8	123.0	115.4
3.0	10.0	18.0	-	-	22.0	4.0	-	22.0	-	-
3.0	10.0	19.0	-	-	21.0	4.0	-	21.0	-	-
3.0	10.0	20.0	-	-	21.0	4.0	-	21.0	-	-
3.0	10.0	21.0	-	-	21.0	4.0	-	21.0	-	-
3.0	10.0	22.0	-	-	21.0	4.0	-	21.0	-	-
3.0	10.0	23.0	-	-	20.0	4.0	-	20.0	-	-
3.0	11.0	-	-	-	20.0	3.0	-	20.0	-	-
3.0	11.0	1.0	-	-	20.0	3.0	-	20.0	-	-
3.0	11.0	2.0	-	-	20.0	3.0	-	20.0	-	-
3.0	11.0	3.0	-	-	20.0	3.0	-	20.0	-	-
3.0	11.0	4.0	-	-	20.0	3.0	-	20.0	-	-
3.0	11.0	5.0	-	-	20.0	3.0	-	20.0	-	-
3.0	11.0	6.0	-	-	20.0	3.0	-	20.0	-	-
3.0	11.0	7.0	458.0	59.0	22.0	4.0	181.2	24.9	131.0	123.3
3.0	11.0	8.0	706.0	89.0	23.0	5.0	448.5	32.1	352.3	338.6
3.0	11.0	9.0	824.0	105.0	24.0	5.0	695.7	39.3	546.1	525.6
3.0	11.0	10.0	879.0	118.0	24.0	5.0	883.9	44.0	683.5	657.4
3.0	11.0	11.0	910.0	123.0	25.0	5.0	1,006.3	48.1	763.1	733.5
3.0	11.0	12.0	636.0	290.0	25.0	5.0	953.8	47.2	726.8	698.8
3.0	11.0	13.0	562.0	305.0	25.0	4.0	874.3	47.4	665.2	639.9
3.0	11.0	14.0	823.0	144.0	24.0	4.0	869.6	46.1	664.9	639.6
3.0	11.0	15.0	461.0	223.0	24.0	4.0	564.7	38.9	445.7	428.9
3.0	11.0	16.0	417.0	143.0	23.0	4.0	360.5	32.1	286.8	275.0
3.0	11.0	17.0	277.0	72.0	22.0	3.0	148.0	25.6	111.6	104.3

3.0	11.0	18.0	-	-	21.0	3.0	-	21.0	-	-
3.0	11.0	19.0	-	-	21.0	3.0	-	21.0	-	-
3.0	11.0	20.0	-	-	21.0	3.0	-	21.0	-	-
3.0	11.0	21.0	-	-	21.0	3.0	-	21.0	-	-
3.0	11.0	22.0	-	-	21.0	3.0	-	21.0	-	-
3.0	11.0	23.0	-	-	21.0	3.0	-	21.0	-	-
3.0	12.0	-	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	1.0	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	2.0	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	3.0	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	4.0	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	5.0	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	6.0	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	7.0	500.0	56.0	22.0	4.0	189.6	25.2	136.0	128.2
3.0	12.0	8.0	474.0	133.0	23.0	4.0	378.4	31.4	301.2	289.0
3.0	12.0	9.0	575.0	182.0	23.0	4.0	602.0	37.4	478.0	460.0
3.0	12.0	10.0	599.0	241.0	23.0	4.0	779.7	42.3	608.3	585.4
3.0	12.0	11.0	332.0	394.0	24.0	4.0	739.0	42.8	576.0	554.4
3.0	12.0	12.0	525.0	337.0	24.0	4.0	892.0	46.3	682.8	656.7
3.0	12.0	13.0	931.0	107.0	24.0	4.0	1,010.4	49.5	760.4	730.9
3.0	12.0	14.0	734.0	184.0	24.0	4.0	839.0	45.8	642.8	618.5
3.0	12.0	15.0	850.0	93.0	23.0	4.0	701.8	41.1	545.7	525.2
3.0	12.0	16.0	750.0	78.0	23.0	4.0	458.7	34.9	355.0	341.2
3.0	12.0	17.0	382.0	61.0	22.0	3.0	162.9	26.4	118.6	111.1
3.0	12.0	18.0	-	-	21.0	3.0	-	21.0	-	-
3.0	12.0	19.0	-	-	21.0	3.0	-	21.0	-	-
3.0	12.0	20.0	-	-	21.0	3.0	-	21.0	-	-
3.0	12.0	21.0	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	22.0	-	-	20.0	3.0	-	20.0	-	-
3.0	12.0	23.0	-	-	20.0	3.0	-	20.0	-	-
3.0	13.0	-	-	-	20.0	3.0	-	20.0	-	-
3.0	13.0	1.0	-	-	20.0	3.0	-	20.0	-	-
3.0	13.0	2.0	-	-	19.0	3.0	-	19.0	-	-
3.0	13.0	3.0	-	-	19.0	3.0	-	19.0	-	-
3.0	13.0	4.0	-	-	19.0	3.0	-	19.0	-	-
3.0	13.0	5.0	-	-	19.0	3.0	-	19.0	-	-
3.0	13.0	6.0	-	-	20.0	3.0	-	20.0	-	-
3.0	13.0	7.0	479.0	61.0	21.0	4.0	190.2	24.2	138.3	130.4
3.0	13.0	8.0	705.0	94.0	22.0	4.0	455.8	32.3	358.3	344.3
3.0	13.0	9.0	810.0	114.0	23.0	4.0	698.2	40.0	546.4	525.9
3.0	13.0	10.0	863.0	129.0	24.0	4.0	889.9	46.2	680.3	654.4
3.0	13.0	11.0	888.0	139.0	24.0	4.0	1,004.3	49.3	756.4	727.1
3.0	13.0	12.0	896.0	142.0	25.0	4.0	1,045.0	51.5	778.1	747.7
3.0	13.0	13.0	878.0	146.0	25.0	4.0	1,008.5	50.8	753.7	724.5
3.0	13.0	14.0	847.0	138.0	24.0	4.0	884.2	46.8	673.6	648.0
3.0	13.0	15.0	783.0	126.0	24.0	4.0	691.6	42.0	535.8	515.7
3.0	13.0	16.0	656.0	107.0	23.0	3.0	443.2	35.7	343.1	329.6
3.0	13.0	17.0	415.0	69.0	22.0	3.0	179.2	26.7	130.4	122.6
3.0	13.0	18.0	-	-	21.0	3.0	-	21.0	-	-
3.0	13.0	19.0	-	-	21.0	3.0	-	21.0	-	-
3.0	13.0	20.0	-	-	21.0	3.0	-	21.0	-	-
3.0	13.0	21.0	-	-	21.0	3.0	-	21.0	-	-
3.0	13.0	22.0	-	-	21.0	3.0	-	21.0	-	-
3.0	13.0	23.0	-	-	21.0	4.0	-	21.0	-	-
3.0	14.0	-	-	-	21.0	4.0	-	21.0	-	-
3.0	14.0	1.0	-	-	21.0	4.0	-	21.0	-	-
3.0	14.0	2.0	-	-	21.0	5.0	-	21.0	-	-
3.0	14.0	3.0	-	-	21.0	5.0	-	21.0	-	-
3.0	14.0	4.0	-	-	21.0	5.0	-	21.0	-	-
3.0	14.0	5.0	-	-	21.0	4.0	-	21.0	-	-
3.0	14.0	6.0	-	-	21.0	4.0	-	21.0	-	-
3.0	14.0	7.0	-	37.0	22.0	5.0	35.1	21.3	30.4	24.7
3.0	14.0	8.0	398.0	151.0	23.0	5.0	360.6	29.8	290.7	278.8
3.0	14.0	9.0	537.0	199.0	24.0	5.0	594.7	36.8	474.0	456.2
3.0	14.0	10.0	495.0	281.0	24.0	5.0	733.3	40.4	577.8	556.1
3.0	14.0	11.0	698.0	246.0	24.0	5.0	947.2	45.4	728.3	700.2
3.0	14.0	12.0	516.0	344.0	24.0	5.0	890.7	44.7	687.7	661.5
3.0	14.0	13.0	534.0	319.0	23.0	5.0	862.3	42.9	671.7	646.2
3.0	14.0	14.0	755.0	177.0	23.0	4.0	849.7	44.7	654.8	630.0
3.0	14.0	15.0	12.0	212.0	23.0	4.0	213.7	29.3	178.1	169.2
3.0	14.0	16.0	142.0	181.0	23.0	4.0	254.2	28.4	209.4	199.7
3.0	14.0	17.0	-	3.0	22.0	3.0	2.8	21.2	2.5	-
3.0	14.0	18.0	-	-	22.0	3.0	-	22.0	-	-
3.0	14.0	19.0	-	-	22.0	3.0	-	22.0	-	-
3.0	14.0	20.0	-	-	22.0	4.0	-	22.0	-	-
3.0	14.0	21.0	-	-	22.0	4.0	-	22.0	-	-
3.0	14.0	22.0	-	-	22.0	4.0	-	22.0	-	-
3.0	14.0	23.0	-	-	22.0	4.0	-	22.0	-	-
3.0	15.0	-	-	-	22.0	4.0	-	22.0	-	-
3.0	15.0	1.0	-	-	22.0	4.0	-	22.0	-	-
3.0	15.0	2.0	-	-	22.0	4.0	-	22.0	-	-

3.0	15.0	3.0	-	-	22.0	4.0	-	22.0	-	-
3.0	15.0	4.0	-	-	22.0	4.0	-	22.0	-	-
3.0	15.0	5.0	-	-	22.0	4.0	-	22.0	-	-
3.0	15.0	6.0	-	-	22.0	4.0	-	22.0	-	-
3.0	15.0	7.0	394.0	73.0	23.0	5.0	180.6	25.7	133.6	125.8
3.0	15.0	8.0	624.0	113.0	24.0	5.0	437.7	32.9	344.5	331.0
3.0	15.0	9.0	745.0	134.0	24.0	5.0	677.8	38.8	533.9	513.9
3.0	15.0	10.0	811.0	146.0	25.0	4.0	865.4	46.5	660.6	635.5
3.0	15.0	11.0	834.0	158.0	25.0	4.0	981.7	49.7	738.0	709.5
3.0	15.0	12.0	832.0	166.0	25.0	4.0	1,016.1	50.8	759.5	730.0
3.0	15.0	13.0	818.0	165.0	25.0	4.0	971.9	49.9	729.9	701.8
3.0	15.0	14.0	767.0	164.0	25.0	4.0	846.2	46.8	644.8	620.4
3.0	15.0	15.0	687.0	153.0	24.0	4.0	652.6	40.9	508.7	489.6
3.0	15.0	16.0	539.0	132.0	24.0	4.0	408.0	34.5	319.2	306.5
3.0	15.0	17.0	294.0	81.0	23.0	4.0	160.2	26.6	120.5	112.9
3.0	15.0	18.0	-	-	23.0	4.0	-	23.0	-	-
3.0	15.0	19.0	-	-	23.0	4.0	-	23.0	-	-
3.0	15.0	20.0	-	-	23.0	4.0	-	23.0	-	-
3.0	15.0	21.0	-	-	23.0	4.0	-	23.0	-	-
3.0	15.0	22.0	-	-	23.0	4.0	-	23.0	-	-
3.0	15.0	23.0	-	-	23.0	4.0	-	23.0	-	-
3.0	16.0	-	-	-	22.0	4.0	-	22.0	-	-
3.0	16.0	1.0	-	-	22.0	4.0	-	22.0	-	-
3.0	16.0	2.0	-	-	22.0	4.0	-	22.0	-	-
3.0	16.0	3.0	-	-	22.0	4.0	-	22.0	-	-
3.0	16.0	4.0	-	-	22.0	5.0	-	22.0	-	-
3.0	16.0	5.0	-	-	22.0	5.0	-	22.0	-	-
3.0	16.0	6.0	-	-	22.0	5.0	-	22.0	-	-
3.0	16.0	7.0	12.0	78.0	23.0	5.0	78.1	23.3	66.4	60.0
3.0	16.0	8.0	-	138.0	24.0	6.0	132.8	25.6	112.6	105.3
3.0	16.0	9.0	757.0	124.0	25.0	6.0	676.7	37.8	535.8	515.8
3.0	16.0	10.0	61.0	346.0	26.0	6.0	401.7	34.2	326.8	313.8
3.0	16.0	11.0	63.0	397.0	26.0	6.0	463.4	35.0	375.7	361.2
3.0	16.0	12.0	829.0	164.0	27.0	6.0	1,011.6	47.1	771.0	741.0
3.0	16.0	13.0	821.0	159.0	27.0	6.0	968.7	47.3	737.7	709.2
3.0	16.0	14.0	-	28.0	27.0	6.0	26.6	28.2	22.3	16.8
3.0	16.0	15.0	-	60.0	26.0	5.0	57.0	26.0	48.3	42.3
3.0	16.0	16.0	-	13.0	25.0	5.0	12.3	24.0	10.5	5.2
3.0	16.0	17.0	216.0	76.0	25.0	4.0	132.7	26.8	101.1	94.0
3.0	16.0	18.0	-	-	24.0	4.0	-	24.0	-	-
3.0	16.0	19.0	-	-	23.0	4.0	-	23.0	-	-
3.0	16.0	20.0	-	-	23.0	4.0	-	23.0	-	-
3.0	16.0	21.0	-	-	22.0	5.0	-	22.0	-	-
3.0	16.0	22.0	-	-	21.0	5.0	-	21.0	-	-
3.0	16.0	23.0	-	-	20.0	5.0	-	20.0	-	-
3.0	17.0	-	-	-	19.0	5.0	-	19.0	-	-
3.0	17.0	1.0	-	-	19.0	5.0	-	19.0	-	-
3.0	17.0	2.0	-	-	19.0	5.0	-	19.0	-	-
3.0	17.0	3.0	-	-	19.0	6.0	-	19.0	-	-
3.0	17.0	4.0	-	-	19.0	6.0	-	19.0	-	-
3.0	17.0	5.0	-	-	18.0	7.0	-	18.0	-	-
3.0	17.0	6.0	-	-	18.0	7.0	-	18.0	-	-
3.0	17.0	7.0	512.0	65.0	18.0	6.0	206.4	20.9	153.2	144.9
3.0	17.0	8.0	744.0	96.0	18.0	6.0	482.5	26.9	390.0	375.0
3.0	17.0	9.0	859.0	113.0	19.0	6.0	737.2	33.6	595.8	573.4
3.0	17.0	10.0	929.0	119.0	20.0	5.0	936.0	41.2	734.3	706.0
3.0	17.0	11.0	964.0	122.0	21.0	5.0	1,063.8	45.4	817.9	785.7
3.0	17.0	12.0	979.0	120.0	21.0	5.0	1,107.5	46.7	846.3	812.6
3.0	17.0	13.0	972.0	117.0	22.0	5.0	1,062.8	46.8	811.4	779.5
3.0	17.0	14.0	943.0	112.0	21.0	5.0	934.4	42.9	726.6	698.6
3.0	17.0	15.0	888.0	101.0	21.0	4.0	736.4	40.2	575.2	553.6
3.0	17.0	16.0	787.0	84.0	20.0	4.0	481.8	32.5	377.1	362.5
3.0	17.0	17.0	564.0	57.0	19.0	4.0	204.5	23.9	146.2	138.0
3.0	17.0	18.0	-	-	17.0	4.0	-	17.0	-	-
3.0	17.0	19.0	-	-	17.0	4.0	-	17.0	-	-
3.0	17.0	20.0	-	-	17.0	3.0	-	17.0	-	-
3.0	17.0	21.0	-	-	16.0	3.0	-	16.0	-	-
3.0	17.0	22.0	-	-	16.0	3.0	-	16.0	-	-
3.0	17.0	23.0	-	-	16.0	3.0	-	16.0	-	-
3.0	18.0	-	-	-	16.0	3.0	-	16.0	-	-
3.0	18.0	1.0	-	-	16.0	3.0	-	16.0	-	-
3.0	18.0	2.0	-	-	16.0	3.0	-	16.0	-	-
3.0	18.0	3.0	-	-	15.0	3.0	-	15.0	-	-
3.0	18.0	4.0	-	-	15.0	4.0	-	15.0	-	-
3.0	18.0	5.0	-	-	15.0	3.0	-	15.0	-	-
3.0	18.0	6.0	-	-	17.0	3.0	-	17.0	-	-
3.0	18.0	7.0	542.0	62.0	18.0	4.0	212.3	21.7	156.3	148.0
3.0	18.0	8.0	753.0	89.0	19.0	4.0	480.5	30.0	382.5	367.8
3.0	18.0	9.0	849.0	107.0	20.0	4.0	725.1	37.7	574.2	552.6
3.0	18.0	10.0	898.0	119.0	21.0	4.0	910.3	43.8	704.7	677.7
3.0	18.0	11.0	918.0	128.0	21.0	4.0	1,026.6	47.0	782.8	752.2

3.0	18.0	12.0	920.0	133.0	22.0	4.0	1,063.0	49.1	801.7	770.2
3.0	18.0	13.0	906.0	133.0	22.0	5.0	1,016.5	45.7	780.6	750.1
3.0	18.0	14.0	872.0	129.0	21.0	5.0	896.5	41.9	700.5	673.7
3.0	18.0	15.0	813.0	117.0	21.0	5.0	700.7	37.3	555.5	534.7
3.0	18.0	16.0	721.0	93.0	20.0	5.0	458.8	30.5	363.3	349.2
3.0	18.0	17.0	498.0	62.0	18.0	5.0	192.6	21.9	140.6	132.6
3.0	18.0	18.0	-	-	18.0	5.0	-	18.0	-	-
3.0	18.0	19.0	-	-	18.0	5.0	-	18.0	-	-
3.0	18.0	20.0	-	-	17.0	5.0	-	17.0	-	-
3.0	18.0	21.0	-	-	17.0	5.0	-	17.0	-	-
3.0	18.0	22.0	-	-	17.0	5.0	-	17.0	-	-
3.0	18.0	23.0	-	-	17.0	5.0	-	17.0	-	-
3.0	19.0	-	-	-	17.0	4.0	-	17.0	-	-
3.0	19.0	1.0	-	-	17.0	4.0	-	17.0	-	-
3.0	19.0	2.0	-	-	18.0	4.0	-	18.0	-	-
3.0	19.0	3.0	-	-	17.0	4.0	-	17.0	-	-
3.0	19.0	4.0	-	-	17.0	4.0	-	17.0	-	-
3.0	19.0	5.0	-	-	17.0	4.0	-	17.0	-	-
3.0	19.0	6.0	-	-	19.0	4.0	-	19.0	-	-
3.0	19.0	7.0	78.0	91.0	20.0	5.0	112.1	21.0	93.2	86.3
3.0	19.0	8.0	741.0	90.0	21.0	5.0	477.2	30.6	379.1	364.5
3.0	19.0	9.0	843.0	105.0	22.0	5.0	720.0	37.8	569.9	548.5
3.0	19.0	10.0	829.0	151.0	22.0	5.0	890.5	42.1	695.3	668.7
3.0	19.0	11.0	845.0	167.0	23.0	5.0	1,005.0	46.0	770.3	740.3
3.0	19.0	12.0	-	118.0	23.0	5.0	112.9	26.5	95.4	88.4
3.0	19.0	13.0	878.0	144.0	22.0	5.0	1,001.2	43.2	778.6	748.2
3.0	19.0	14.0	847.0	136.0	22.0	5.0	882.3	42.6	687.2	660.9
3.0	19.0	15.0	779.0	127.0	22.0	5.0	687.0	38.0	543.0	522.6
3.0	19.0	16.0	685.0	100.0	21.0	4.0	448.0	32.6	351.6	337.9
3.0	19.0	17.0	455.0	67.0	21.0	4.0	186.4	25.4	135.3	127.4
3.0	19.0	18.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	19.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	20.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	21.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	22.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	23.0	-	-	20.0	4.0	-	20.0	-	-
3.0	20.0	-	-	-	20.0	4.0	-	20.0	-	-
3.0	20.0	1.0	-	-	20.0	4.0	-	20.0	-	-
3.0	20.0	2.0	-	-	20.0	4.0	-	20.0	-	-
3.0	20.0	3.0	-	-	20.0	3.0	-	20.0	-	-
3.0	20.0	4.0	-	-	19.0	3.0	-	19.0	-	-
3.0	20.0	5.0	-	-	19.0	3.0	-	19.0	-	-
3.0	20.0	6.0	-	-	20.0	4.0	-	20.0	-	-
3.0	20.0	7.0	-	40.0	21.0	4.0	37.9	20.3	33.0	27.3
3.0	20.0	8.0	-	64.0	22.0	5.0	60.8	22.0	52.4	46.3
3.0	20.0	9.0	783.0	123.0	23.0	6.0	697.4	36.0	557.3	536.4
3.0	20.0	10.0	226.0	378.0	23.0	6.0	586.3	35.0	475.1	457.3
3.0	20.0	11.0	116.0	432.0	23.0	6.0	560.4	34.2	456.0	438.9
3.0	20.0	12.0	20.0	326.0	22.0	6.0	338.0	28.7	282.6	270.9
3.0	20.0	13.0	529.0	330.0	22.0	6.0	868.4	39.0	690.1	663.7
3.0	20.0	14.0	386.0	334.0	22.0	6.0	683.5	36.2	550.1	529.5
3.0	20.0	15.0	67.0	274.0	22.0	6.0	320.1	28.5	267.3	256.1
3.0	20.0	16.0	86.0	184.0	21.0	6.0	224.1	24.9	188.7	179.5
3.0	20.0	17.0	76.0	83.0	21.0	6.0	101.8	22.2	83.9	77.1
3.0	20.0	18.0	-	-	21.0	6.0	-	21.0	-	-
3.0	20.0	19.0	-	-	20.0	6.0	-	20.0	-	-
3.0	20.0	20.0	-	-	20.0	5.0	-	20.0	-	-
3.0	20.0	21.0	-	-	20.0	5.0	-	20.0	-	-
3.0	20.0	22.0	-	-	20.0	5.0	-	20.0	-	-
3.0	20.0	23.0	-	-	20.0	5.0	-	20.0	-	-
3.0	21.0	-	-	-	19.0	4.0	-	19.0	-	-
3.0	21.0	1.0	-	-	19.0	4.0	-	19.0	-	-
3.0	21.0	2.0	-	-	19.0	5.0	-	19.0	-	-
3.0	21.0	3.0	-	-	19.0	5.0	-	19.0	-	-
3.0	21.0	4.0	-	-	19.0	5.0	-	19.0	-	-
3.0	21.0	5.0	-	-	19.0	5.0	-	19.0	-	-
3.0	21.0	6.0	-	-	20.0	6.0	-	20.0	-	-
3.0	21.0	7.0	534.0	66.0	21.0	6.0	217.1	24.1	159.4	150.9
3.0	21.0	8.0	741.0	94.0	21.0	6.0	484.0	30.0	386.1	371.3
3.0	21.0	9.0	842.0	109.0	22.0	7.0	726.1	35.1	582.8	560.9
3.0	21.0	10.0	11.0	244.0	23.0	7.0	245.7	27.6	206.5	196.9
3.0	21.0	11.0	387.0	391.0	23.0	7.0	789.1	36.9	633.7	609.7
3.0	21.0	12.0	217.0	456.0	24.0	6.0	690.7	38.3	551.0	530.4
3.0	21.0	13.0	900.0	136.0	24.0	6.0	1,014.5	44.6	783.5	752.9
3.0	21.0	14.0	869.0	130.0	23.0	6.0	894.7	41.8	699.8	673.0
3.0	21.0	15.0	818.0	115.0	23.0	6.0	701.2	37.6	555.0	534.2
3.0	21.0	16.0	717.0	94.0	22.0	6.0	456.5	31.3	360.0	346.0
3.0	21.0	17.0	491.0	65.0	22.0	5.0	192.6	26.0	138.3	130.3
3.0	21.0	18.0	-	-	22.0	5.0	-	22.0	-	-
3.0	21.0	19.0	-	-	21.0	5.0	-	21.0	-	-
3.0	21.0	20.0	-	-	21.0	5.0	-	21.0	-	-

3.0	21.0	21.0	-	-	20.0	5.0	-	20.0	-	-
3.0	21.0	22.0	-	-	20.0	5.0	-	20.0	-	-
3.0	21.0	23.0	-	-	20.0	5.0	-	20.0	-	-
3.0	22.0	-	-	-	20.0	5.0	-	20.0	-	-
3.0	22.0	1.0	-	-	20.0	5.0	-	20.0	-	-
3.0	22.0	2.0	-	-	21.0	5.0	-	21.0	-	-
3.0	22.0	3.0	-	-	21.0	5.0	-	21.0	-	-
3.0	22.0	4.0	-	-	21.0	5.0	-	21.0	-	-
3.0	22.0	5.0	-	-	21.0	6.0	-	21.0	-	-
3.0	22.0	6.0	-	-	21.0	6.0	-	21.0	-	-
3.0	22.0	7.0	99.0	94.0	22.0	6.0	120.8	23.2	98.8	91.8
3.0	22.0	8.0	141.0	198.0	23.0	7.0	272.2	27.1	226.2	216.1
3.0	22.0	9.0	100.0	296.0	23.0	7.0	367.3	29.1	305.7	293.4
3.0	22.0	10.0	769.0	174.0	24.0	7.0	868.1	39.6	686.9	660.6
3.0	22.0	11.0	798.0	185.0	24.0	7.0	980.0	42.4	765.4	735.6
3.0	22.0	12.0	806.0	188.0	24.0	7.0	1,016.0	43.2	790.2	759.3
3.0	22.0	13.0	102.0	428.0	24.0	7.0	531.5	34.3	432.3	416.0
3.0	22.0	14.0	814.0	144.0	24.0	7.0	861.9	39.7	681.2	655.2
3.0	22.0	15.0	744.0	134.0	23.0	7.0	670.3	35.7	536.1	516.0
3.0	22.0	16.0	613.0	116.0	23.0	8.0	427.7	30.2	340.5	327.1
3.0	22.0	17.0	351.0	81.0	22.0	7.0	171.9	24.7	128.6	120.9
3.0	22.0	18.0	-	-	22.0	7.0	-	22.0	-	-
3.0	22.0	19.0	-	-	22.0	7.0	-	22.0	-	-
3.0	22.0	20.0	-	-	22.0	7.0	-	22.0	-	-
3.0	22.0	21.0	-	-	22.0	7.0	-	22.0	-	-
3.0	22.0	22.0	-	-	22.0	6.0	-	22.0	-	-
3.0	22.0	23.0	-	-	22.0	6.0	-	22.0	-	-
3.0	23.0	-	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	1.0	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	2.0	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	3.0	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	4.0	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	5.0	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	6.0	-	6.0	22.0	5.0	5.7	20.7	4.9	-
3.0	23.0	7.0	434.0	79.0	23.0	6.0	202.9	25.9	151.0	142.8
3.0	23.0	8.0	630.0	120.0	24.0	6.0	456.2	32.4	361.3	347.3
3.0	23.0	9.0	729.0	147.0	24.0	6.0	688.6	37.6	546.4	525.9
3.0	23.0	10.0	830.0	139.0	25.0	6.0	882.6	42.9	686.4	660.2
3.0	23.0	11.0	853.0	149.0	25.0	6.0	996.5	45.6	765.7	735.9
3.0	23.0	12.0	859.0	153.0	25.0	6.0	1,032.9	46.5	789.9	759.0
3.0	23.0	13.0	856.0	146.0	25.0	6.0	989.6	45.7	759.8	730.3
3.0	23.0	14.0	828.0	137.0	25.0	6.0	866.4	43.2	672.8	647.2
3.0	23.0	15.0	773.0	122.0	24.0	6.0	676.2	38.1	534.1	514.1
3.0	23.0	16.0	708.0	89.0	23.0	6.0	445.8	32.1	350.0	336.4
3.0	23.0	17.0	493.0	62.0	23.0	6.0	189.2	26.4	135.0	127.1
3.0	23.0	18.0	-	-	22.0	6.0	-	22.0	-	-
3.0	23.0	19.0	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	20.0	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	21.0	-	-	22.0	5.0	-	22.0	-	-
3.0	23.0	22.0	-	-	21.0	4.0	-	21.0	-	-
3.0	23.0	23.0	-	-	21.0	4.0	-	21.0	-	-
3.0	24.0	-	-	-	21.0	4.0	-	21.0	-	-
3.0	24.0	1.0	-	-	21.0	4.0	-	21.0	-	-
3.0	24.0	2.0	-	-	21.0	4.0	-	21.0	-	-
3.0	24.0	3.0	-	-	21.0	4.0	-	21.0	-	-
3.0	24.0	4.0	-	-	21.0	4.0	-	21.0	-	-
3.0	24.0	5.0	-	-	21.0	4.0	-	21.0	-	-
3.0	24.0	6.0	92.0	12.0	21.0	5.0	18.5	19.9	12.4	7.0
3.0	24.0	7.0	612.0	57.0	22.0	5.0	232.5	25.9	167.7	159.1
3.0	24.0	8.0	793.0	79.0	23.0	6.0	498.5	32.3	393.0	378.0
3.0	24.0	9.0	881.0	92.0	24.0	6.0	736.9	38.7	581.1	559.3
3.0	24.0	10.0	932.0	97.0	24.0	6.0	923.5	42.8	718.6	691.0
3.0	24.0	11.0	13.0	271.0	24.0	6.0	275.3	30.1	228.6	218.4
3.0	24.0	12.0	32.0	373.0	25.0	6.0	407.5	32.6	334.3	321.1
3.0	24.0	13.0	256.0	432.0	24.0	6.0	702.1	37.8	561.4	540.3
3.0	24.0	14.0	351.0	350.0	24.0	6.0	668.4	37.6	534.3	514.3
3.0	24.0	15.0	207.0	292.0	24.0	6.0	441.3	33.0	359.7	345.8
3.0	24.0	16.0	170.0	190.0	23.0	6.0	274.1	28.2	225.7	215.6
3.0	24.0	17.0	490.0	65.0	22.0	6.0	191.0	25.1	137.5	129.6
3.0	24.0	18.0	-	-	22.0	6.0	-	22.0	-	-
3.0	24.0	19.0	-	-	22.0	6.0	-	22.0	-	-
3.0	24.0	20.0	-	-	22.0	5.0	-	22.0	-	-
3.0	24.0	21.0	-	-	22.0	5.0	-	22.0	-	-
3.0	24.0	22.0	-	-	21.0	5.0	-	21.0	-	-
3.0	24.0	23.0	-	-	21.0	4.0	-	21.0	-	-
3.0	25.0	-	-	-	21.0	4.0	-	21.0	-	-
3.0	25.0	1.0	-	-	21.0	4.0	-	21.0	-	-
3.0	25.0	2.0	-	-	21.0	4.0	-	21.0	-	-
3.0	25.0	3.0	-	-	20.0	4.0	-	20.0	-	-
3.0	25.0	4.0	-	-	20.0	4.0	-	20.0	-	-
3.0	25.0	5.0	-	-	20.0	4.0	-	20.0	-	-

3.0	25.0	6.0	62.0	13.0	21.0	4.0	17.3	19.8	12.6	7.2
3.0	25.0	7.0	555.0	68.0	22.0	5.0	228.8	25.8	167.5	158.9
3.0	25.0	8.0	316.0	186.0	23.0	5.0	355.0	30.1	288.1	276.3
3.0	25.0	9.0	383.0	270.0	23.0	5.0	557.0	34.9	449.3	432.4
3.0	25.0	10.0	896.0	120.0	24.0	6.0	917.1	42.4	715.3	687.8
3.0	25.0	11.0	922.0	125.0	24.0	6.0	1,032.8	45.4	794.5	763.3
3.0	25.0	12.0	929.0	127.0	25.0	6.0	1,068.9	47.3	814.1	782.0
3.0	25.0	13.0	326.0	416.0	24.0	6.0	752.4	40.0	594.9	572.5
3.0	25.0	14.0	280.0	370.0	24.0	6.0	627.7	36.9	503.6	484.7
3.0	25.0	15.0	837.0	107.0	24.0	6.0	704.4	38.2	555.7	534.9
3.0	25.0	16.0	730.0	91.0	23.0	6.0	457.6	32.4	358.6	344.7
3.0	25.0	17.0	510.0	64.0	22.0	6.0	194.5	25.5	139.2	131.2
3.0	25.0	18.0	-	-	22.0	5.0	-	22.0	-	-
3.0	25.0	19.0	-	-	22.0	5.0	-	22.0	-	-
3.0	25.0	20.0	-	-	22.0	5.0	-	22.0	-	-
3.0	25.0	21.0	-	-	21.0	5.0	-	21.0	-	-
3.0	25.0	22.0	-	-	21.0	5.0	-	21.0	-	-
3.0	25.0	23.0	-	-	21.0	5.0	-	21.0	-	-
3.0	26.0	-	-	-	21.0	5.0	-	21.0	-	-
3.0	26.0	1.0	-	-	21.0	5.0	-	21.0	-	-
3.0	26.0	2.0	-	-	21.0	5.0	-	21.0	-	-
3.0	26.0	3.0	-	-	21.0	5.0	-	21.0	-	-
3.0	26.0	4.0	-	-	21.0	5.0	-	21.0	-	-
3.0	26.0	5.0	-	-	21.0	5.0	-	21.0	-	-
3.0	26.0	6.0	60.0	14.0	21.0	5.0	18.1	19.9	13.4	8.0
3.0	26.0	7.0	516.0	75.0	22.0	6.0	225.8	25.4	167.2	158.6
3.0	26.0	8.0	709.0	106.0	23.0	6.0	485.8	32.1	385.0	370.3
3.0	26.0	9.0	807.0	124.0	24.0	6.0	722.3	38.3	571.0	549.6
3.0	26.0	10.0	859.0	136.0	25.0	7.0	907.4	41.9	709.7	682.4
3.0	26.0	11.0	883.0	145.0	25.0	7.0	1,015.9	44.1	786.4	755.7
3.0	26.0	12.0	887.0	149.0	25.0	6.0	1,049.5	46.9	801.1	769.7
3.0	26.0	13.0	876.0	147.0	25.0	6.0	1,002.7	46.0	768.7	738.8
3.0	26.0	14.0	838.0	143.0	25.0	6.0	880.4	43.5	682.6	656.5
3.0	26.0	15.0	770.0	133.0	25.0	5.0	685.5	41.0	533.6	513.6
3.0	26.0	16.0	648.0	115.0	24.0	5.0	441.7	34.1	344.5	331.0
3.0	26.0	17.0	429.0	76.0	23.0	5.0	184.5	26.8	134.0	126.2
3.0	26.0	18.0	-	-	23.0	5.0	-	23.0	-	-
3.0	26.0	19.0	-	-	22.0	5.0	-	22.0	-	-
3.0	26.0	20.0	-	-	22.0	5.0	-	22.0	-	-
3.0	26.0	21.0	-	-	22.0	5.0	-	22.0	-	-
3.0	26.0	22.0	-	-	22.0	5.0	-	22.0	-	-
3.0	26.0	23.0	-	-	22.0	5.0	-	22.0	-	-
3.0	27.0	-	-	-	22.0	5.0	-	22.0	-	-
3.0	27.0	1.0	-	-	22.0	5.0	-	22.0	-	-
3.0	27.0	2.0	-	-	22.0	5.0	-	22.0	-	-
3.0	27.0	3.0	-	-	22.0	5.0	-	22.0	-	-
3.0	27.0	4.0	-	-	21.0	5.0	-	21.0	-	-
3.0	27.0	5.0	-	-	21.0	5.0	-	21.0	-	-
3.0	27.0	6.0	-	11.0	21.0	5.0	10.4	19.8	9.1	3.8
3.0	27.0	7.0	120.0	103.0	22.0	5.0	136.0	23.7	110.7	103.4
3.0	27.0	8.0	174.0	208.0	23.0	5.0	299.6	28.7	246.9	236.2
3.0	27.0	9.0	417.0	264.0	24.0	4.0	582.1	37.7	463.0	445.6
3.0	27.0	10.0	385.0	355.0	25.0	4.0	709.7	42.6	553.5	532.7
3.0	27.0	11.0	473.0	361.0	25.0	4.0	849.5	46.2	650.6	625.9
3.0	27.0	12.0	461.0	381.0	25.0	4.0	873.1	47.1	665.5	640.2
3.0	27.0	13.0	504.0	348.0	25.0	4.0	860.7	46.9	656.7	631.8
3.0	27.0	14.0	384.0	347.0	24.0	4.0	692.3	41.9	541.5	521.2
3.0	27.0	15.0	176.0	298.0	24.0	4.0	424.6	35.0	342.9	329.5
3.0	27.0	16.0	235.0	187.0	23.0	4.0	305.7	30.3	247.9	237.2
3.0	27.0	17.0	159.0	88.0	22.0	4.0	127.6	24.5	100.7	93.6
3.0	27.0	18.0	-	-	22.0	4.0	-	22.0	-	-
3.0	27.0	19.0	-	-	22.0	4.0	-	22.0	-	-
3.0	27.0	20.0	-	-	22.0	4.0	-	22.0	-	-
3.0	27.0	21.0	-	-	22.0	4.0	-	22.0	-	-
3.0	27.0	22.0	-	-	22.0	4.0	-	22.0	-	-
3.0	27.0	23.0	-	-	21.0	4.0	-	21.0	-	-
3.0	28.0	-	-	-	21.0	3.0	-	21.0	-	-
3.0	28.0	1.0	-	-	21.0	3.0	-	21.0	-	-
3.0	28.0	2.0	-	-	21.0	3.0	-	21.0	-	-
3.0	28.0	3.0	-	-	21.0	3.0	-	21.0	-	-
3.0	28.0	4.0	-	-	21.0	3.0	-	21.0	-	-
3.0	28.0	5.0	-	-	21.0	3.0	-	21.0	-	-
3.0	28.0	6.0	69.0	17.0	21.0	3.0	21.4	19.7	15.9	10.5
3.0	28.0	7.0	91.0	105.0	22.0	4.0	129.8	23.7	106.8	99.6
3.0	28.0	8.0	744.0	98.0	23.0	4.0	498.0	34.2	390.4	375.5
3.0	28.0	9.0	842.0	112.0	24.0	4.0	737.3	42.0	572.1	550.6
3.0	28.0	10.0	877.0	130.0	25.0	4.0	913.2	47.8	692.6	666.2
3.0	28.0	11.0	911.0	130.0	25.0	4.0	1,028.8	50.9	768.5	738.6
3.0	28.0	12.0	923.0	128.0	26.0	4.0	1,064.5	53.0	786.4	755.6
3.0	28.0	13.0	912.0	127.0	26.0	4.0	1,016.7	52.0	755.0	725.7
3.0	28.0	14.0	884.0	120.0	26.0	4.0	890.3	49.0	670.7	645.2

3.0	28.0	15.0	827.0	110.0	25.0	4.0	699.0	43.1	537.9	517.8
3.0	28.0	16.0	719.0	95.0	24.0	4.0	454.6	35.7	350.5	336.8
3.0	28.0	17.0	186.0	87.0	23.0	3.0	132.9	26.5	102.9	95.7
3.0	28.0	18.0	-	-	23.0	3.0	-	23.0	-	-
3.0	28.0	19.0	-	-	22.0	3.0	-	22.0	-	-
3.0	28.0	20.0	-	-	22.0	3.0	-	22.0	-	-
3.0	28.0	21.0	-	-	22.0	4.0	-	22.0	-	-
3.0	28.0	22.0	-	-	22.0	3.0	-	22.0	-	-
3.0	28.0	23.0	-	-	22.0	3.0	-	22.0	-	-
3.0	29.0	-	-	-	22.0	3.0	-	22.0	-	-
3.0	29.0	1.0	-	-	21.0	3.0	-	21.0	-	-
3.0	29.0	2.0	-	-	21.0	3.0	-	21.0	-	-
3.0	29.0	3.0	-	-	21.0	3.0	-	21.0	-	-
3.0	29.0	4.0	-	-	20.0	3.0	-	20.0	-	-
3.0	29.0	5.0	-	-	20.0	3.0	-	20.0	-	-
3.0	29.0	6.0	126.0	18.0	21.0	3.0	26.6	19.9	18.1	12.6
3.0	29.0	7.0	601.0	65.0	22.0	4.0	242.9	26.6	177.1	168.2
3.0	29.0	8.0	779.0	88.0	23.0	4.0	506.9	34.7	396.1	381.0
3.0	29.0	9.0	866.0	102.0	24.0	4.0	742.3	42.2	575.5	553.9
3.0	29.0	10.0	912.0	112.0	25.0	4.0	926.3	48.1	701.4	674.5
3.0	29.0	11.0	933.0	118.0	25.0	3.0	1,038.4	53.6	764.5	734.7
3.0	29.0	12.0	937.0	120.0	25.0	3.0	1,070.5	54.8	783.3	752.7
3.0	29.0	13.0	932.0	115.0	25.0	4.0	1,023.5	51.2	763.2	733.6
3.0	29.0	14.0	901.0	112.0	25.0	4.0	896.2	48.1	678.1	652.3
3.0	29.0	15.0	842.0	105.0	24.0	4.0	703.6	42.3	543.8	523.4
3.0	29.0	16.0	734.0	92.0	24.0	4.0	458.2	35.8	352.8	339.0
3.0	29.0	17.0	509.0	67.0	23.0	4.0	195.3	27.7	138.4	130.5
3.0	29.0	18.0	-	-	22.0	4.0	-	22.0	-	-
3.0	29.0	19.0	-	-	22.0	4.0	-	22.0	-	-
3.0	29.0	20.0	-	-	22.0	4.0	-	22.0	-	-
3.0	29.0	21.0	-	-	22.0	4.0	-	22.0	-	-
3.0	29.0	22.0	-	-	22.0	4.0	-	22.0	-	-
3.0	29.0	23.0	-	-	22.0	4.0	-	22.0	-	-
3.0	30.0	-	-	-	22.0	4.0	-	22.0	-	-
3.0	30.0	1.0	-	-	22.0	3.0	-	22.0	-	-
3.0	30.0	2.0	-	-	22.0	3.0	-	22.0	-	-
3.0	30.0	3.0	-	-	22.0	3.0	-	22.0	-	-
3.0	30.0	4.0	-	-	21.0	4.0	-	21.0	-	-
3.0	30.0	5.0	-	-	21.0	4.0	-	21.0	-	-
3.0	30.0	6.0	83.0	19.0	22.0	4.0	24.5	21.0	17.9	12.5
3.0	30.0	7.0	484.0	85.0	23.0	4.0	228.3	27.2	169.8	161.1
3.0	30.0	8.0	706.0	107.0	24.0	5.0	489.5	34.2	384.6	369.8
3.0	30.0	9.0	808.0	121.0	24.0	5.0	723.8	40.0	567.7	546.4
3.0	30.0	10.0	770.0	183.0	25.0	5.0	883.5	45.0	680.0	654.1
3.0	30.0	11.0	812.0	183.0	25.0	5.0	994.7	47.8	755.5	726.2
3.0	30.0	12.0	142.0	472.0	25.0	5.0	629.2	40.0	497.5	478.8
3.0	30.0	13.0	6.0	185.0	25.0	5.0	183.6	29.2	153.1	144.8
3.0	30.0	14.0	2.0	164.0	25.0	5.0	158.9	27.7	133.5	125.7
3.0	30.0	15.0	187.0	300.0	24.0	5.0	433.1	32.7	353.6	339.8
3.0	30.0	16.0	273.0	185.0	24.0	6.0	320.9	30.1	259.8	248.8
3.0	30.0	17.0	419.0	77.0	23.0	6.0	181.3	26.0	132.2	124.4
3.0	30.0	18.0	-	-	22.0	6.0	-	22.0	-	-
3.0	30.0	19.0	-	-	22.0	6.0	-	22.0	-	-
3.0	30.0	20.0	-	-	22.0	6.0	-	22.0	-	-
3.0	30.0	21.0	-	-	22.0	6.0	-	22.0	-	-
3.0	30.0	22.0	-	-	22.0	6.0	-	22.0	-	-
3.0	30.0	23.0	-	-	21.0	5.0	-	21.0	-	-
3.0	31.0	-	-	-	21.0	5.0	-	21.0	-	-
3.0	31.0	1.0	-	-	21.0	5.0	-	21.0	-	-
3.0	31.0	2.0	-	-	21.0	4.0	-	21.0	-	-
3.0	31.0	3.0	-	-	20.0	4.0	-	20.0	-	-
3.0	31.0	4.0	-	-	20.0	4.0	-	20.0	-	-
3.0	31.0	5.0	-	-	20.0	4.0	-	20.0	-	-
3.0	31.0	6.0	92.0	23.0	20.0	4.0	28.6	19.0	21.3	15.8
3.0	31.0	7.0	547.0	79.0	21.0	5.0	243.2	25.1	181.3	172.3
3.0	31.0	8.0	738.0	105.0	22.0	5.0	505.3	32.5	400.2	384.9
3.0	31.0	9.0	160.0	320.0	23.0	5.0	440.5	32.7	360.3	346.3
3.0	31.0	10.0	884.0	131.0	23.0	5.0	922.6	43.2	716.6	689.0
3.0	31.0	11.0	378.0	409.0	24.0	5.0	798.0	42.6	622.8	599.3
3.0	31.0	12.0	917.0	137.0	24.0	5.0	1,067.9	48.2	809.4	777.6
3.0	31.0	13.0	584.0	324.0	24.0	5.0	911.6	45.4	701.1	674.2
3.0	31.0	14.0	319.0	367.0	23.0	5.0	654.9	38.4	521.6	502.1
3.0	31.0	15.0	818.0	118.0	23.0	5.0	699.2	38.8	550.2	529.5
3.0	31.0	16.0	193.0	195.0	23.0	4.0	288.0	30.7	233.9	223.5
3.0	31.0	17.0	504.0	69.0	22.0	4.0	195.1	26.1	139.4	131.5
3.0	31.0	18.0	-	-	21.0	4.0	-	21.0	-	-
3.0	31.0	19.0	-	-	22.0	6.0	-	22.0	-	-
3.0	31.0	20.0	-	-	21.0	5.0	-	21.0	-	-
3.0	31.0	21.0	-	-	20.0	5.0	-	20.0	-	-
3.0	31.0	22.0	-	-	20.0	5.0	-	20.0	-	-
3.0	31.0	23.0	-	-	20.0	5.0	-	20.0	-	-

4.0	1.0	-	-	-	19.0	5.0	-	19.0	-	-
4.0	1.0	1.0	-	-	19.0	5.0	-	19.0	-	-
4.0	1.0	2.0	-	-	19.0	5.0	-	19.0	-	-
4.0	1.0	3.0	-	-	19.0	5.0	-	19.0	-	-
4.0	1.0	4.0	-	-	18.0	4.0	-	18.0	-	-
4.0	1.0	5.0	-	-	18.0	4.0	-	18.0	-	-
4.0	1.0	6.0	-	14.0	19.0	4.0	13.3	17.6	11.7	6.4
4.0	1.0	7.0	258.0	105.0	20.0	5.0	180.9	22.6	143.5	135.5
4.0	1.0	8.0	701.0	120.0	21.0	5.0	502.1	31.3	400.7	385.4
4.0	1.0	9.0	317.0	302.0	21.0	6.0	543.0	31.7	445.5	428.7
4.0	1.0	10.0	877.0	141.0	22.0	6.0	932.6	40.6	734.1	705.7
4.0	1.0	11.0	913.0	144.0	22.0	6.0	1,046.5	43.6	812.2	780.3
4.0	1.0	12.0	934.0	139.0	23.0	6.0	1,087.0	45.7	835.0	801.9
4.0	1.0	13.0	937.0	130.0	23.0	5.0	1,043.0	47.3	794.1	763.0
4.0	1.0	14.0	912.0	123.0	24.0	5.0	915.6	45.4	702.7	675.8
4.0	1.0	15.0	860.0	112.0	24.0	5.0	721.6	40.9	561.6	540.6
4.0	1.0	16.0	759.0	95.0	23.0	4.0	471.5	35.2	363.9	349.8
4.0	1.0	17.0	552.0	67.0	22.0	4.0	204.3	26.9	144.2	136.1
4.0	1.0	18.0	-	-	20.0	4.0	-	20.0	-	-
4.0	1.0	19.0	-	-	19.0	5.0	-	19.0	-	-
4.0	1.0	20.0	-	-	18.0	6.0	-	18.0	-	-
4.0	1.0	21.0	-	-	17.0	6.0	-	17.0	-	-
4.0	1.0	22.0	-	-	16.0	6.0	-	16.0	-	-
4.0	1.0	23.0	-	-	16.0	6.0	-	16.0	-	-
4.0	2.0	-	-	-	15.0	5.0	-	15.0	-	-
4.0	2.0	1.0	-	-	15.0	5.0	-	15.0	-	-
4.0	2.0	2.0	-	-	15.0	5.0	-	15.0	-	-
4.0	2.0	3.0	-	-	15.0	5.0	-	15.0	-	-
4.0	2.0	4.0	-	-	14.0	5.0	-	14.0	-	-
4.0	2.0	5.0	-	-	14.0	5.0	-	14.0	-	-
4.0	2.0	6.0	173.0	25.0	16.0	5.0	36.0	15.2	25.0	19.4
4.0	2.0	7.0	593.0	78.0	17.0	5.0	257.6	21.4	195.0	185.7
4.0	2.0	8.0	764.0	105.0	18.0	6.0	521.1	27.8	422.4	406.4
4.0	2.0	9.0	851.0	123.0	19.0	5.0	760.0	35.8	608.8	585.9
4.0	2.0	10.0	893.0	137.0	20.0	5.0	937.9	41.3	735.8	707.4
4.0	2.0	11.0	913.0	146.0	21.0	4.0	1,048.8	47.6	797.3	766.1
4.0	2.0	12.0	916.0	149.0	22.0	4.0	1,078.9	49.6	811.9	780.0
4.0	2.0	13.0	899.0	150.0	23.0	4.0	1,026.3	49.4	772.9	742.8
4.0	2.0	14.0	860.0	146.0	23.0	4.0	899.0	46.3	686.9	660.7
4.0	2.0	15.0	797.0	135.0	24.0	4.0	700.7	42.2	541.9	521.6
4.0	2.0	16.0	693.0	112.0	23.0	4.0	456.2	34.8	353.8	340.0
4.0	2.0	17.0	490.0	76.0	22.0	5.0	197.6	26.1	142.2	134.2
4.0	2.0	18.0	-	-	21.0	5.0	-	21.0	-	-
4.0	2.0	19.0	-	-	20.0	6.0	-	20.0	-	-
4.0	2.0	20.0	-	-	19.0	6.0	-	19.0	-	-
4.0	2.0	21.0	-	-	18.0	5.0	-	18.0	-	-
4.0	2.0	22.0	-	-	18.0	5.0	-	18.0	-	-
4.0	2.0	23.0	-	-	17.0	5.0	-	17.0	-	-
4.0	3.0	-	-	-	17.0	5.0	-	17.0	-	-
4.0	3.0	1.0	-	-	16.0	5.0	-	16.0	-	-
4.0	3.0	2.0	-	-	16.0	5.0	-	16.0	-	-
4.0	3.0	3.0	-	-	16.0	5.0	-	16.0	-	-
4.0	3.0	4.0	-	-	16.0	5.0	-	16.0	-	-
4.0	3.0	5.0	-	-	16.0	5.0	-	16.0	-	-
4.0	3.0	6.0	190.0	26.0	17.0	5.0	37.9	16.3	25.9	20.3
4.0	3.0	7.0	607.0	77.0	18.0	5.0	261.7	22.5	197.0	187.6
4.0	3.0	8.0	785.0	101.0	20.0	5.0	529.1	31.1	422.1	406.1
4.0	3.0	9.0	878.0	114.0	21.0	5.0	771.4	38.1	610.9	587.9
4.0	3.0	10.0	927.0	123.0	22.0	4.0	954.3	45.9	731.0	702.8
4.0	3.0	11.0	949.0	130.0	23.0	4.0	1,068.0	50.0	801.7	770.2
4.0	3.0	12.0	951.0	134.0	23.0	4.0	1,098.8	51.0	820.4	788.1
4.0	3.0	13.0	935.0	136.0	24.0	3.0	1,046.4	53.4	771.3	741.3
4.0	3.0	14.0	906.0	129.0	25.0	3.0	915.5	50.9	682.5	656.4
4.0	3.0	15.0	846.0	120.0	25.0	2.0	718.7	48.2	538.6	518.4
4.0	3.0	16.0	737.0	103.0	24.0	1.0	467.6	42.5	348.2	334.6
4.0	3.0	17.0	525.0	73.0	23.0	1.0	202.6	31.1	141.3	133.3
4.0	3.0	18.0	40.0	10.0	22.0	2.0	10.9	21.2	8.4	3.1
4.0	3.0	19.0	-	-	21.0	4.0	-	21.0	-	-
4.0	3.0	20.0	-	-	20.0	5.0	-	20.0	-	-
4.0	3.0	21.0	-	-	19.0	5.0	-	19.0	-	-
4.0	3.0	22.0	-	-	18.0	5.0	-	18.0	-	-
4.0	3.0	23.0	-	-	17.0	5.0	-	17.0	-	-
4.0	4.0	-	-	-	16.0	5.0	-	16.0	-	-
4.0	4.0	1.0	-	-	16.0	4.0	-	16.0	-	-
4.0	4.0	2.0	-	-	16.0	4.0	-	16.0	-	-
4.0	4.0	3.0	-	-	16.0	5.0	-	16.0	-	-
4.0	4.0	4.0	-	-	16.0	4.0	-	16.0	-	-
4.0	4.0	5.0	-	-	16.0	4.0	-	16.0	-	-
4.0	4.0	6.0	36.0	26.0	17.0	5.0	27.2	16.1	22.7	17.2
4.0	4.0	7.0	591.0	79.0	19.0	5.0	259.9	23.4	195.4	186.1
4.0	4.0	8.0	768.0	102.0	20.0	5.0	522.0	30.9	417.0	401.2

4.0	4.0	9.0	852.0	117.0	21.0	5.0	756.2	37.7	600.0	577.4
4.0	4.0	10.0	886.0	134.0	22.0	5.0	929.7	43.1	722.7	694.9
4.0	4.0	11.0	907.0	142.0	23.0	5.0	1,039.3	46.9	793.1	762.1
4.0	4.0	12.0	912.0	144.0	24.0	5.0	1,069.6	48.8	808.2	776.5
4.0	4.0	13.0	905.0	141.0	25.0	5.0	1,022.2	48.8	772.1	742.0
4.0	4.0	14.0	876.0	135.0	26.0	5.0	900.1	47.1	684.9	658.8
4.0	4.0	15.0	819.0	124.0	26.0	5.0	703.4	42.5	543.2	522.8
4.0	4.0	16.0	310.0	184.0	25.0	5.0	335.5	32.8	267.5	256.2
4.0	4.0	17.0	501.0	75.0	24.0	5.0	198.3	27.9	141.0	133.0
4.0	4.0	18.0	42.0	10.0	23.0	5.0	10.9	22.3	8.3	3.0
4.0	4.0	19.0	-	-	21.0	5.0	-	21.0	-	-
4.0	4.0	20.0	-	-	20.0	6.0	-	20.0	-	-
4.0	4.0	21.0	-	-	19.0	5.0	-	19.0	-	-
4.0	4.0	22.0	-	-	19.0	5.0	-	19.0	-	-
4.0	4.0	23.0	-	-	18.0	5.0	-	18.0	-	-
4.0	5.0	-	-	-	17.0	5.0	-	17.0	-	-
4.0	5.0	1.0	-	-	17.0	4.0	-	17.0	-	-
4.0	5.0	2.0	-	-	16.0	4.0	-	16.0	-	-
4.0	5.0	3.0	-	-	16.0	4.0	-	16.0	-	-
4.0	5.0	4.0	-	-	15.0	4.0	-	15.0	-	-
4.0	5.0	5.0	-	-	15.0	3.0	-	15.0	-	-
4.0	5.0	6.0	179.0	29.0	17.0	3.0	39.6	16.2	27.9	22.3
4.0	5.0	7.0	581.0	82.0	18.0	3.0	260.8	23.5	196.7	187.4
4.0	5.0	8.0	756.0	109.0	20.0	2.0	523.9	35.1	410.4	394.8
4.0	5.0	9.0	848.0	124.0	22.0	2.0	761.3	45.0	582.3	560.4
4.0	5.0	10.0	900.0	133.0	23.0	2.0	941.6	51.9	698.9	672.2
4.0	5.0	11.0	928.0	136.0	24.0	2.0	1,053.9	56.5	763.6	734.0
4.0	5.0	12.0	938.0	136.0	24.0	2.0	1,087.4	57.8	782.4	751.8
4.0	5.0	13.0	931.0	133.0	25.0	2.0	1,038.7	57.6	748.1	719.2
4.0	5.0	14.0	374.0	359.0	25.0	2.0	691.0	47.9	523.9	504.3
4.0	5.0	15.0	862.0	110.0	25.0	2.0	718.0	47.3	540.4	520.2
4.0	5.0	16.0	766.0	93.0	24.0	2.0	470.1	39.4	354.9	341.1
4.0	5.0	17.0	568.0	66.0	23.0	3.0	205.1	28.6	142.8	134.8
4.0	5.0	18.0	64.0	11.0	21.0	3.0	12.1	20.2	8.8	3.6
4.0	5.0	19.0	-	-	20.0	3.0	-	20.0	-	-
4.0	5.0	20.0	-	-	19.0	3.0	-	19.0	-	-
4.0	5.0	21.0	-	-	19.0	2.0	-	19.0	-	-
4.0	5.0	22.0	-	-	19.0	2.0	-	19.0	-	-
4.0	5.0	23.0	-	-	19.0	2.0	-	19.0	-	-
4.0	6.0	-	-	-	19.0	2.0	-	19.0	-	-
4.0	6.0	1.0	-	-	19.0	2.0	-	19.0	-	-
4.0	6.0	2.0	-	-	18.0	2.0	-	18.0	-	-
4.0	6.0	3.0	-	-	18.0	2.0	-	18.0	-	-
4.0	6.0	4.0	-	-	18.0	3.0	-	18.0	-	-
4.0	6.0	5.0	-	-	18.0	3.0	-	18.0	-	-
4.0	6.0	6.0	181.0	31.0	20.0	3.0	41.4	19.3	29.0	23.4
4.0	6.0	7.0	270.0	112.0	21.0	3.0	193.0	24.7	152.2	143.9
4.0	6.0	8.0	730.0	113.0	22.0	3.0	514.9	34.9	404.0	388.6
4.0	6.0	9.0	809.0	134.0	22.0	3.0	743.5	42.0	577.6	555.9
4.0	6.0	10.0	857.0	145.0	23.0	3.0	921.4	48.2	697.4	670.7
4.0	6.0	11.0	889.0	145.0	24.0	3.0	1,024.8	52.3	759.8	730.3
4.0	6.0	12.0	894.0	146.0	24.0	2.0	1,053.0	56.8	761.9	732.3
4.0	6.0	13.0	867.0	152.0	24.0	2.0	995.7	55.4	725.9	698.0
4.0	6.0	14.0	834.0	145.0	24.0	2.0	873.1	51.8	647.7	623.2
4.0	6.0	15.0	767.0	135.0	24.0	2.0	678.2	46.0	514.4	495.1
4.0	6.0	16.0	321.0	192.0	23.0	3.0	347.8	33.1	276.9	265.4
4.0	6.0	17.0	219.0	92.0	22.0	3.0	143.2	25.4	110.3	103.0
4.0	6.0	18.0	-	8.0	21.0	3.0	7.6	19.9	6.6	1.4
4.0	6.0	19.0	-	-	21.0	3.0	-	21.0	-	-
4.0	6.0	20.0	-	-	21.0	3.0	-	21.0	-	-
4.0	6.0	21.0	-	-	21.0	3.0	-	21.0	-	-
4.0	6.0	22.0	-	-	21.0	3.0	-	21.0	-	-
4.0	6.0	23.0	-	-	20.0	2.0	-	20.0	-	-
4.0	7.0	-	-	-	20.0	2.0	-	20.0	-	-
4.0	7.0	1.0	-	-	20.0	2.0	-	20.0	-	-
4.0	7.0	2.0	-	-	20.0	2.0	-	20.0	-	-
4.0	7.0	3.0	-	-	20.0	2.0	-	20.0	-	-
4.0	7.0	4.0	-	-	20.0	2.0	-	20.0	-	-
4.0	7.0	5.0	-	-	20.0	2.0	-	20.0	-	-
4.0	7.0	6.0	147.0	33.0	21.0	2.0	40.8	20.2	29.7	24.1
4.0	7.0	7.0	504.0	93.0	22.0	2.0	248.2	27.8	185.8	176.7
4.0	7.0	8.0	672.0	127.0	23.0	2.0	498.6	37.3	387.5	372.6
4.0	7.0	9.0	762.0	147.0	24.0	2.0	724.0	45.8	551.8	531.1
4.0	7.0	10.0	819.0	158.0	25.0	2.0	901.2	52.5	666.7	641.3
4.0	7.0	11.0	851.0	161.0	25.0	3.0	1,011.1	52.9	747.4	718.5
4.0	7.0	12.0	860.0	161.0	26.0	3.0	1,041.6	54.9	761.6	732.0
4.0	7.0	13.0	829.0	170.0	26.0	3.0	984.0	53.6	724.5	696.6
4.0	7.0	14.0	779.0	169.0	26.0	3.0	849.7	50.0	636.5	612.4
4.0	7.0	15.0	701.0	160.0	25.0	3.0	657.4	43.8	504.6	485.7
4.0	7.0	16.0	169.0	203.0	25.0	3.0	281.9	33.3	226.4	216.3
4.0	7.0	17.0	199.0	94.0	24.0	4.0	140.0	26.8	107.9	100.7

4.0	7.0	18.0	-	8.0	23.0	4.0	7.6	22.0	6.5	1.3
4.0	7.0	19.0	-	-	22.0	5.0	-	22.0	-	-
4.0	7.0	20.0	-	-	22.0	4.0	-	22.0	-	-
4.0	7.0	21.0	-	-	22.0	4.0	-	22.0	-	-
4.0	7.0	22.0	-	-	22.0	4.0	-	22.0	-	-
4.0	7.0	23.0	-	-	22.0	3.0	-	22.0	-	-
4.0	8.0	-	-	-	21.0	3.0	-	21.0	-	-
4.0	8.0	1.0	-	-	21.0	3.0	-	21.0	-	-
4.0	8.0	2.0	-	-	21.0	3.0	-	21.0	-	-
4.0	8.0	3.0	-	-	21.0	3.0	-	21.0	-	-
4.0	8.0	4.0	-	-	21.0	3.0	-	21.0	-	-
4.0	8.0	5.0	-	-	21.0	3.0	-	21.0	-	-
4.0	8.0	6.0	213.0	31.0	21.0	4.0	43.2	20.4	29.2	23.6
4.0	8.0	7.0	573.0	79.0	23.0	4.0	257.9	28.0	190.8	181.6
4.0	8.0	8.0	730.0	106.0	24.0	5.0	509.3	34.7	400.2	384.9
4.0	8.0	9.0	804.0	126.0	25.0	4.0	732.8	42.9	566.7	545.4
4.0	8.0	10.0	838.0	144.0	26.0	4.0	904.0	48.5	683.2	657.1
4.0	8.0	11.0	844.0	162.0	27.0	3.0	1,005.2	54.6	735.9	707.5
4.0	8.0	12.0	834.0	173.0	27.0	3.0	1,027.5	55.5	748.8	719.8
4.0	8.0	13.0	769.0	204.0	28.0	4.0	964.6	52.6	713.8	686.4
4.0	8.0	14.0	687.0	220.0	28.0	4.0	825.1	49.2	620.8	597.4
4.0	8.0	15.0	200.0	308.0	27.0	4.0	446.2	38.9	353.3	339.5
4.0	8.0	16.0	337.0	207.0	27.0	4.0	369.4	36.0	290.0	278.1
4.0	8.0	17.0	300.0	87.0	26.0	3.0	158.5	30.0	116.6	109.2
4.0	8.0	18.0	-	5.0	25.0	3.0	4.7	24.0	4.0	-
4.0	8.0	19.0	-	-	24.0	3.0	-	24.0	-	-
4.0	8.0	20.0	-	-	24.0	3.0	-	24.0	-	-
4.0	8.0	21.0	-	-	23.0	4.0	-	23.0	-	-
4.0	8.0	22.0	-	-	23.0	4.0	-	23.0	-	-
4.0	8.0	23.0	-	-	22.0	4.0	-	22.0	-	-
4.0	9.0	-	-	-	22.0	4.0	-	22.0	-	-
4.0	9.0	1.0	-	-	22.0	4.0	-	22.0	-	-
4.0	9.0	2.0	-	-	22.0	3.0	-	22.0	-	-
4.0	9.0	3.0	-	-	21.0	3.0	-	21.0	-	-
4.0	9.0	4.0	-	-	21.0	2.0	-	21.0	-	-
4.0	9.0	5.0	-	-	21.0	2.0	-	21.0	-	-
4.0	9.0	6.0	133.0	36.0	22.0	2.0	42.4	21.3	31.5	25.9
4.0	9.0	7.0	474.0	100.0	23.0	3.0	247.2	28.2	186.1	177.1
4.0	9.0	8.0	642.0	136.0	24.0	2.0	492.8	38.1	381.9	367.2
4.0	9.0	9.0	97.0	330.0	25.0	2.0	397.3	37.3	317.9	305.2
4.0	9.0	10.0	60.0	385.0	26.0	1.0	435.8	41.6	341.8	328.4
4.0	9.0	11.0	12.0	257.0	26.0	1.0	259.8	35.9	209.7	200.0
4.0	9.0	12.0	-	132.0	27.0	-	126.5	33.5	103.3	96.1
4.0	9.0	13.0	291.0	444.0	27.0	-	739.5	55.9	537.8	517.7
4.0	9.0	14.0	676.0	222.0	27.0	-	817.0	62.6	571.3	549.9
4.0	9.0	15.0	26.0	257.0	26.0	-	265.3	43.4	206.0	196.4
4.0	9.0	16.0	8.0	162.0	26.0	1.0	158.7	31.3	130.8	123.0
4.0	9.0	17.0	52.0	106.0	25.0	2.0	113.6	27.3	92.9	86.0
4.0	9.0	18.0	4.0	7.0	24.0	2.0	6.8	22.7	5.8	0.6
4.0	9.0	19.0	-	-	24.0	3.0	-	24.0	-	-
4.0	9.0	20.0	-	-	24.0	3.0	-	24.0	-	-
4.0	9.0	21.0	-	-	24.0	3.0	-	24.0	-	-
4.0	9.0	22.0	-	-	23.0	3.0	-	23.0	-	-
4.0	9.0	23.0	-	-	23.0	2.0	-	23.0	-	-
4.0	10.0	-	-	-	23.0	2.0	-	23.0	-	-
4.0	10.0	1.0	-	-	23.0	2.0	-	23.0	-	-
4.0	10.0	2.0	-	-	23.0	2.0	-	23.0	-	-
4.0	10.0	3.0	-	-	23.0	1.0	-	23.0	-	-
4.0	10.0	4.0	-	-	22.0	1.0	-	22.0	-	-
4.0	10.0	5.0	-	-	22.0	-	-	22.0	-	-
4.0	10.0	6.0	-	30.0	23.0	-	28.3	20.5	24.6	19.1
4.0	10.0	7.0	153.0	132.0	24.0	1.0	175.7	28.2	140.5	132.5
4.0	10.0	8.0	695.0	118.0	25.0	1.0	504.1	41.6	383.2	368.5
4.0	10.0	9.0	266.0	328.0	26.0	1.0	531.4	45.3	407.5	392.0
4.0	10.0	10.0	228.0	418.0	27.0	1.0	626.0	49.5	471.0	453.3
4.0	10.0	11.0	32.0	383.0	27.0	-	412.6	48.1	313.0	300.4
4.0	10.0	12.0	817.0	187.0	28.0	-	1,023.8	68.1	694.6	668.0
4.0	10.0	13.0	806.0	183.0	28.0	-	973.1	70.0	652.5	627.8
4.0	10.0	14.0	766.0	177.0	28.0	1.0	847.3	59.5	602.8	580.1
4.0	10.0	15.0	686.0	168.0	27.0	2.0	652.8	48.0	490.1	471.7
4.0	10.0	16.0	540.0	151.0	26.0	2.0	413.8	39.5	315.3	302.7
4.0	10.0	17.0	309.0	104.0	25.0	3.0	174.9	29.6	130.0	122.2
4.0	10.0	18.0	14.0	10.0	24.0	4.0	10.0	23.2	8.3	3.0
4.0	10.0	19.0	-	-	24.0	3.0	-	24.0	-	-
4.0	10.0	20.0	-	-	24.0	3.0	-	24.0	-	-
4.0	10.0	21.0	-	-	23.0	3.0	-	23.0	-	-
4.0	10.0	22.0	-	-	23.0	2.0	-	23.0	-	-
4.0	10.0	23.0	-	-	23.0	2.0	-	23.0	-	-
4.0	11.0	-	-	-	23.0	2.0	-	23.0	-	-
4.0	11.0	1.0	-	-	23.0	2.0	-	23.0	-	-
4.0	11.0	2.0	-	-	22.0	2.0	-	22.0	-	-

4.0	11.0	3.0	-	-	22.0	1.0	-	22.0	-	-
4.0	11.0	4.0	-	-	22.0	1.0	-	22.0	-	-
4.0	11.0	5.0	-	-	22.0	1.0	-	22.0	-	-
4.0	11.0	6.0	147.0	39.0	23.0	1.0	45.7	22.2	33.8	28.1
4.0	11.0	7.0	480.0	104.0	24.0	1.0	254.1	31.2	189.2	180.0
4.0	11.0	8.0	648.0	141.0	25.0	1.0	502.2	42.0	381.9	367.2
4.0	11.0	9.0	736.0	166.0	26.0	1.0	726.0	51.5	537.0	516.9
4.0	11.0	10.0	784.0	183.0	27.0	2.0	896.0	54.3	656.5	631.6
4.0	11.0	11.0	804.0	196.0	27.0	2.0	1,000.0	57.7	719.7	692.1
4.0	11.0	12.0	807.0	200.0	27.0	3.0	1,026.3	55.5	748.1	719.2
4.0	11.0	13.0	479.0	374.0	27.0	3.0	854.2	51.3	636.9	612.8
4.0	11.0	14.0	487.0	311.0	27.0	3.0	741.3	47.9	562.0	540.9
4.0	11.0	15.0	532.0	219.0	26.0	4.0	594.5	41.2	463.0	445.6
4.0	11.0	16.0	172.0	206.0	26.0	4.0	284.9	33.3	228.7	218.5
4.0	11.0	17.0	139.0	100.0	25.0	3.0	129.3	27.9	101.4	94.3
4.0	11.0	18.0	-	7.0	24.0	3.0	6.6	22.9	5.7	0.5
4.0	11.0	19.0	-	-	24.0	3.0	-	24.0	-	-
4.0	11.0	20.0	-	-	24.0	4.0	-	24.0	-	-
4.0	11.0	21.0	-	-	24.0	4.0	-	24.0	-	-
4.0	11.0	22.0	-	-	24.0	5.0	-	24.0	-	-
4.0	11.0	23.0	-	-	24.0	5.0	-	24.0	-	-
4.0	12.0	-	-	-	24.0	5.0	-	24.0	-	-
4.0	12.0	1.0	-	-	24.0	5.0	-	24.0	-	-
4.0	12.0	2.0	-	-	24.0	5.0	-	24.0	-	-
4.0	12.0	3.0	-	-	24.0	6.0	-	24.0	-	-
4.0	12.0	4.0	-	-	24.0	6.0	-	24.0	-	-
4.0	12.0	5.0	-	-	24.0	6.0	-	24.0	-	-
4.0	12.0	6.0	-	6.0	24.0	6.0	5.7	22.9	4.9	-
4.0	12.0	7.0	-	15.0	24.0	6.0	14.2	23.0	12.2	6.9
4.0	12.0	8.0	-	22.0	25.0	6.0	20.9	24.2	17.8	12.4
4.0	12.0	9.0	206.0	340.0	25.0	6.0	493.2	33.9	401.0	385.7
4.0	12.0	10.0	8.0	212.0	25.0	5.0	210.8	29.5	175.5	166.6
4.0	12.0	11.0	8.0	194.0	26.0	5.0	194.3	29.5	161.8	153.3
4.0	12.0	12.0	22.0	353.0	26.0	5.0	364.6	33.3	298.0	285.9
4.0	12.0	13.0	21.0	331.0	27.0	5.0	340.6	34.2	277.2	265.7
4.0	12.0	14.0	4.0	177.0	26.0	4.0	173.0	29.8	143.8	135.7
4.0	12.0	15.0	-	140.0	26.0	4.0	133.6	28.4	111.9	104.5
4.0	12.0	16.0	-	140.0	26.0	3.0	133.5	28.5	111.7	104.4
4.0	12.0	17.0	3.0	91.0	25.0	2.0	86.9	26.4	73.3	66.8
4.0	12.0	18.0	-	5.0	24.0	2.0	4.7	22.5	4.1	-
4.0	12.0	19.0	-	-	24.0	2.0	-	24.0	-	-
4.0	12.0	20.0	-	-	24.0	3.0	-	24.0	-	-
4.0	12.0	21.0	-	-	24.0	3.0	-	24.0	-	-
4.0	12.0	22.0	-	-	23.0	4.0	-	23.0	-	-
4.0	12.0	23.0	-	-	23.0	5.0	-	23.0	-	-
4.0	13.0	-	-	-	23.0	6.0	-	23.0	-	-
4.0	13.0	1.0	-	-	24.0	5.0	-	24.0	-	-
4.0	13.0	2.0	-	-	24.0	5.0	-	24.0	-	-
4.0	13.0	3.0	-	-	24.0	6.0	-	24.0	-	-
4.0	13.0	4.0	-	-	24.0	6.0	-	24.0	-	-
4.0	13.0	5.0	-	-	24.0	6.0	-	24.0	-	-
4.0	13.0	6.0	-	12.0	24.0	5.0	11.4	22.9	9.8	4.5
4.0	13.0	7.0	-	52.0	24.0	5.0	49.3	23.7	42.2	36.3
4.0	13.0	8.0	282.0	228.0	25.0	6.0	382.8	31.7	310.3	297.9
4.0	13.0	9.0	680.0	188.0	26.0	6.0	707.2	39.9	556.0	535.1
4.0	13.0	10.0	648.0	257.0	26.0	7.0	852.6	41.8	667.2	641.9
4.0	13.0	11.0	38.0	401.0	26.0	6.0	436.2	35.3	353.1	339.4
4.0	13.0	12.0	9.0	200.0	26.0	6.0	201.4	29.7	167.5	158.9
4.0	13.0	13.0	-	38.0	26.0	6.0	36.2	25.9	30.7	25.0
4.0	13.0	14.0	2.0	157.0	25.0	5.0	151.9	27.1	127.9	120.2
4.0	13.0	15.0	2.0	172.0	24.0	5.0	165.9	26.7	139.9	132.0
4.0	13.0	16.0	146.0	208.0	23.0	5.0	273.8	28.2	225.8	215.7
4.0	13.0	17.0	-	19.0	21.0	6.0	18.0	20.6	15.6	10.2
4.0	13.0	18.0	-	14.0	21.0	5.0	13.3	19.9	11.6	6.2
4.0	13.0	19.0	-	-	21.0	5.0	-	21.0	-	-
4.0	13.0	20.0	-	-	20.0	6.0	-	20.0	-	-
4.0	13.0	21.0	-	-	20.0	7.0	-	20.0	-	-
4.0	13.0	22.0	-	-	19.0	7.0	-	19.0	-	-
4.0	13.0	23.0	-	-	18.0	7.0	-	18.0	-	-
4.0	14.0	-	-	-	18.0	7.0	-	18.0	-	-
4.0	14.0	1.0	-	-	17.0	8.0	-	17.0	-	-
4.0	14.0	2.0	-	-	16.0	7.0	-	16.0	-	-
4.0	14.0	3.0	-	-	16.0	7.0	-	16.0	-	-
4.0	14.0	4.0	-	-	16.0	7.0	-	16.0	-	-
4.0	14.0	5.0	-	-	15.0	7.0	-	15.0	-	-
4.0	14.0	6.0	272.0	41.0	15.0	7.0	54.9	14.8	38.3	32.5
4.0	14.0	7.0	644.0	83.0	15.0	7.0	288.8	19.2	223.2	213.2
4.0	14.0	8.0	798.0	106.0	16.0	7.0	550.9	25.5	452.8	435.8
4.0	14.0	9.0	871.0	124.0	17.0	7.0	783.5	31.2	642.4	618.1
4.0	14.0	10.0	907.0	138.0	18.0	7.0	955.3	35.7	770.7	740.7
4.0	14.0	11.0	923.0	146.0	19.0	7.0	1,058.2	38.9	841.3	807.9

4.0	14.0	12.0	927.0	147.0	20.0	7.0	1,083.8	40.6	854.6	820.6
4.0	14.0	13.0	464.0	378.0	21.0	7.0	841.6	37.1	675.0	649.3
4.0	14.0	14.0	688.0	232.0	22.0	7.0	833.1	37.6	665.4	640.1
4.0	14.0	15.0	826.0	128.0	21.0	7.0	704.4	34.2	566.5	545.3
4.0	14.0	16.0	734.0	107.0	20.0	7.0	462.3	28.5	368.2	354.0
4.0	14.0	17.0	551.0	74.0	19.0	6.0	204.4	22.7	146.9	138.7
4.0	14.0	18.0	85.0	17.0	18.0	6.0	16.3	17.3	12.8	7.5
4.0	14.0	19.0	-	-	17.0	6.0	-	17.0	-	-
4.0	14.0	20.0	-	-	17.0	6.0	-	17.0	-	-
4.0	14.0	21.0	-	-	16.0	6.0	-	16.0	-	-
4.0	14.0	22.0	-	-	16.0	6.0	-	16.0	-	-
4.0	14.0	23.0	-	-	16.0	5.0	-	16.0	-	-
4.0	15.0	-	-	-	15.0	5.0	-	15.0	-	-
4.0	15.0	1.0	-	-	15.0	5.0	-	15.0	-	-
4.0	15.0	2.0	-	-	15.0	5.0	-	15.0	-	-
4.0	15.0	3.0	-	-	15.0	5.0	-	15.0	-	-
4.0	15.0	4.0	-	-	15.0	5.0	-	15.0	-	-
4.0	15.0	5.0	-	-	15.0	5.0	-	15.0	-	-
4.0	15.0	6.0	285.0	41.0	17.0	5.0	56.0	16.7	38.3	32.5
4.0	15.0	7.0	628.0	86.0	18.0	5.0	287.4	23.1	218.9	208.9
4.0	15.0	8.0	775.0	113.0	19.0	5.0	546.0	30.5	438.5	421.9
4.0	15.0	9.0	850.0	130.0	20.0	5.0	774.4	37.2	616.6	593.4
4.0	15.0	10.0	896.0	139.0	21.0	5.0	946.5	42.5	738.1	709.6
4.0	15.0	11.0	914.0	146.0	22.0	5.0	1,049.1	46.1	803.8	772.2
4.0	15.0	12.0	913.0	150.0	22.0	5.0	1,072.1	46.9	818.4	786.1
4.0	15.0	13.0	903.0	146.0	22.0	5.0	1,018.5	45.7	781.8	751.3
4.0	15.0	14.0	871.0	140.0	22.0	5.0	892.5	42.9	693.9	667.4
4.0	15.0	15.0	814.0	129.0	21.0	5.0	696.4	37.2	551.7	531.0
4.0	15.0	16.0	714.0	110.0	21.0	5.0	455.1	31.4	357.6	343.7
4.0	15.0	17.0	517.0	79.0	20.0	4.0	200.8	24.8	144.2	136.1
4.0	15.0	18.0	66.0	17.0	19.0	4.0	16.6	18.3	13.4	8.1
4.0	15.0	19.0	-	-	18.0	4.0	-	18.0	-	-
4.0	15.0	20.0	-	-	18.0	4.0	-	18.0	-	-
4.0	15.0	21.0	-	-	18.0	4.0	-	18.0	-	-
4.0	15.0	22.0	-	-	18.0	4.0	-	18.0	-	-
4.0	15.0	23.0	-	-	18.0	4.0	-	18.0	-	-
4.0	16.0	-	-	-	18.0	4.0	-	18.0	-	-
4.0	16.0	1.0	-	-	18.0	4.0	-	18.0	-	-
4.0	16.0	2.0	-	-	18.0	4.0	-	18.0	-	-
4.0	16.0	3.0	-	-	19.0	4.0	-	19.0	-	-
4.0	16.0	4.0	-	-	19.0	4.0	-	19.0	-	-
4.0	16.0	5.0	-	-	19.0	4.0	-	19.0	-	-
4.0	16.0	6.0	-	12.0	20.0	4.0	11.4	18.6	10.0	4.7
4.0	16.0	7.0	-	52.0	21.0	5.0	49.3	20.7	42.8	36.9
4.0	16.0	8.0	62.0	232.0	21.0	5.0	259.2	25.5	218.8	208.9
4.0	16.0	9.0	176.0	347.0	22.0	5.0	477.1	31.9	391.8	376.8
4.0	16.0	10.0	24.0	326.0	23.0	5.0	336.3	30.3	279.0	267.4
4.0	16.0	11.0	223.0	476.0	23.0	5.0	701.0	38.1	559.6	538.6
4.0	16.0	12.0	115.0	486.0	24.0	5.0	608.8	37.9	486.6	468.3
4.0	16.0	13.0	844.0	179.0	24.0	5.0	1,001.1	46.3	766.1	736.3
4.0	16.0	14.0	823.0	162.0	23.0	5.0	873.1	43.4	677.0	651.2
4.0	16.0	15.0	333.0	289.0	23.0	5.0	519.3	35.3	417.7	401.8
4.0	16.0	16.0	665.0	122.0	22.0	5.0	443.0	31.8	348.3	334.7
4.0	16.0	17.0	465.0	86.0	21.0	4.0	193.4	25.6	140.1	132.1
4.0	16.0	18.0	44.0	18.0	21.0	4.0	16.9	20.3	14.0	8.6
4.0	16.0	19.0	-	-	21.0	4.0	-	21.0	-	-
4.0	16.0	20.0	-	-	21.0	4.0	-	21.0	-	-
4.0	16.0	21.0	-	-	21.0	4.0	-	21.0	-	-
4.0	16.0	22.0	-	-	21.0	4.0	-	21.0	-	-
4.0	16.0	23.0	-	-	20.0	4.0	-	20.0	-	-
4.0	17.0	-	-	-	20.0	4.0	-	20.0	-	-
4.0	17.0	1.0	-	-	20.0	5.0	-	20.0	-	-
4.0	17.0	2.0	-	-	20.0	5.0	-	20.0	-	-
4.0	17.0	3.0	-	-	20.0	5.0	-	20.0	-	-
4.0	17.0	4.0	-	-	20.0	5.0	-	20.0	-	-
4.0	17.0	5.0	-	-	20.0	5.0	-	20.0	-	-
4.0	17.0	6.0	179.0	50.0	20.0	5.0	57.8	19.8	43.3	37.4
4.0	17.0	7.0	60.0	136.0	21.0	6.0	149.1	22.8	125.5	117.8
4.0	17.0	8.0	554.0	162.0	22.0	6.0	471.8	30.6	380.9	366.2
4.0	17.0	9.0	-	156.0	22.0	6.0	149.0	24.6	127.0	119.3
4.0	17.0	10.0	870.0	145.0	23.0	6.0	934.4	41.0	734.3	706.0
4.0	17.0	11.0	889.0	153.0	23.0	6.0	1,030.8	44.3	797.2	765.9
4.0	17.0	12.0	893.0	156.0	24.0	6.0	1,056.7	46.0	810.1	778.3
4.0	17.0	13.0	548.0	354.0	24.0	6.0	895.9	42.9	698.0	671.3
4.0	17.0	14.0	863.0	139.0	23.0	6.0	882.9	41.3	691.9	665.5
4.0	17.0	15.0	813.0	124.0	23.0	6.0	689.0	37.4	545.4	524.9
4.0	17.0	16.0	103.0	208.0	22.0	6.0	249.6	27.1	207.6	197.9
4.0	17.0	17.0	526.0	76.0	22.0	6.0	199.1	25.2	141.9	133.9
4.0	17.0	18.0	71.0	19.0	21.0	5.0	18.2	20.4	14.7	9.3
4.0	17.0	19.0	-	-	21.0	5.0	-	21.0	-	-
4.0	17.0	20.0	-	-	21.0	6.0	-	21.0	-	-

4.0	17.0	21.0	-	-	21.0	6.0	-	21.0	-	-
4.0	17.0	22.0	-	-	21.0	6.0	-	21.0	-	-
4.0	17.0	23.0	-	-	20.0	5.0	-	20.0	-	-
4.0	18.0	-	-	-	20.0	5.0	-	20.0	-	-
4.0	18.0	1.0	-	-	20.0	5.0	-	20.0	-	-
4.0	18.0	2.0	-	-	20.0	5.0	-	20.0	-	-
4.0	18.0	3.0	-	-	20.0	5.0	-	20.0	-	-
4.0	18.0	4.0	-	-	20.0	5.0	-	20.0	-	-
4.0	18.0	5.0	-	-	20.0	5.0	-	20.0	-	-
4.0	18.0	6.0	-	18.0	20.0	5.0	17.0	18.9	14.9	9.5
4.0	18.0	7.0	-	70.0	21.0	5.0	66.5	21.1	57.6	51.4
4.0	18.0	8.0	733.0	124.0	22.0	6.0	535.5	31.8	428.2	411.9
4.0	18.0	9.0	820.0	140.0	23.0	6.0	762.9	38.2	604.5	581.7
4.0	18.0	10.0	849.0	161.0	23.0	6.0	931.8	42.0	728.3	700.3
4.0	18.0	11.0	131.0	478.0	24.0	6.0	612.0	36.9	491.4	473.0
4.0	18.0	12.0	325.0	464.0	24.0	6.0	803.4	40.2	634.7	610.6
4.0	18.0	13.0	31.0	376.0	24.0	6.0	401.6	32.4	329.7	316.6
4.0	18.0	14.0	852.0	147.0	24.0	6.0	880.8	41.4	690.0	663.7
4.0	18.0	15.0	790.0	136.0	23.0	6.0	684.5	37.3	542.2	521.9
4.0	18.0	16.0	680.0	119.0	22.0	6.0	445.8	31.1	351.3	337.6
4.0	18.0	17.0	468.0	87.0	22.0	6.0	194.3	25.5	140.7	132.7
4.0	18.0	18.0	38.0	20.0	21.0	5.0	19.1	20.4	16.1	10.7
4.0	18.0	19.0	-	-	21.0	5.0	-	21.0	-	-
4.0	18.0	20.0	-	-	21.0	5.0	-	21.0	-	-
4.0	18.0	21.0	-	-	21.0	4.0	-	21.0	-	-
4.0	18.0	22.0	-	-	21.0	4.0	-	21.0	-	-
4.0	18.0	23.0	-	-	21.0	4.0	-	21.0	-	-
4.0	19.0	-	-	-	21.0	4.0	-	21.0	-	-
4.0	19.0	1.0	-	-	21.0	5.0	-	21.0	-	-
4.0	19.0	2.0	-	-	21.0	5.0	-	21.0	-	-
4.0	19.0	3.0	-	-	21.0	5.0	-	21.0	-	-
4.0	19.0	4.0	-	-	21.0	5.0	-	21.0	-	-
4.0	19.0	5.0	-	-	21.0	5.0	-	21.0	-	-
4.0	19.0	6.0	-	29.0	21.0	5.0	27.5	20.1	23.9	18.4
4.0	19.0	7.0	-	79.0	22.0	6.0	75.0	22.3	64.6	58.3
4.0	19.0	8.0	719.0	129.0	23.0	5.0	533.2	33.8	422.4	406.4
4.0	19.0	9.0	805.0	145.0	23.0	5.0	756.9	39.8	595.1	572.7
4.0	19.0	10.0	869.0	146.0	24.0	5.0	934.3	45.2	718.5	690.9
4.0	19.0	11.0	892.0	151.0	24.0	5.0	1,030.9	47.7	783.4	752.8
4.0	19.0	12.0	899.0	152.0	25.0	5.0	1,057.5	49.5	796.0	764.8
4.0	19.0	13.0	852.0	175.0	24.0	5.0	1,002.2	47.4	762.8	733.2
4.0	19.0	14.0	820.0	166.0	24.0	5.0	871.9	44.4	672.6	647.0
4.0	19.0	15.0	437.0	260.0	24.0	5.0	564.2	37.3	448.6	431.7
4.0	19.0	16.0	658.0	126.0	23.0	5.0	441.7	32.8	345.4	331.8
4.0	19.0	17.0	459.0	89.0	22.0	4.0	193.7	26.6	139.9	131.9
4.0	19.0	18.0	45.0	20.0	22.0	4.0	18.3	21.4	15.2	9.8
4.0	19.0	19.0	-	-	21.0	4.0	-	21.0	-	-
4.0	19.0	20.0	-	-	21.0	4.0	-	21.0	-	-
4.0	19.0	21.0	-	-	21.0	4.0	-	21.0	-	-
4.0	19.0	22.0	-	-	21.0	4.0	-	21.0	-	-
4.0	19.0	23.0	-	-	21.0	4.0	-	21.0	-	-
4.0	20.0	-	-	-	21.0	3.0	-	21.0	-	-
4.0	20.0	1.0	-	-	21.0	3.0	-	21.0	-	-
4.0	20.0	2.0	-	-	20.0	3.0	-	20.0	-	-
4.0	20.0	3.0	-	-	20.0	3.0	-	20.0	-	-
4.0	20.0	4.0	-	-	20.0	2.0	-	20.0	-	-
4.0	20.0	5.0	-	-	20.0	2.0	-	20.0	-	-
4.0	20.0	6.0	275.0	48.0	21.0	2.0	63.6	20.9	43.9	37.9
4.0	20.0	7.0	599.0	93.0	22.0	2.0	288.2	29.1	215.0	205.2
4.0	20.0	8.0	751.0	117.0	23.0	3.0	539.3	36.9	420.3	404.4
4.0	20.0	9.0	835.0	131.0	24.0	3.0	765.4	44.6	587.1	565.1
4.0	20.0	10.0	850.0	159.0	24.0	3.0	930.3	49.5	699.6	672.8
4.0	20.0	11.0	876.0	163.0	25.0	4.0	1,033.8	51.1	771.6	741.5
4.0	20.0	12.0	883.0	163.0	25.0	4.0	1,051.4	51.8	781.9	751.4
4.0	20.0	13.0	884.0	151.0	25.0	4.0	1,001.2	50.7	748.9	719.9
4.0	20.0	14.0	855.0	143.0	25.0	4.0	877.5	47.6	665.4	640.1
4.0	20.0	15.0	800.0	130.0	24.0	3.0	683.7	43.6	524.5	504.8
4.0	20.0	16.0	700.0	112.0	24.0	3.0	447.0	36.8	342.0	328.5
4.0	20.0	17.0	86.0	107.0	23.0	3.0	121.9	26.2	98.6	91.6
4.0	20.0	18.0	-	15.0	22.0	2.0	14.2	20.9	12.3	7.0
4.0	20.0	19.0	-	-	22.0	2.0	-	22.0	-	-
4.0	20.0	20.0	-	-	22.0	2.0	-	22.0	-	-
4.0	20.0	21.0	-	-	21.0	2.0	-	21.0	-	-
4.0	20.0	22.0	-	-	21.0	2.0	-	21.0	-	-
4.0	20.0	23.0	-	-	21.0	3.0	-	21.0	-	-
4.0	21.0	-	-	-	21.0	3.0	-	21.0	-	-
4.0	21.0	1.0	-	-	21.0	4.0	-	21.0	-	-
4.0	21.0	2.0	-	-	21.0	3.0	-	21.0	-	-
4.0	21.0	3.0	-	-	21.0	3.0	-	21.0	-	-
4.0	21.0	4.0	-	-	21.0	3.0	-	21.0	-	-
4.0	21.0	5.0	-	-	21.0	2.0	-	21.0	-	-

4.0	21.0	6.0	-	44.0	22.0	2.0	41.2	21.2	35.7	29.9
4.0	21.0	7.0	47.0	139.0	23.0	2.0	147.7	25.7	123.2	115.6
4.0	21.0	8.0	734.0	122.0	23.0	2.0	535.3	37.9	415.3	399.5
4.0	21.0	9.0	822.0	134.0	24.0	3.0	758.8	44.4	582.7	560.8
4.0	21.0	10.0	616.0	282.0	24.0	3.0	846.4	47.3	643.9	619.5
4.0	21.0	11.0	527.0	384.0	25.0	3.0	916.8	50.3	687.0	660.8
4.0	21.0	12.0	19.0	337.0	25.0	4.0	345.0	34.7	280.1	268.5
4.0	21.0	13.0	441.0	388.0	25.0	4.0	824.0	44.6	636.1	612.1
4.0	21.0	14.0	41.0	353.0	25.0	4.0	381.3	35.3	308.6	296.1
4.0	21.0	15.0	413.0	270.0	25.0	4.0	556.3	38.3	440.1	423.5
4.0	21.0	16.0	679.0	117.0	24.0	4.0	441.4	35.0	340.9	327.5
4.0	21.0	17.0	490.0	84.0	24.0	3.0	196.9	29.2	139.2	131.2
4.0	21.0	18.0	78.0	22.0	23.0	3.0	20.2	22.5	16.5	11.1
4.0	21.0	19.0	-	-	23.0	4.0	-	23.0	-	-
4.0	21.0	20.0	-	-	23.0	4.0	-	23.0	-	-
4.0	21.0	21.0	-	-	23.0	4.0	-	23.0	-	-
4.0	21.0	22.0	-	-	23.0	4.0	-	23.0	-	-
4.0	21.0	23.0	-	-	23.0	4.0	-	23.0	-	-
4.0	22.0	-	-	-	22.0	4.0	-	22.0	-	-
4.0	22.0	1.0	-	-	22.0	4.0	-	22.0	-	-
4.0	22.0	2.0	-	-	21.0	3.0	-	21.0	-	-
4.0	22.0	3.0	-	-	21.0	3.0	-	21.0	-	-
4.0	22.0	4.0	-	-	21.0	3.0	-	21.0	-	-
4.0	22.0	5.0	-	-	21.0	3.0	-	21.0	-	-
4.0	22.0	6.0	284.0	50.0	22.0	3.0	66.8	22.0	45.8	39.8
4.0	22.0	7.0	604.0	93.0	23.0	3.0	290.9	29.5	216.9	207.0
4.0	22.0	8.0	754.0	116.0	24.0	2.0	540.7	39.7	415.7	399.9
4.0	22.0	9.0	837.0	128.0	25.0	2.0	764.1	48.0	575.6	554.0
4.0	22.0	10.0	861.0	149.0	26.0	2.0	929.5	54.4	680.7	654.7
4.0	22.0	11.0	880.0	156.0	27.0	2.0	1,022.5	58.5	733.0	704.7
4.0	22.0	12.0	881.0	160.0	27.0	2.0	1,045.0	59.4	745.3	716.4
4.0	22.0	13.0	860.0	162.0	27.0	2.0	994.0	58.1	713.8	686.4
4.0	22.0	14.0	823.0	156.0	27.0	2.0	861.7	54.4	630.4	606.6
4.0	22.0	15.0	759.0	145.0	26.0	3.0	669.8	45.1	509.8	490.7
4.0	22.0	16.0	648.0	126.0	26.0	3.0	435.1	38.4	330.9	317.8
4.0	22.0	17.0	451.0	90.0	25.0	4.0	191.7	29.5	136.7	128.8
4.0	22.0	18.0	66.0	22.0	24.0	4.0	19.9	23.5	16.4	11.0
4.0	22.0	19.0	-	-	23.0	3.0	-	23.0	-	-
4.0	22.0	20.0	-	-	23.0	3.0	-	23.0	-	-
4.0	22.0	21.0	-	-	22.0	3.0	-	22.0	-	-
4.0	22.0	22.0	-	-	22.0	3.0	-	22.0	-	-
4.0	22.0	23.0	-	-	22.0	3.0	-	22.0	-	-
4.0	23.0	-	-	-	22.0	3.0	-	22.0	-	-
4.0	23.0	1.0	-	-	22.0	3.0	-	22.0	-	-
4.0	23.0	2.0	-	-	21.0	3.0	-	21.0	-	-
4.0	23.0	3.0	-	-	21.0	3.0	-	21.0	-	-
4.0	23.0	4.0	-	-	21.0	3.0	-	21.0	-	-
4.0	23.0	5.0	-	-	21.0	3.0	-	21.0	-	-
4.0	23.0	6.0	270.0	51.0	23.0	3.0	67.0	23.1	46.1	40.2
4.0	23.0	7.0	587.0	95.0	24.0	3.0	287.8	30.4	214.1	204.3
4.0	23.0	8.0	737.0	118.0	25.0	3.0	533.6	38.7	412.3	396.6
4.0	23.0	9.0	821.0	130.0	25.0	3.0	754.2	45.2	576.5	554.9
4.0	23.0	10.0	869.0	136.0	26.0	3.0	918.4	51.1	684.8	658.6
4.0	23.0	11.0	892.0	140.0	26.0	3.0	1,018.1	54.1	747.8	718.8
4.0	23.0	12.0	896.0	142.0	27.0	3.0	1,041.7	55.9	757.5	728.1
4.0	23.0	13.0	887.0	138.0	26.0	3.0	988.7	53.7	727.5	699.5
4.0	23.0	14.0	858.0	132.0	26.0	4.0	862.2	48.2	651.8	627.0
4.0	23.0	15.0	806.0	120.0	25.0	4.0	675.3	42.5	520.6	501.1
4.0	23.0	16.0	716.0	101.0	25.0	4.0	441.6	36.4	337.8	324.5
4.0	23.0	17.0	540.0	73.0	24.0	4.0	197.1	28.7	137.1	129.2
4.0	23.0	18.0	122.0	22.0	23.0	3.0	19.1	22.5	15.3	9.9
4.0	23.0	19.0	-	-	23.0	3.0	-	23.0	-	-
4.0	23.0	20.0	-	-	22.0	3.0	-	22.0	-	-
4.0	23.0	21.0	-	-	22.0	3.0	-	22.0	-	-
4.0	23.0	22.0	-	-	22.0	3.0	-	22.0	-	-
4.0	23.0	23.0	-	-	22.0	3.0	-	22.0	-	-
4.0	24.0	-	-	-	21.0	3.0	-	21.0	-	-
4.0	24.0	1.0	-	-	21.0	3.0	-	21.0	-	-
4.0	24.0	2.0	-	-	21.0	2.0	-	21.0	-	-
4.0	24.0	3.0	-	-	21.0	2.0	-	21.0	-	-
4.0	24.0	4.0	-	-	21.0	2.0	-	21.0	-	-
4.0	24.0	5.0	-	-	21.0	2.0	-	21.0	-	-
4.0	24.0	6.0	358.0	45.0	22.0	2.0	69.7	22.1	44.8	38.9
4.0	24.0	7.0	649.0	80.0	23.0	2.0	293.8	30.4	216.7	206.8
4.0	24.0	8.0	779.0	101.0	24.0	1.0	540.4	42.5	409.2	393.6
4.0	24.0	9.0	849.0	116.0	25.0	1.0	758.5	51.8	560.0	539.0
4.0	24.0	10.0	845.0	152.0	26.0	1.0	917.6	58.7	656.4	631.4
4.0	24.0	11.0	869.0	156.0	27.0	2.0	1,010.6	58.1	725.9	697.9
4.0	24.0	12.0	874.0	157.0	27.0	2.0	1,033.5	59.1	738.5	710.0
4.0	24.0	13.0	832.0	173.0	27.0	2.0	976.6	57.6	703.3	676.3
4.0	24.0	14.0	798.0	165.0	26.0	3.0	847.8	50.0	635.1	611.0

4.0	24.0	15.0	738.0	151.0	26.0	3.0	660.0	44.8	503.1	484.3
4.0	24.0	16.0	642.0	125.0	25.0	4.0	430.1	36.0	330.8	317.7
4.0	24.0	17.0	466.0	87.0	24.0	4.0	191.7	28.5	136.6	128.7
4.0	24.0	18.0	91.0	23.0	23.0	4.0	20.8	22.5	17.1	11.7
4.0	24.0	19.0	-	-	23.0	4.0	-	23.0	-	-
4.0	24.0	20.0	-	-	23.0	4.0	-	23.0	-	-
4.0	24.0	21.0	-	-	23.0	4.0	-	23.0	-	-
4.0	24.0	22.0	-	-	23.0	4.0	-	23.0	-	-
4.0	24.0	23.0	-	-	22.0	4.0	-	22.0	-	-
4.0	25.0	-	-	-	22.0	4.0	-	22.0	-	-
4.0	25.0	1.0	-	-	22.0	3.0	-	22.0	-	-
4.0	25.0	2.0	-	-	22.0	3.0	-	22.0	-	-
4.0	25.0	3.0	-	-	22.0	3.0	-	22.0	-	-
4.0	25.0	4.0	-	-	22.0	3.0	-	22.0	-	-
4.0	25.0	5.0	-	-	22.0	3.0	-	22.0	-	-
4.0	25.0	6.0	337.0	47.0	22.0	3.0	70.3	22.1	46.1	40.1
4.0	25.0	7.0	-	104.0	23.0	4.0	98.6	24.1	84.2	77.5
4.0	25.0	8.0	775.0	100.0	24.0	3.0	537.5	37.2	418.0	402.2
4.0	25.0	9.0	850.0	111.0	25.0	3.0	754.2	45.3	576.4	554.8
4.0	25.0	10.0	886.0	121.0	26.0	3.0	918.2	51.1	684.6	658.5
4.0	25.0	11.0	903.0	126.0	26.0	3.0	1,013.8	53.9	745.1	716.3
4.0	25.0	12.0	908.0	127.0	27.0	3.0	1,037.3	55.8	754.9	725.6
4.0	25.0	13.0	879.0	136.0	27.0	3.0	977.4	54.4	716.5	689.0
4.0	25.0	14.0	857.0	126.0	27.0	3.0	853.6	51.1	635.5	611.5
4.0	25.0	15.0	810.0	113.0	26.0	3.0	669.3	45.1	509.1	490.0
4.0	25.0	16.0	726.0	95.0	26.0	3.0	439.1	38.5	331.9	318.8
4.0	25.0	17.0	558.0	69.0	25.0	4.0	196.7	29.7	135.2	127.3
4.0	25.0	18.0	153.0	22.0	24.0	3.0	18.9	23.5	15.0	9.7
4.0	25.0	19.0	-	-	24.0	3.0	-	24.0	-	-
4.0	25.0	20.0	-	-	23.0	3.0	-	23.0	-	-
4.0	25.0	21.0	-	-	23.0	3.0	-	23.0	-	-
4.0	25.0	22.0	-	-	23.0	3.0	-	23.0	-	-
4.0	25.0	23.0	-	-	23.0	3.0	-	23.0	-	-
4.0	26.0	-	-	-	23.0	3.0	-	23.0	-	-
4.0	26.0	1.0	-	-	22.0	3.0	-	22.0	-	-
4.0	26.0	2.0	-	-	22.0	3.0	-	22.0	-	-
4.0	26.0	3.0	-	-	22.0	3.0	-	22.0	-	-
4.0	26.0	4.0	-	-	22.0	3.0	-	22.0	-	-
4.0	26.0	5.0	-	-	22.0	3.0	-	22.0	-	-
4.0	26.0	6.0	365.0	46.0	23.0	3.0	71.9	23.2	45.9	40.0
4.0	26.0	7.0	646.0	81.0	24.0	4.0	294.8	30.0	218.1	208.2
4.0	26.0	8.0	773.0	102.0	25.0	3.0	538.7	38.9	415.5	399.7
4.0	26.0	9.0	842.0	116.0	26.0	3.0	753.2	46.2	572.8	551.3
4.0	26.0	10.0	883.0	123.0	27.0	3.0	917.2	52.0	680.4	654.4
4.0	26.0	11.0	900.0	129.0	28.0	3.0	1,013.3	55.8	737.0	708.5
4.0	26.0	12.0	900.0	133.0	28.0	3.0	1,034.4	56.7	749.1	720.1
4.0	26.0	13.0	858.0	150.0	28.0	3.0	970.2	55.1	708.3	681.1
4.0	26.0	14.0	827.0	142.0	28.0	3.0	847.4	51.9	628.2	604.5
4.0	26.0	15.0	769.0	130.0	28.0	3.0	657.9	46.7	496.3	477.7
4.0	26.0	16.0	668.0	112.0	27.0	3.0	428.3	39.2	323.5	310.7
4.0	26.0	17.0	485.0	81.0	26.0	3.0	191.1	31.1	133.4	125.6
4.0	26.0	18.0	102.0	24.0	25.0	4.0	19.9	24.5	16.9	11.5
4.0	26.0	19.0	-	-	25.0	4.0	-	25.0	-	-
4.0	26.0	20.0	-	-	24.0	4.0	-	24.0	-	-
4.0	26.0	21.0	-	-	24.0	4.0	-	24.0	-	-
4.0	26.0	22.0	-	-	24.0	3.0	-	24.0	-	-
4.0	26.0	23.0	-	-	24.0	3.0	-	24.0	-	-
4.0	27.0	-	-	-	23.0	3.0	-	23.0	-	-
4.0	27.0	1.0	-	-	23.0	3.0	-	23.0	-	-
4.0	27.0	2.0	-	-	23.0	3.0	-	23.0	-	-
4.0	27.0	3.0	-	-	23.0	3.0	-	23.0	-	-
4.0	27.0	4.0	-	-	22.0	2.0	-	22.0	-	-
4.0	27.0	5.0	-	-	22.0	2.0	-	22.0	-	-
4.0	27.0	6.0	296.0	52.0	23.0	3.0	71.2	23.2	48.2	42.2
4.0	27.0	7.0	580.0	93.0	24.0	3.0	285.1	30.3	212.5	202.8
4.0	27.0	8.0	709.0	120.0	25.0	3.0	520.8	38.4	403.4	388.1
4.0	27.0	9.0	788.0	134.0	26.0	3.0	733.2	45.6	559.4	538.4
4.0	27.0	10.0	189.0	441.0	27.0	2.0	608.5	46.4	465.6	448.0
4.0	27.0	11.0	309.0	465.0	28.0	2.0	775.2	51.5	577.3	555.6
4.0	27.0	12.0	191.0	502.0	28.0	2.0	695.4	49.9	522.3	502.7
4.0	27.0	13.0	39.0	401.0	27.0	2.0	432.1	41.2	339.6	326.3
4.0	27.0	14.0	-	139.0	27.0	1.0	132.7	32.4	109.0	101.7
4.0	27.0	15.0	10.0	219.0	26.0	1.0	216.0	32.4	177.3	168.4
4.0	27.0	16.0	-	147.0	25.0	2.0	139.7	28.4	117.0	109.5
4.0	27.0	17.0	44.0	108.0	24.0	3.0	111.8	25.8	92.4	85.5
4.0	27.0	18.0	-	14.0	23.0	4.0	13.3	22.1	11.4	6.1
4.0	27.0	19.0	-	-	22.0	4.0	-	22.0	-	-
4.0	27.0	20.0	-	-	22.0	4.0	-	22.0	-	-
4.0	27.0	21.0	-	-	22.0	4.0	-	22.0	-	-
4.0	27.0	22.0	-	-	22.0	4.0	-	22.0	-	-
4.0	27.0	23.0	-	-	22.0	4.0	-	22.0	-	-

4.0	28.0	-	-	-	22.0	4.0	-	22.0	-	-
4.0	28.0	1.0	-	-	22.0	4.0	-	22.0	-	-
4.0	28.0	2.0	-	-	22.0	4.0	-	22.0	-	-
4.0	28.0	3.0	-	-	22.0	5.0	-	22.0	-	-
4.0	28.0	4.0	-	-	22.0	5.0	-	22.0	-	-
4.0	28.0	5.0	-	-	22.0	5.0	-	22.0	-	-
4.0	28.0	6.0	234.0	61.0	22.0	6.0	74.3	22.2	53.8	47.6
4.0	28.0	7.0	524.0	114.0	23.0	6.0	285.6	27.7	218.0	208.1
4.0	28.0	8.0	677.0	141.0	24.0	6.0	524.0	34.0	415.5	399.7
4.0	28.0	9.0	763.0	157.0	25.0	6.0	737.2	39.7	580.0	558.2
4.0	28.0	10.0	839.0	150.0	25.0	6.0	908.6	43.6	704.8	677.7
4.0	28.0	11.0	858.0	157.0	26.0	6.0	998.2	46.7	762.7	733.0
4.0	28.0	12.0	40.0	424.0	26.0	6.0	458.9	36.0	370.2	355.9
4.0	28.0	13.0	7.0	191.0	26.0	5.0	189.8	30.0	157.6	149.2
4.0	28.0	14.0	2.0	158.0	26.0	5.0	152.7	28.5	127.7	120.0
4.0	28.0	15.0	5.0	196.0	25.0	5.0	190.5	28.3	159.5	151.1
4.0	28.0	16.0	-	119.0	25.0	5.0	113.1	26.6	95.5	88.5
4.0	28.0	17.0	-	69.0	24.0	5.0	65.4	24.3	55.8	49.6
4.0	28.0	18.0	54.0	25.0	24.0	5.0	22.8	23.3	19.5	14.1
4.0	28.0	19.0	-	-	23.0	5.0	-	23.0	-	-
4.0	28.0	20.0	-	-	23.0	5.0	-	23.0	-	-
4.0	28.0	21.0	-	-	23.0	5.0	-	23.0	-	-
4.0	28.0	22.0	-	-	23.0	6.0	-	23.0	-	-
4.0	28.0	23.0	-	-	23.0	6.0	-	23.0	-	-
4.0	29.0	-	-	-	23.0	5.0	-	23.0	-	-
4.0	29.0	1.0	-	-	23.0	5.0	-	23.0	-	-
4.0	29.0	2.0	-	-	23.0	5.0	-	23.0	-	-
4.0	29.0	3.0	-	-	23.0	5.0	-	23.0	-	-
4.0	29.0	4.0	-	-	23.0	5.0	-	23.0	-	-
4.0	29.0	5.0	-	-	23.0	5.0	-	23.0	-	-
4.0	29.0	6.0	223.0	61.0	23.0	6.0	74.0	23.2	53.7	47.6
4.0	29.0	7.0	133.0	155.0	24.0	6.0	192.1	26.8	156.5	148.1
4.0	29.0	8.0	32.0	228.0	25.0	6.0	237.3	29.0	197.6	188.2
4.0	29.0	9.0	8.0	213.0	26.0	6.0	209.7	29.5	174.5	165.7
4.0	29.0	10.0	5.0	174.0	26.0	6.0	171.0	28.7	142.9	134.9
4.0	29.0	11.0	290.0	471.0	27.0	5.0	761.4	43.1	592.5	570.3
4.0	29.0	12.0	791.0	192.0	27.0	5.0	989.0	49.4	744.8	716.0
4.0	29.0	13.0	400.0	407.0	26.0	5.0	792.3	44.6	611.8	588.7
4.0	29.0	14.0	247.0	404.0	26.0	5.0	612.9	40.2	483.6	465.5
4.0	29.0	15.0	51.0	293.0	25.0	5.0	318.2	32.2	261.1	250.0
4.0	29.0	16.0	101.0	216.0	25.0	5.0	253.8	30.1	208.1	198.5
4.0	29.0	17.0	289.0	101.0	24.0	5.0	162.2	26.9	121.8	114.3
4.0	29.0	18.0	3.0	23.0	24.0	5.0	21.8	23.5	18.7	13.3
4.0	29.0	19.0	-	-	24.0	5.0	-	24.0	-	-
4.0	29.0	20.0	-	-	24.0	5.0	-	24.0	-	-
4.0	29.0	21.0	-	-	24.0	5.0	-	24.0	-	-
4.0	29.0	22.0	-	-	24.0	5.0	-	24.0	-	-
4.0	29.0	23.0	-	-	24.0	5.0	-	24.0	-	-
4.0	30.0	-	-	-	24.0	4.0	-	24.0	-	-
4.0	30.0	1.0	-	-	23.0	4.0	-	23.0	-	-
4.0	30.0	2.0	-	-	23.0	4.0	-	23.0	-	-
4.0	30.0	3.0	-	-	23.0	4.0	-	23.0	-	-
4.0	30.0	4.0	-	-	23.0	4.0	-	23.0	-	-
4.0	30.0	5.0	-	-	23.0	4.0	-	23.0	-	-
4.0	30.0	6.0	-	49.0	24.0	4.0	46.0	23.6	39.4	33.5
4.0	30.0	7.0	578.0	94.0	25.0	4.0	286.3	30.8	213.3	203.5
4.0	30.0	8.0	724.0	113.0	26.0	4.0	522.5	38.2	404.8	389.4
4.0	30.0	9.0	802.0	124.0	26.0	4.0	733.2	43.9	564.2	543.1
4.0	30.0	10.0	844.0	132.0	27.0	4.0	889.6	49.2	670.0	644.5
4.0	30.0	11.0	863.0	138.0	27.0	4.0	983.3	51.8	731.2	703.0
4.0	30.0	12.0	865.0	140.0	27.0	4.0	1,003.0	52.5	743.1	714.4
4.0	30.0	13.0	221.0	472.0	27.0	4.0	681.0	45.0	524.9	505.2
4.0	30.0	14.0	313.0	389.0	27.0	4.0	652.9	43.5	506.6	487.6
4.0	30.0	15.0	762.0	125.0	26.0	4.0	645.2	42.2	498.0	479.4
4.0	30.0	16.0	351.0	192.0	26.0	4.0	351.3	35.1	275.8	264.3
4.0	30.0	17.0	365.0	93.0	25.0	4.0	172.6	28.8	125.5	117.8
4.0	30.0	18.0	78.0	25.0	25.0	4.0	21.4	24.5	18.3	12.8
4.0	30.0	19.0	-	-	26.0	3.0	-	26.0	-	-
4.0	30.0	20.0	-	-	25.0	3.0	-	25.0	-	-
4.0	30.0	21.0	-	-	25.0	3.0	-	25.0	-	-
4.0	30.0	22.0	-	-	25.0	3.0	-	25.0	-	-
4.0	30.0	23.0	-	-	25.0	3.0	-	25.0	-	-
5.0	1.0	-	-	-	25.0	3.0	-	25.0	-	-
5.0	1.0	1.0	-	-	24.0	3.0	-	24.0	-	-
5.0	1.0	2.0	-	-	24.0	3.0	-	24.0	-	-
5.0	1.0	3.0	-	-	24.0	3.0	-	24.0	-	-
5.0	1.0	4.0	-	-	24.0	3.0	-	24.0	-	-
5.0	1.0	5.0	-	-	24.0	3.0	-	24.0	-	-
5.0	1.0	6.0	346.0	51.0	25.0	4.0	75.8	25.4	49.1	43.0
5.0	1.0	7.0	621.0	86.0	26.0	4.0	293.2	32.0	215.9	206.0
5.0	1.0	8.0	746.0	107.0	27.0	4.0	529.3	39.4	407.5	392.0

5.0	1.0	9.0	805.0	126.0	28.0	4.0	737.2	46.0	561.2	540.2
5.0	1.0	10.0	531.0	338.0	28.0	4.0	820.3	48.5	620.1	596.7
5.0	1.0	11.0	530.0	390.0	28.0	3.0	918.5	53.2	677.8	652.0
5.0	1.0	12.0	827.0	168.0	28.0	3.0	999.1	55.5	728.1	700.1
5.0	1.0	13.0	757.0	205.0	28.0	3.0	930.5	54.0	683.3	657.3
5.0	1.0	14.0	22.0	311.0	28.0	3.0	317.1	38.2	253.0	242.2
5.0	1.0	15.0	2.0	174.0	28.0	3.0	167.3	32.1	137.6	129.6
5.0	1.0	16.0	-	24.0	27.0	3.0	22.8	26.6	19.2	13.8
5.0	1.0	17.0	31.0	108.0	27.0	3.0	108.5	28.4	89.3	82.4
5.0	1.0	18.0	-	17.0	26.0	3.0	16.1	25.2	13.7	8.3
5.0	1.0	19.0	-	-	26.0	4.0	-	26.0	-	-
5.0	1.0	20.0	-	-	25.0	4.0	-	25.0	-	-
5.0	1.0	21.0	-	-	25.0	3.0	-	25.0	-	-
5.0	1.0	22.0	-	-	25.0	3.0	-	25.0	-	-
5.0	1.0	23.0	-	-	25.0	3.0	-	25.0	-	-
5.0	2.0	-	-	-	25.0	3.0	-	25.0	-	-
5.0	2.0	1.0	-	-	25.0	3.0	-	25.0	-	-
5.0	2.0	2.0	-	-	25.0	3.0	-	25.0	-	-
5.0	2.0	3.0	-	-	25.0	3.0	-	25.0	-	-
5.0	2.0	4.0	-	-	25.0	3.0	-	25.0	-	-
5.0	2.0	5.0	-	-	25.0	4.0	-	25.0	-	-
5.0	2.0	6.0	247.0	61.0	25.0	4.0	76.2	25.4	53.8	47.6
5.0	2.0	7.0	231.0	152.0	26.0	4.0	223.1	30.3	175.6	166.8
5.0	2.0	8.0	157.0	265.0	26.0	5.0	345.1	33.0	280.0	268.4
5.0	2.0	9.0	372.0	325.0	27.0	5.0	603.0	40.0	474.9	457.1
5.0	2.0	10.0	320.0	417.0	27.0	5.0	704.8	42.8	549.0	528.4
5.0	2.0	11.0	466.0	411.0	28.0	4.0	875.9	49.8	658.4	633.4
5.0	2.0	12.0	497.0	418.0	28.0	4.0	923.4	51.3	688.4	662.1
5.0	2.0	13.0	248.0	468.0	28.0	3.0	707.1	48.2	535.9	515.8
5.0	2.0	14.0	381.0	367.0	28.0	2.0	686.8	49.4	516.4	497.1
5.0	2.0	15.0	583.0	210.0	28.0	2.0	607.4	47.1	458.2	440.9
5.0	2.0	16.0	396.0	184.0	27.0	1.0	366.2	41.5	277.6	266.1
5.0	2.0	17.0	277.0	104.0	27.0	1.0	161.8	33.0	118.5	111.0
5.0	2.0	18.0	30.0	26.0	26.0	1.0	23.2	25.6	19.7	14.2
5.0	2.0	19.0	-	-	26.0	1.0	-	26.0	-	-
5.0	2.0	20.0	-	-	26.0	1.0	-	26.0	-	-
5.0	2.0	21.0	-	-	25.0	1.0	-	25.0	-	-
5.0	2.0	22.0	-	-	25.0	1.0	-	25.0	-	-
5.0	2.0	23.0	-	-	25.0	1.0	-	25.0	-	-
5.0	3.0	-	-	-	24.0	2.0	-	24.0	-	-
5.0	3.0	1.0	-	-	24.0	2.0	-	24.0	-	-
5.0	3.0	2.0	-	-	24.0	2.0	-	24.0	-	-
5.0	3.0	3.0	-	-	24.0	2.0	-	24.0	-	-
5.0	3.0	4.0	-	-	24.0	2.0	-	24.0	-	-
5.0	3.0	5.0	-	-	24.0	2.0	-	24.0	-	-
5.0	3.0	6.0	77.0	60.0	24.0	3.0	61.7	23.9	49.2	43.2
5.0	3.0	7.0	559.0	98.0	25.0	3.0	284.5	31.3	212.2	202.4
5.0	3.0	8.0	9.0	194.0	26.0	3.0	189.7	30.5	157.0	148.7
5.0	3.0	9.0	-	89.0	27.0	3.0	84.8	28.4	71.0	64.5
5.0	3.0	10.0	-	103.0	27.0	2.0	98.3	28.6	82.2	75.5
5.0	3.0	11.0	22.0	357.0	27.0	2.0	365.8	36.7	294.1	282.1
5.0	3.0	12.0	62.0	461.0	27.0	2.0	516.5	42.2	403.8	388.4
5.0	3.0	13.0	12.0	256.0	26.0	2.0	257.2	34.3	209.3	199.6
5.0	3.0	14.0	3.0	165.0	26.0	2.0	160.2	30.2	132.9	125.1
5.0	3.0	15.0	34.0	277.0	26.0	2.0	290.5	33.7	236.7	226.3
5.0	3.0	16.0	-	97.0	26.0	2.0	92.2	28.3	77.2	70.6
5.0	3.0	17.0	38.0	111.0	25.0	2.0	112.8	27.0	93.1	86.1
5.0	3.0	18.0	-	19.0	24.0	2.0	18.0	23.1	15.5	10.1
5.0	3.0	19.0	-	-	24.0	2.0	-	24.0	-	-
5.0	3.0	20.0	-	-	24.0	2.0	-	24.0	-	-
5.0	3.0	21.0	-	-	23.0	2.0	-	23.0	-	-
5.0	3.0	22.0	-	-	23.0	2.0	-	23.0	-	-
5.0	3.0	23.0	-	-	23.0	2.0	-	23.0	-	-
5.0	4.0	-	-	-	23.0	2.0	-	23.0	-	-
5.0	4.0	1.0	-	-	23.0	2.0	-	23.0	-	-
5.0	4.0	2.0	-	-	22.0	3.0	-	22.0	-	-
5.0	4.0	3.0	-	-	22.0	4.0	-	22.0	-	-
5.0	4.0	4.0	-	-	21.0	5.0	-	21.0	-	-
5.0	4.0	5.0	-	-	21.0	5.0	-	21.0	-	-
5.0	4.0	6.0	219.0	67.0	21.0	5.0	79.9	21.3	59.1	52.9
5.0	4.0	7.0	497.0	123.0	22.0	6.0	286.2	26.7	220.9	211.0
5.0	4.0	8.0	670.0	145.0	23.0	5.0	523.9	34.0	415.5	399.7
5.0	4.0	9.0	778.0	152.0	24.0	5.0	742.0	40.4	581.5	559.7
5.0	4.0	10.0	868.0	138.0	25.0	5.0	914.8	45.7	701.4	674.6
5.0	4.0	11.0	891.0	144.0	25.0	5.0	1,013.3	48.3	767.6	737.7
5.0	4.0	12.0	898.0	146.0	26.0	5.0	1,037.9	50.0	779.0	748.6
5.0	4.0	13.0	900.0	137.0	26.0	5.0	990.0	49.0	746.7	717.8
5.0	4.0	14.0	874.0	130.0	26.0	5.0	864.2	46.2	660.0	635.0
5.0	4.0	15.0	826.0	119.0	25.0	5.0	679.5	40.8	527.9	508.1
5.0	4.0	16.0	742.0	101.0	25.0	4.0	447.9	36.5	341.5	328.1
5.0	4.0	17.0	580.0	74.0	24.0	3.0	204.3	29.5	140.5	132.5

5.0	4.0	18.0	201.0	27.0	23.0	3.0	20.8	22.5	17.9	12.5
5.0	4.0	19.0	-	-	23.0	3.0	-	23.0	-	-
5.0	4.0	20.0	-	-	22.0	3.0	-	22.0	-	-
5.0	4.0	21.0	-	-	22.0	3.0	-	22.0	-	-
5.0	4.0	22.0	-	-	22.0	2.0	-	22.0	-	-
5.0	4.0	23.0	-	-	22.0	2.0	-	22.0	-	-
5.0	5.0	-	-	-	22.0	2.0	-	22.0	-	-
5.0	5.0	1.0	-	-	22.0	2.0	-	22.0	-	-
5.0	5.0	2.0	-	-	21.0	2.0	-	21.0	-	-
5.0	5.0	3.0	-	-	21.0	2.0	-	21.0	-	-
5.0	5.0	4.0	-	-	21.0	2.0	-	21.0	-	-
5.0	5.0	5.0	-	-	21.0	2.0	-	21.0	-	-
5.0	5.0	6.0	440.0	49.0	23.0	2.0	84.2	23.6	52.1	46.0
5.0	5.0	7.0	690.0	80.0	24.0	3.0	311.3	31.1	229.3	219.1
5.0	5.0	8.0	808.0	99.0	25.0	3.0	556.1	39.4	427.8	411.6
5.0	5.0	9.0	872.0	111.0	26.0	3.0	769.1	46.7	583.4	561.5
5.0	5.0	10.0	908.0	119.0	27.0	3.0	931.1	52.4	689.2	662.9
5.0	5.0	11.0	925.0	123.0	27.0	3.0	1,025.1	55.2	748.1	719.1
5.0	5.0	12.0	929.0	124.0	27.0	3.0	1,046.3	56.0	760.3	730.8
5.0	5.0	13.0	919.0	122.0	27.0	3.0	992.3	54.8	725.8	697.9
5.0	5.0	14.0	894.0	115.0	27.0	3.0	865.3	51.4	642.8	618.4
5.0	5.0	15.0	849.0	105.0	27.0	3.0	679.0	46.3	512.5	493.3
5.0	5.0	16.0	768.0	90.0	26.0	3.0	449.5	38.8	338.2	324.9
5.0	5.0	17.0	612.0	67.0	25.0	2.0	204.8	31.4	138.0	130.0
5.0	5.0	18.0	238.0	26.0	24.0	2.0	19.8	23.6	16.9	11.5
5.0	5.0	19.0	-	-	23.0	2.0	-	23.0	-	-
5.0	5.0	20.0	-	-	23.0	2.0	-	23.0	-	-
5.0	5.0	21.0	-	-	23.0	2.0	-	23.0	-	-
5.0	5.0	22.0	-	-	22.0	2.0	-	22.0	-	-
5.0	5.0	23.0	-	-	22.0	2.0	-	22.0	-	-
5.0	6.0	-	-	-	22.0	2.0	-	22.0	-	-
5.0	6.0	1.0	-	-	22.0	2.0	-	22.0	-	-
5.0	6.0	2.0	-	-	22.0	2.0	-	22.0	-	-
5.0	6.0	3.0	-	-	22.0	2.0	-	22.0	-	-
5.0	6.0	4.0	-	-	22.0	1.0	-	22.0	-	-
5.0	6.0	5.0	-	-	22.0	1.0	-	22.0	-	-
5.0	6.0	6.0	416.0	51.0	23.0	-	84.1	23.4	53.1	47.0
5.0	6.0	7.0	670.0	84.0	24.0	-	308.7	36.2	222.2	212.2
5.0	6.0	8.0	791.0	103.0	25.0	-	550.4	48.6	404.0	388.6
5.0	6.0	9.0	859.0	115.0	26.0	-	762.9	58.6	542.5	522.2
5.0	6.0	10.0	896.0	122.0	27.0	1.0	922.8	59.8	655.8	630.9
5.0	6.0	11.0	909.0	130.0	27.0	2.0	1,015.6	58.3	728.8	700.7
5.0	6.0	12.0	906.0	135.0	28.0	2.0	1,033.3	60.0	734.4	706.1
5.0	6.0	13.0	901.0	129.0	28.0	2.0	981.3	58.7	702.4	675.5
5.0	6.0	14.0	868.0	126.0	27.0	3.0	853.6	51.1	635.2	611.2
5.0	6.0	15.0	817.0	116.0	27.0	3.0	669.2	46.0	506.0	487.1
5.0	6.0	16.0	733.0	99.0	26.0	3.0	440.9	38.5	332.7	319.5
5.0	6.0	17.0	575.0	73.0	25.0	3.0	201.9	30.4	138.2	130.2
5.0	6.0	18.0	209.0	27.0	24.0	3.0	20.7	23.6	17.8	12.3
5.0	6.0	19.0	-	-	24.0	3.0	-	24.0	-	-
5.0	6.0	20.0	-	-	23.0	3.0	-	23.0	-	-
5.0	6.0	21.0	-	-	23.0	3.0	-	23.0	-	-
5.0	6.0	22.0	-	-	23.0	3.0	-	23.0	-	-
5.0	6.0	23.0	-	-	23.0	3.0	-	23.0	-	-
5.0	7.0	-	-	-	23.0	3.0	-	23.0	-	-
5.0	7.0	1.0	-	-	23.0	3.0	-	23.0	-	-
5.0	7.0	2.0	-	-	23.0	3.0	-	23.0	-	-
5.0	7.0	3.0	-	-	23.0	2.0	-	23.0	-	-
5.0	7.0	4.0	-	-	23.0	2.0	-	23.0	-	-
5.0	7.0	5.0	-	-	23.0	2.0	-	23.0	-	-
5.0	7.0	6.0	387.0	54.0	25.0	2.0	84.5	25.7	54.1	48.0
5.0	7.0	7.0	641.0	90.0	26.0	3.0	304.9	32.9	223.9	213.9
5.0	7.0	8.0	764.0	111.0	27.0	3.0	543.1	41.0	414.9	399.1
5.0	7.0	9.0	834.0	124.0	27.0	3.0	754.9	47.3	571.0	549.6
5.0	7.0	10.0	876.0	131.0	28.0	3.0	913.2	52.9	674.2	648.5
5.0	7.0	11.0	895.0	136.0	28.0	4.0	1,007.0	53.3	742.4	713.7
5.0	7.0	12.0	898.0	138.0	29.0	4.0	1,027.3	55.0	750.7	721.6
5.0	7.0	13.0	882.0	139.0	28.0	4.0	972.2	52.8	718.6	691.0
5.0	7.0	14.0	853.0	133.0	28.0	4.0	847.2	49.8	634.9	610.9
5.0	7.0	15.0	804.0	121.0	28.0	4.0	664.9	45.2	505.1	486.1
5.0	7.0	16.0	721.0	103.0	27.0	4.0	438.9	38.3	331.8	318.7
5.0	7.0	17.0	557.0	77.0	26.0	4.0	201.5	30.8	138.5	130.5
5.0	7.0	18.0	186.0	30.0	25.0	4.0	23.1	24.6	19.7	14.3
5.0	7.0	19.0	-	-	25.0	4.0	-	25.0	-	-
5.0	7.0	20.0	-	-	25.0	4.0	-	25.0	-	-
5.0	7.0	21.0	-	-	25.0	4.0	-	25.0	-	-
5.0	7.0	22.0	-	-	24.0	4.0	-	24.0	-	-
5.0	7.0	23.0	-	-	24.0	4.0	-	24.0	-	-
5.0	8.0	-	-	-	24.0	4.0	-	24.0	-	-
5.0	8.0	1.0	-	-	24.0	4.0	-	24.0	-	-
5.0	8.0	2.0	-	-	23.0	4.0	-	23.0	-	-

5.0	8.0	3.0	-	-	23.0	4.0	-	23.0	-	-
5.0	8.0	4.0	-	-	23.0	3.0	-	23.0	-	-
5.0	8.0	5.0	-	-	23.0	3.0	-	23.0	-	-
5.0	8.0	6.0	387.0	56.0	25.0	4.0	86.6	25.6	55.8	49.7
5.0	8.0	7.0	358.0	139.0	26.0	4.0	254.7	31.1	196.0	186.6
5.0	8.0	8.0	770.0	111.0	27.0	4.0	546.4	39.7	420.0	404.1
5.0	8.0	9.0	840.0	124.0	27.0	4.0	759.0	45.6	579.0	557.3
5.0	8.0	10.0	878.0	132.0	28.0	4.0	915.3	50.8	683.3	657.2
5.0	8.0	11.0	897.0	136.0	29.0	4.0	1,008.0	54.3	739.2	710.7
5.0	8.0	12.0	899.0	137.0	29.0	4.0	1,026.4	55.0	750.1	721.0
5.0	8.0	13.0	884.0	137.0	29.0	4.0	971.3	53.8	714.2	686.8
5.0	8.0	14.0	855.0	131.0	29.0	4.0	846.1	50.7	630.9	607.1
5.0	8.0	15.0	803.0	121.0	28.0	4.0	663.6	45.1	504.2	485.3
5.0	8.0	16.0	713.0	105.0	27.0	4.0	436.8	38.2	330.4	317.4
5.0	8.0	17.0	89.0	118.0	26.0	4.0	130.7	29.0	104.5	97.3
5.0	8.0	18.0	176.0	31.0	25.0	3.0	23.9	24.4	20.4	14.9
5.0	8.0	19.0	-	-	25.0	3.0	-	25.0	-	-
5.0	8.0	20.0	-	-	25.0	4.0	-	25.0	-	-
5.0	8.0	21.0	-	-	25.0	4.0	-	25.0	-	-
5.0	8.0	22.0	-	-	24.0	4.0	-	24.0	-	-
5.0	8.0	23.0	-	-	24.0	4.0	-	24.0	-	-
5.0	9.0	-	-	-	24.0	4.0	-	24.0	-	-
5.0	9.0	1.0	-	-	23.0	4.0	-	23.0	-	-
5.0	9.0	2.0	-	-	23.0	4.0	-	23.0	-	-
5.0	9.0	3.0	-	-	23.0	4.0	-	23.0	-	-
5.0	9.0	4.0	-	-	23.0	4.0	-	23.0	-	-
5.0	9.0	5.0	-	-	23.0	4.0	-	23.0	-	-
5.0	9.0	6.0	204.0	62.0	25.0	4.0	74.9	25.3	54.2	48.1
5.0	9.0	7.0	614.0	100.0	26.0	5.0	305.6	31.7	227.0	216.8
5.0	9.0	8.0	746.0	121.0	26.0	5.0	542.1	37.5	421.6	405.6
5.0	9.0	9.0	820.0	135.0	27.0	5.0	754.5	43.8	581.1	559.3
5.0	9.0	10.0	861.0	143.0	28.0	5.0	910.2	48.7	687.2	660.9
5.0	9.0	11.0	877.0	151.0	28.0	4.0	1,002.2	53.2	739.4	710.8
5.0	9.0	12.0	875.0	156.0	28.0	4.0	1,020.0	53.9	750.0	720.9
5.0	9.0	13.0	855.0	159.0	28.0	4.0	970.2	52.8	717.4	689.8
5.0	9.0	14.0	826.0	151.0	28.0	4.0	844.5	49.7	633.2	609.2
5.0	9.0	15.0	773.0	138.0	28.0	4.0	659.8	45.0	501.7	482.9
5.0	9.0	16.0	683.0	118.0	27.0	4.0	435.3	38.2	330.1	317.0
5.0	9.0	17.0	513.0	88.0	26.0	4.0	201.8	30.8	140.9	132.9
5.0	9.0	18.0	148.0	33.0	25.0	4.0	25.5	24.7	21.7	16.2
5.0	9.0	19.0	-	-	25.0	4.0	-	25.0	-	-
5.0	9.0	20.0	-	-	25.0	4.0	-	25.0	-	-
5.0	9.0	21.0	-	-	25.0	4.0	-	25.0	-	-
5.0	9.0	22.0	-	-	25.0	4.0	-	25.0	-	-
5.0	9.0	23.0	-	-	24.0	5.0	-	24.0	-	-
5.0	10.0	-	-	-	24.0	5.0	-	24.0	-	-
5.0	10.0	1.0	-	-	24.0	5.0	-	24.0	-	-
5.0	10.0	2.0	-	-	24.0	4.0	-	24.0	-	-
5.0	10.0	3.0	-	-	24.0	4.0	-	24.0	-	-
5.0	10.0	4.0	-	-	24.0	4.0	-	24.0	-	-
5.0	10.0	5.0	-	-	24.0	4.0	-	24.0	-	-
5.0	10.0	6.0	265.0	71.0	25.0	4.0	87.8	25.7	62.3	56.0
5.0	10.0	7.0	526.0	122.0	25.0	4.0	295.4	31.1	222.8	212.8
5.0	10.0	8.0	126.0	270.0	26.0	5.0	331.2	32.8	269.3	258.0
5.0	10.0	9.0	11.0	239.0	27.0	5.0	236.5	31.8	194.7	185.4
5.0	10.0	10.0	150.0	448.0	28.0	5.0	575.5	40.2	454.5	437.4
5.0	10.0	11.0	517.0	398.0	28.0	4.0	906.5	50.1	680.0	654.1
5.0	10.0	12.0	563.0	385.0	28.0	4.0	949.4	52.0	705.2	678.2
5.0	10.0	13.0	568.0	355.0	28.0	4.0	895.9	50.9	669.4	643.9
5.0	10.0	14.0	706.0	215.0	28.0	4.0	809.1	48.7	610.1	587.1
5.0	10.0	15.0	525.0	231.0	27.0	4.0	582.7	42.1	451.2	434.2
5.0	10.0	16.0	227.0	219.0	27.0	4.0	314.9	35.0	249.4	238.7
5.0	10.0	17.0	403.0	94.0	26.0	3.0	180.8	30.4	129.4	121.7
5.0	10.0	18.0	92.0	35.0	25.0	3.0	28.8	24.7	24.5	19.0
5.0	10.0	19.0	-	-	25.0	3.0	-	25.0	-	-
5.0	10.0	20.0	-	-	25.0	3.0	-	25.0	-	-
5.0	10.0	21.0	-	-	24.0	3.0	-	24.0	-	-
5.0	10.0	22.0	-	-	24.0	3.0	-	24.0	-	-
5.0	10.0	23.0	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	-	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	1.0	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	2.0	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	3.0	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	4.0	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	5.0	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	6.0	114.0	67.0	25.0	3.0	71.6	25.3	55.6	49.5
5.0	11.0	7.0	193.0	163.0	26.0	4.0	219.4	30.2	174.3	165.5
5.0	11.0	8.0	50.0	250.0	27.0	3.0	267.2	33.4	217.5	207.6
5.0	11.0	9.0	209.0	368.0	27.0	3.0	515.9	40.2	406.5	391.0
5.0	11.0	10.0	201.0	447.0	27.0	3.0	619.3	43.7	480.4	462.4
5.0	11.0	11.0	437.0	414.0	28.0	3.0	843.8	50.7	631.0	607.2

5.0	11.0	12.0	455.0	428.0	28.0	3.0	883.9	52.4	655.1	630.2
5.0	11.0	13.0	614.0	328.0	28.0	3.0	910.7	53.2	671.9	646.3
5.0	11.0	14.0	184.0	417.0	28.0	3.0	562.6	44.5	434.4	417.9
5.0	11.0	15.0	270.0	316.0	27.0	4.0	490.5	39.2	387.0	372.1
5.0	11.0	16.0	185.0	223.0	27.0	4.0	299.0	34.4	238.4	227.9
5.0	11.0	17.0	427.0	91.0	26.0	4.0	183.5	30.0	130.7	122.9
5.0	11.0	18.0	115.0	34.0	25.0	3.0	28.1	24.7	23.9	18.4
5.0	11.0	19.0	-	-	25.0	3.0	-	25.0	-	-
5.0	11.0	20.0	-	-	25.0	4.0	-	25.0	-	-
5.0	11.0	21.0	-	-	25.0	4.0	-	25.0	-	-
5.0	11.0	22.0	-	-	24.0	4.0	-	24.0	-	-
5.0	11.0	23.0	-	-	24.0	4.0	-	24.0	-	-
5.0	12.0	-	-	-	24.0	4.0	-	24.0	-	-
5.0	12.0	1.0	-	-	24.0	4.0	-	24.0	-	-
5.0	12.0	2.0	-	-	24.0	4.0	-	24.0	-	-
5.0	12.0	3.0	-	-	24.0	3.0	-	24.0	-	-
5.0	12.0	4.0	-	-	24.0	3.0	-	24.0	-	-
5.0	12.0	5.0	-	-	24.0	3.0	-	24.0	-	-
5.0	12.0	6.0	-	9.0	25.0	3.0	8.5	23.5	7.3	2.1
5.0	12.0	7.0	-	122.0	26.0	4.0	115.3	27.4	97.0	89.9
5.0	12.0	8.0	729.0	123.0	26.0	5.0	533.7	36.9	416.5	400.7
5.0	12.0	9.0	801.0	137.0	27.0	5.0	740.8	43.5	571.4	550.0
5.0	12.0	10.0	841.0	147.0	27.0	5.0	894.2	47.3	680.0	654.1
5.0	12.0	11.0	856.0	157.0	27.0	4.0	985.0	51.8	732.2	704.0
5.0	12.0	12.0	856.0	161.0	28.0	4.0	1,003.2	53.4	739.3	710.8
5.0	12.0	13.0	827.0	171.0	28.0	4.0	953.2	52.3	706.4	679.3
5.0	12.0	14.0	804.0	158.0	27.0	4.0	831.0	48.4	627.4	603.7
5.0	12.0	15.0	758.0	140.0	27.0	4.0	650.2	43.8	497.6	478.9
5.0	12.0	16.0	671.0	118.0	27.0	5.0	428.9	36.8	327.4	314.4
5.0	12.0	17.0	122.0	121.0	26.0	5.0	140.7	28.8	111.3	104.0
5.0	12.0	18.0	143.0	35.0	25.0	5.0	27.1	24.6	23.1	17.6
5.0	12.0	19.0	-	-	25.0	5.0	-	25.0	-	-
5.0	12.0	20.0	-	-	25.0	5.0	-	25.0	-	-
5.0	12.0	21.0	-	-	25.0	5.0	-	25.0	-	-
5.0	12.0	22.0	-	-	25.0	5.0	-	25.0	-	-
5.0	12.0	23.0	-	-	25.0	5.0	-	25.0	-	-
5.0	13.0	-	-	-	25.0	5.0	-	25.0	-	-
5.0	13.0	1.0	-	-	25.0	5.0	-	25.0	-	-
5.0	13.0	2.0	-	-	25.0	5.0	-	25.0	-	-
5.0	13.0	3.0	-	-	25.0	5.0	-	25.0	-	-
5.0	13.0	4.0	-	-	25.0	5.0	-	25.0	-	-
5.0	13.0	5.0	-	-	25.0	5.0	-	25.0	-	-
5.0	13.0	6.0	290.0	70.0	25.0	5.0	89.5	25.7	62.5	56.2
5.0	13.0	7.0	540.0	116.0	26.0	5.0	295.8	31.5	222.2	212.1
5.0	13.0	8.0	275.0	260.0	27.0	5.0	406.8	35.5	324.3	311.4
5.0	13.0	9.0	736.0	167.0	28.0	5.0	722.1	43.8	556.3	535.5
5.0	13.0	10.0	820.0	151.0	28.0	5.0	883.3	48.0	669.2	643.7
5.0	13.0	11.0	408.0	422.0	28.0	5.0	822.0	47.0	626.8	603.1
5.0	13.0	12.0	805.0	183.0	28.0	5.0	981.0	50.4	734.9	706.6
5.0	13.0	13.0	473.0	394.0	28.0	5.0	842.3	47.7	639.9	615.7
5.0	13.0	14.0	106.0	410.0	28.0	5.0	486.2	39.6	385.1	370.3
5.0	13.0	15.0	75.0	315.0	27.0	5.0	353.0	34.8	285.8	274.1
5.0	13.0	16.0	240.0	219.0	27.0	5.0	321.9	33.8	256.3	245.4
5.0	13.0	17.0	342.0	103.0	26.0	5.0	175.0	29.4	128.3	120.6
5.0	13.0	18.0	98.0	33.0	26.0	5.0	27.3	25.7	23.1	17.6
5.0	13.0	19.0	-	-	26.0	5.0	-	26.0	-	-
5.0	13.0	20.0	-	-	26.0	5.0	-	26.0	-	-
5.0	13.0	21.0	-	-	26.0	4.0	-	26.0	-	-
5.0	13.0	22.0	-	-	25.0	4.0	-	25.0	-	-
5.0	13.0	23.0	-	-	25.0	4.0	-	25.0	-	-
5.0	14.0	-	-	-	25.0	4.0	-	25.0	-	-
5.0	14.0	1.0	-	-	25.0	4.0	-	25.0	-	-
5.0	14.0	2.0	-	-	25.0	3.0	-	25.0	-	-
5.0	14.0	3.0	-	-	25.0	3.0	-	25.0	-	-
5.0	14.0	4.0	-	-	25.0	4.0	-	25.0	-	-
5.0	14.0	5.0	-	-	25.0	4.0	-	25.0	-	-
5.0	14.0	6.0	84.0	69.0	25.0	4.0	70.6	25.2	56.1	49.9
5.0	14.0	7.0	110.0	168.0	26.0	4.0	195.7	29.6	158.4	150.0
5.0	14.0	8.0	733.0	113.0	26.0	5.0	526.1	36.9	410.2	394.6
5.0	14.0	9.0	805.0	125.0	27.0	5.0	730.7	43.2	564.3	543.1
5.0	14.0	10.0	847.0	132.0	27.0	5.0	883.6	47.1	672.8	647.2
5.0	14.0	11.0	868.0	135.0	28.0	5.0	973.8	50.4	729.6	701.4
5.0	14.0	12.0	874.0	134.0	28.0	5.0	993.4	51.0	741.8	713.1
5.0	14.0	13.0	857.0	135.0	28.0	5.0	938.9	49.8	705.1	678.1
5.0	14.0	14.0	827.0	129.0	28.0	5.0	816.8	47.1	620.9	597.5
5.0	14.0	15.0	599.0	207.0	27.0	5.0	608.7	41.2	473.0	455.3
5.0	14.0	16.0	691.0	103.0	27.0	5.0	423.1	36.6	322.5	309.7
5.0	14.0	17.0	56.0	120.0	26.0	4.0	124.6	28.9	101.2	94.1
5.0	14.0	18.0	94.0	33.0	26.0	4.0	27.3	25.5	23.2	17.6
5.0	14.0	19.0	-	-	25.0	4.0	-	25.0	-	-
5.0	14.0	20.0	-	-	25.0	4.0	-	25.0	-	-

5.0	14.0	21.0	-	-	25.0	4.0	-	25.0	-	-
5.0	14.0	22.0	-	-	25.0	4.0	-	25.0	-	-
5.0	14.0	23.0	-	-	25.0	4.0	-	25.0	-	-
5.0	15.0	-	-	-	25.0	4.0	-	25.0	-	-
5.0	15.0	1.0	-	-	25.0	4.0	-	25.0	-	-
5.0	15.0	2.0	-	-	25.0	4.0	-	25.0	-	-
5.0	15.0	3.0	-	-	24.0	4.0	-	24.0	-	-
5.0	15.0	4.0	-	-	24.0	4.0	-	24.0	-	-
5.0	15.0	5.0	-	-	25.0	4.0	-	25.0	-	-
5.0	15.0	6.0	131.0	72.0	25.0	4.0	77.7	25.4	59.9	53.7
5.0	15.0	7.0	471.0	123.0	25.0	4.0	277.3	30.6	210.6	200.9
5.0	15.0	8.0	636.0	152.0	26.0	5.0	509.0	36.7	398.5	383.3
5.0	15.0	9.0	232.0	366.0	26.0	5.0	529.8	37.7	422.5	406.5
5.0	15.0	10.0	386.0	392.0	26.0	5.0	731.6	42.3	571.5	550.0
5.0	15.0	11.0	12.0	254.0	26.0	5.0	255.3	32.1	210.0	200.3
5.0	15.0	12.0	4.0	159.0	26.0	5.0	156.3	28.8	130.6	122.8
5.0	15.0	13.0	8.0	196.0	26.0	5.0	195.1	29.4	162.5	154.0
5.0	15.0	14.0	20.0	304.0	26.0	5.0	307.6	32.0	252.9	242.1
5.0	15.0	15.0	40.0	289.0	26.0	5.0	304.4	32.2	249.8	239.0
5.0	15.0	16.0	45.0	209.0	26.0	5.0	219.2	30.3	180.6	171.7
5.0	15.0	17.0	-	10.0	25.0	5.0	9.5	24.4	8.1	2.8
5.0	15.0	18.0	-	26.0	25.0	5.0	24.7	24.2	21.1	15.6
5.0	15.0	19.0	-	-	25.0	5.0	-	25.0	-	-
5.0	15.0	20.0	-	-	25.0	4.0	-	25.0	-	-
5.0	15.0	21.0	-	-	24.0	4.0	-	24.0	-	-
5.0	15.0	22.0	-	-	24.0	4.0	-	24.0	-	-
5.0	15.0	23.0	-	-	24.0	3.0	-	24.0	-	-
5.0	16.0	-	-	-	24.0	3.0	-	24.0	-	-
5.0	16.0	1.0	-	-	24.0	3.0	-	24.0	-	-
5.0	16.0	2.0	-	-	23.0	3.0	-	23.0	-	-
5.0	16.0	3.0	-	-	23.0	3.0	-	23.0	-	-
5.0	16.0	4.0	-	-	23.0	3.0	-	23.0	-	-
5.0	16.0	5.0	-	-	23.0	3.0	-	23.0	-	-
5.0	16.0	6.0	-	48.0	23.0	4.0	45.4	22.5	39.1	33.2
5.0	16.0	7.0	48.0	160.0	23.0	5.0	166.7	25.5	139.5	131.6
5.0	16.0	8.0	-	133.0	23.0	5.0	126.4	24.8	107.7	100.4
5.0	16.0	9.0	25.0	293.0	24.0	5.0	298.4	29.6	248.2	237.5
5.0	16.0	10.0	44.0	391.0	24.0	5.0	419.2	32.8	343.6	330.1
5.0	16.0	11.0	45.0	430.0	24.0	5.0	464.1	34.0	378.0	363.5
5.0	16.0	12.0	99.0	494.0	24.0	5.0	581.9	36.8	467.7	450.1
5.0	16.0	13.0	50.0	426.0	24.0	5.0	462.7	34.4	376.2	361.7
5.0	16.0	14.0	56.0	380.0	23.0	5.0	414.8	32.0	341.1	327.7
5.0	16.0	15.0	92.0	322.0	23.0	5.0	370.6	30.9	305.6	293.3
5.0	16.0	16.0	197.0	225.0	23.0	5.0	305.7	29.4	249.5	238.8
5.0	16.0	17.0	60.0	122.0	22.0	5.0	127.3	24.2	105.6	98.4
5.0	16.0	18.0	12.0	33.0	22.0	5.0	30.0	21.5	26.0	20.4
5.0	16.0	19.0	-	-	22.0	5.0	-	22.0	-	-
5.0	16.0	20.0	-	-	22.0	5.0	-	22.0	-	-
5.0	16.0	21.0	-	-	22.0	5.0	-	22.0	-	-
5.0	16.0	22.0	-	-	21.0	5.0	-	21.0	-	-
5.0	16.0	23.0	-	-	21.0	5.0	-	21.0	-	-
5.0	17.0	-	-	-	21.0	5.0	-	21.0	-	-
5.0	17.0	1.0	-	-	21.0	5.0	-	21.0	-	-
5.0	17.0	2.0	-	-	21.0	5.0	-	21.0	-	-
5.0	17.0	3.0	-	-	22.0	5.0	-	22.0	-	-
5.0	17.0	4.0	-	-	22.0	5.0	-	22.0	-	-
5.0	17.0	5.0	-	-	22.0	5.0	-	22.0	-	-
5.0	17.0	6.0	372.0	67.0	23.0	5.0	95.0	23.7	63.8	57.5
5.0	17.0	7.0	620.0	106.0	24.0	6.0	312.7	29.3	235.4	225.0
5.0	17.0	8.0	742.0	130.0	25.0	6.0	546.1	35.5	429.2	412.9
5.0	17.0	9.0	809.0	148.0	25.0	6.0	754.7	40.1	592.2	569.9
5.0	17.0	10.0	859.0	152.0	26.0	6.0	915.6	44.7	705.6	678.6
5.0	17.0	11.0	517.0	399.0	26.0	6.0	901.9	44.8	695.9	669.3
5.0	17.0	12.0	656.0	326.0	26.0	6.0	975.1	46.2	746.9	718.0
5.0	17.0	13.0	700.0	275.0	26.0	6.0	935.7	45.5	718.9	691.2
5.0	17.0	14.0	813.0	166.0	26.0	6.0	843.0	43.6	652.4	627.7
5.0	17.0	15.0	756.0	153.0	25.0	6.0	659.6	38.7	517.9	498.5
5.0	17.0	16.0	656.0	134.0	25.0	6.0	436.5	33.9	338.7	325.4
5.0	17.0	17.0	480.0	101.0	24.0	5.0	205.0	28.3	147.1	138.9
5.0	17.0	18.0	139.0	41.0	24.0	5.0	33.4	23.8	28.6	23.0
5.0	17.0	19.0	-	-	24.0	5.0	-	24.0	-	-
5.0	17.0	20.0	-	-	23.0	5.0	-	23.0	-	-
5.0	17.0	21.0	-	-	23.0	5.0	-	23.0	-	-
5.0	17.0	22.0	-	-	23.0	5.0	-	23.0	-	-
5.0	17.0	23.0	-	-	22.0	4.0	-	22.0	-	-
5.0	18.0	-	-	-	22.0	4.0	-	22.0	-	-
5.0	18.0	1.0	-	-	22.0	4.0	-	22.0	-	-
5.0	18.0	2.0	-	-	22.0	4.0	-	22.0	-	-
5.0	18.0	3.0	-	-	21.0	4.0	-	21.0	-	-
5.0	18.0	4.0	-	-	21.0	4.0	-	21.0	-	-
5.0	18.0	5.0	-	-	22.0	4.0	-	22.0	-	-

5.0	18.0	6.0	-	35.0	23.0	5.0	33.2	22.3	28.6	23.0
5.0	18.0	7.0	620.0	104.0	24.0	5.0	310.6	29.7	233.2	222.9
5.0	18.0	8.0	742.0	127.0	25.0	6.0	542.7	35.4	426.6	410.4
5.0	18.0	9.0	810.0	143.0	25.0	6.0	749.9	40.0	588.6	566.5
5.0	18.0	10.0	307.0	426.0	26.0	6.0	693.5	40.3	547.2	526.7
5.0	18.0	11.0	882.0	151.0	26.0	6.0	999.1	46.3	764.7	735.0
5.0	18.0	12.0	884.0	154.0	26.0	6.0	1,018.6	47.2	775.9	745.7
5.0	18.0	13.0	875.0	150.0	26.0	6.0	967.0	46.2	740.1	711.5
5.0	18.0	14.0	850.0	142.0	26.0	6.0	849.3	43.8	656.6	631.7
5.0	18.0	15.0	227.0	326.0	26.0	6.0	466.6	35.9	374.5	360.1
5.0	18.0	16.0	713.0	112.0	25.0	6.0	441.5	33.6	341.7	328.3
5.0	18.0	17.0	544.0	87.0	24.0	5.0	208.0	28.3	146.3	138.2
5.0	18.0	18.0	184.0	39.0	24.0	5.0	30.3	23.8	25.9	20.3
5.0	18.0	19.0	-	-	23.0	4.0	-	23.0	-	-
5.0	18.0	20.0	-	-	23.0	4.0	-	23.0	-	-
5.0	18.0	21.0	-	-	23.0	4.0	-	23.0	-	-
5.0	18.0	22.0	-	-	23.0	4.0	-	23.0	-	-
5.0	18.0	23.0	-	-	23.0	4.0	-	23.0	-	-
5.0	19.0	-	-	-	23.0	4.0	-	23.0	-	-
5.0	19.0	1.0	-	-	22.0	4.0	-	22.0	-	-
5.0	19.0	2.0	-	-	22.0	4.0	-	22.0	-	-
5.0	19.0	3.0	-	-	22.0	4.0	-	22.0	-	-
5.0	19.0	4.0	-	-	22.0	4.0	-	22.0	-	-
5.0	19.0	5.0	-	-	22.0	4.0	-	22.0	-	-
5.0	19.0	6.0	360.0	68.0	23.0	4.0	94.7	23.8	64.1	57.8
5.0	19.0	7.0	617.0	104.0	24.0	5.0	309.4	29.8	232.2	221.9
5.0	19.0	8.0	745.0	125.0	25.0	5.0	541.9	36.5	423.5	407.4
5.0	19.0	9.0	814.0	139.0	26.0	5.0	748.2	42.6	579.5	557.7
5.0	19.0	10.0	857.0	146.0	26.0	5.0	902.0	46.5	688.8	662.5
5.0	19.0	11.0	876.0	151.0	27.0	5.0	992.5	49.8	745.7	716.8
5.0	19.0	12.0	879.0	153.0	27.0	6.0	1,011.9	48.1	767.3	737.5
5.0	19.0	13.0	869.0	150.0	27.0	6.0	960.7	47.1	731.9	703.7
5.0	19.0	14.0	841.0	143.0	26.0	6.0	842.3	43.6	651.7	627.0
5.0	19.0	15.0	791.0	131.0	26.0	6.0	660.5	39.8	515.7	496.4
5.0	19.0	16.0	704.0	113.0	26.0	5.0	438.2	36.0	335.3	322.1
5.0	19.0	17.0	544.0	86.0	25.0	5.0	207.2	29.3	144.9	136.8
5.0	19.0	18.0	206.0	38.0	24.0	4.0	29.5	23.8	25.2	19.6
5.0	19.0	19.0	-	-	24.0	4.0	-	24.0	-	-
5.0	19.0	20.0	-	-	23.0	4.0	-	23.0	-	-
5.0	19.0	21.0	-	-	23.0	3.0	-	23.0	-	-
5.0	19.0	22.0	-	-	23.0	3.0	-	23.0	-	-
5.0	19.0	23.0	-	-	23.0	3.0	-	23.0	-	-
5.0	20.0	-	-	-	23.0	3.0	-	23.0	-	-
5.0	20.0	1.0	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	2.0	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	3.0	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	4.0	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	5.0	-	-	23.0	2.0	-	23.0	-	-
5.0	20.0	6.0	368.0	65.0	24.0	2.0	92.8	24.9	61.8	55.5
5.0	20.0	7.0	607.0	102.0	25.0	3.0	303.9	31.9	225.6	215.5
5.0	20.0	8.0	734.0	122.0	26.0	4.0	532.4	38.5	411.8	396.2
5.0	20.0	9.0	808.0	133.0	26.0	4.0	737.2	44.1	566.7	545.4
5.0	20.0	10.0	832.0	153.0	27.0	5.0	890.3	47.2	677.3	651.5
5.0	20.0	11.0	854.0	157.0	27.0	5.0	976.1	49.4	734.9	706.6
5.0	20.0	12.0	861.0	157.0	27.0	5.0	997.2	50.1	748.3	719.3
5.0	20.0	13.0	851.0	153.0	27.0	5.0	946.0	49.0	713.6	686.2
5.0	20.0	14.0	505.0	319.0	26.0	5.0	736.6	43.3	571.5	550.1
5.0	20.0	15.0	786.0	127.0	26.0	5.0	653.0	41.0	506.6	487.6
5.0	20.0	16.0	708.0	108.0	26.0	5.0	435.1	36.0	332.8	319.7
5.0	20.0	17.0	560.0	81.0	25.0	4.0	206.3	29.9	143.0	134.9
5.0	20.0	18.0	228.0	37.0	24.0	4.0	28.6	23.8	24.5	18.9
5.0	20.0	19.0	-	-	24.0	4.0	-	24.0	-	-
5.0	20.0	20.0	-	-	23.0	3.0	-	23.0	-	-
5.0	20.0	21.0	-	-	23.0	3.0	-	23.0	-	-
5.0	20.0	22.0	-	-	23.0	3.0	-	23.0	-	-
5.0	20.0	23.0	-	-	23.0	3.0	-	23.0	-	-
5.0	21.0	-	-	-	22.0	3.0	-	22.0	-	-
5.0	21.0	1.0	-	-	22.0	3.0	-	22.0	-	-
5.0	21.0	2.0	-	-	22.0	3.0	-	22.0	-	-
5.0	21.0	3.0	-	-	22.0	3.0	-	22.0	-	-
5.0	21.0	4.0	-	-	22.0	3.0	-	22.0	-	-
5.0	21.0	5.0	-	-	22.0	3.0	-	22.0	-	-
5.0	21.0	6.0	387.0	62.0	23.0	3.0	92.0	23.8	60.5	54.3
5.0	21.0	7.0	622.0	97.0	24.0	3.0	303.9	30.9	226.2	216.0
5.0	21.0	8.0	743.0	119.0	25.0	4.0	534.7	37.6	415.4	399.7
5.0	21.0	9.0	810.0	133.0	26.0	4.0	738.0	44.1	567.2	545.9
5.0	21.0	10.0	846.0	143.0	26.0	4.0	887.9	48.2	672.1	646.5
5.0	21.0	11.0	860.0	151.0	27.0	4.0	975.4	51.6	726.0	698.0
5.0	21.0	12.0	857.0	156.0	27.0	4.0	991.5	52.2	735.7	707.3
5.0	21.0	13.0	850.0	150.0	27.0	4.0	941.6	51.1	702.5	675.6
5.0	21.0	14.0	817.0	146.0	27.0	4.0	824.4	48.2	622.9	599.4

5.0	21.0	15.0	766.0	134.0	26.0	4.0	646.3	42.7	497.2	478.5
5.0	21.0	16.0	685.0	114.0	26.0	4.0	430.3	37.0	327.8	314.8
5.0	21.0	17.0	533.0	85.0	25.0	3.0	203.9	30.4	142.1	134.0
5.0	21.0	18.0	211.0	38.0	24.0	2.0	29.4	23.9	25.2	19.6
5.0	21.0	19.0	-	-	23.0	2.0	-	23.0	-	-
5.0	21.0	20.0	-	-	23.0	2.0	-	23.0	-	-
5.0	21.0	21.0	-	-	23.0	2.0	-	23.0	-	-
5.0	21.0	22.0	-	-	22.0	2.0	-	22.0	-	-
5.0	21.0	23.0	-	-	22.0	2.0	-	22.0	-	-
5.0	22.0	-	-	-	22.0	2.0	-	22.0	-	-
5.0	22.0	1.0	-	-	22.0	1.0	-	22.0	-	-
5.0	22.0	2.0	-	-	22.0	1.0	-	22.0	-	-
5.0	22.0	3.0	-	-	22.0	1.0	-	22.0	-	-
5.0	22.0	4.0	-	-	22.0	1.0	-	22.0	-	-
5.0	22.0	5.0	-	-	22.0	1.0	-	22.0	-	-
5.0	22.0	6.0	422.0	61.0	23.0	1.0	95.3	24.0	61.7	55.4
5.0	22.0	7.0	656.0	93.0	24.0	1.0	311.2	33.5	227.9	217.8
5.0	22.0	8.0	774.0	113.0	25.0	1.0	545.6	43.7	410.6	395.0
5.0	22.0	9.0	840.0	126.0	26.0	1.0	752.6	52.6	553.0	532.3
5.0	22.0	10.0	879.0	133.0	27.0	1.0	906.5	59.2	646.1	621.6
5.0	22.0	11.0	896.0	138.0	28.0	1.0	996.7	63.6	694.1	667.6
5.0	22.0	12.0	896.0	141.0	28.0	2.0	1,014.6	59.4	723.4	695.5
5.0	22.0	13.0	880.0	141.0	28.0	2.0	960.3	58.1	689.6	663.3
5.0	22.0	14.0	850.0	136.0	28.0	2.0	838.2	54.6	612.0	589.0
5.0	22.0	15.0	798.0	126.0	28.0	2.0	659.5	49.2	490.3	471.9
5.0	22.0	16.0	714.0	109.0	27.0	2.0	438.8	41.2	327.0	314.0
5.0	22.0	17.0	563.0	83.0	26.0	2.0	209.2	32.5	143.5	135.4
5.0	22.0	18.0	243.0	37.0	25.0	2.0	28.6	24.9	24.3	18.8
5.0	22.0	19.0	-	-	24.0	2.0	-	24.0	-	-
5.0	22.0	20.0	-	-	23.0	1.0	-	23.0	-	-
5.0	22.0	21.0	-	-	23.0	1.0	-	23.0	-	-
5.0	22.0	22.0	-	-	23.0	2.0	-	23.0	-	-
5.0	22.0	23.0	-	-	23.0	2.0	-	23.0	-	-
5.0	23.0	-	-	-	23.0	2.0	-	23.0	-	-
5.0	23.0	1.0	-	-	23.0	2.0	-	23.0	-	-
5.0	23.0	2.0	-	-	23.0	2.0	-	23.0	-	-
5.0	23.0	3.0	-	-	22.0	2.0	-	22.0	-	-
5.0	23.0	4.0	-	-	22.0	2.0	-	22.0	-	-
5.0	23.0	5.0	-	-	23.0	2.0	-	23.0	-	-
5.0	23.0	6.0	325.0	69.0	24.0	2.0	91.9	24.9	63.1	56.8
5.0	23.0	7.0	553.0	114.0	26.0	2.0	296.3	33.6	219.8	209.8
5.0	23.0	8.0	677.0	142.0	27.0	1.0	518.7	44.7	389.3	374.3
5.0	23.0	9.0	747.0	162.0	28.0	1.0	718.3	53.3	526.1	506.4
5.0	23.0	10.0	781.0	180.0	29.0	-	869.6	65.9	596.6	574.1
5.0	23.0	11.0	804.0	186.0	30.0	-	960.3	70.6	641.8	617.5
5.0	23.0	12.0	811.0	186.0	30.0	-	981.1	71.7	651.3	626.6
5.0	23.0	13.0	777.0	199.0	31.0	1.0	925.4	64.6	640.4	616.2
5.0	23.0	14.0	747.0	189.0	30.0	2.0	809.5	55.6	588.0	565.9
5.0	23.0	15.0	693.0	171.0	30.0	2.0	633.4	50.3	468.8	451.2
5.0	23.0	16.0	593.0	148.0	29.0	2.0	420.4	42.6	313.3	300.8
5.0	23.0	17.0	429.0	108.0	28.0	3.0	200.2	33.3	142.2	134.2
5.0	23.0	18.0	145.0	41.0	27.0	3.0	33.5	27.0	28.2	22.6
5.0	23.0	19.0	-	-	26.0	4.0	-	26.0	-	-
5.0	23.0	20.0	-	-	26.0	3.0	-	26.0	-	-
5.0	23.0	21.0	-	-	26.0	3.0	-	26.0	-	-
5.0	23.0	22.0	-	-	25.0	3.0	-	25.0	-	-
5.0	23.0	23.0	-	-	25.0	3.0	-	25.0	-	-
5.0	24.0	-	-	-	25.0	3.0	-	25.0	-	-
5.0	24.0	1.0	-	-	25.0	3.0	-	25.0	-	-
5.0	24.0	2.0	-	-	24.0	3.0	-	24.0	-	-
5.0	24.0	3.0	-	-	24.0	3.0	-	24.0	-	-
5.0	24.0	4.0	-	-	24.0	3.0	-	24.0	-	-
5.0	24.0	5.0	-	-	24.0	3.0	-	24.0	-	-
5.0	24.0	6.0	289.0	75.0	25.0	3.0	93.6	25.9	65.9	59.5
5.0	24.0	7.0	526.0	123.0	26.0	3.0	294.0	32.7	219.9	210.0
5.0	24.0	8.0	659.0	151.0	28.0	2.0	516.9	43.0	391.7	376.7
5.0	24.0	9.0	734.0	171.0	29.0	1.0	717.5	54.2	522.9	503.3
5.0	24.0	10.0	735.0	210.0	30.0	-	860.2	66.6	588.0	565.9
5.0	24.0	11.0	756.0	220.0	30.0	-	950.6	70.2	636.7	612.6
5.0	24.0	12.0	501.0	419.0	31.0	-	910.4	70.4	609.2	586.2
5.0	24.0	13.0	306.0	456.0	30.0	1.0	737.0	57.7	530.4	510.6
5.0	24.0	14.0	502.0	319.0	30.0	2.0	732.4	52.7	540.6	520.4
5.0	24.0	15.0	443.0	269.0	29.0	2.0	559.6	46.9	423.1	407.1
5.0	24.0	16.0	419.0	214.0	29.0	2.0	400.2	41.7	303.3	291.0
5.0	24.0	17.0	272.0	142.0	28.0	3.0	194.3	33.1	145.4	137.3
5.0	24.0	18.0	73.0	40.0	27.0	3.0	34.4	27.0	29.0	23.3
5.0	24.0	19.0	-	-	26.0	3.0	-	26.0	-	-
5.0	24.0	20.0	-	-	26.0	3.0	-	26.0	-	-
5.0	24.0	21.0	-	-	26.0	3.0	-	26.0	-	-
5.0	24.0	22.0	-	-	25.0	3.0	-	25.0	-	-
5.0	24.0	23.0	-	-	25.0	2.0	-	25.0	-	-

5.0	25.0	-	-	-	25.0	2.0	-	25.0	-	-
5.0	25.0	1.0	-	-	25.0	2.0	-	25.0	-	-
5.0	25.0	2.0	-	-	25.0	2.0	-	25.0	-	-
5.0	25.0	3.0	-	-	24.0	2.0	-	24.0	-	-
5.0	25.0	4.0	-	-	24.0	1.0	-	24.0	-	-
5.0	25.0	5.0	-	-	24.0	1.0	-	24.0	-	-
5.0	25.0	6.0	121.0	75.0	25.0	1.0	79.3	25.5	61.6	55.3
5.0	25.0	7.0	94.0	171.0	26.0	1.0	191.6	31.2	154.4	146.1
5.0	25.0	8.0	352.0	247.0	27.0	1.0	433.7	41.3	334.8	321.6
5.0	25.0	9.0	480.0	285.0	28.0	-	637.9	55.5	462.5	445.1
5.0	25.0	10.0	486.0	358.0	28.0	-	784.2	61.8	551.2	530.6
5.0	25.0	11.0	502.0	406.0	29.0	1.0	888.2	60.7	628.7	604.9
5.0	25.0	12.0	823.0	177.0	29.0	2.0	982.5	59.1	701.6	674.8
5.0	25.0	13.0	599.0	339.0	29.0	2.0	898.7	57.2	648.4	623.9
5.0	25.0	14.0	762.0	178.0	28.0	3.0	808.6	50.7	603.0	580.3
5.0	25.0	15.0	710.0	162.0	28.0	3.0	635.6	46.0	481.0	462.9
5.0	25.0	16.0	625.0	137.0	27.0	3.0	424.7	39.0	321.7	308.9
5.0	25.0	17.0	208.0	125.0	27.0	3.0	164.2	31.4	125.1	117.4
5.0	25.0	18.0	185.0	42.0	26.0	2.0	32.5	25.9	27.5	21.9
5.0	25.0	19.0	-	-	25.0	2.0	-	25.0	-	-
5.0	25.0	20.0	-	-	25.0	2.0	-	25.0	-	-
5.0	25.0	21.0	-	-	25.0	2.0	-	25.0	-	-
5.0	25.0	22.0	-	-	24.0	1.0	-	24.0	-	-
5.0	25.0	23.0	-	-	24.0	1.0	-	24.0	-	-
5.0	26.0	-	-	-	24.0	1.0	-	24.0	-	-
5.0	26.0	1.0	-	-	24.0	1.0	-	24.0	-	-
5.0	26.0	2.0	-	-	24.0	1.0	-	24.0	-	-
5.0	26.0	3.0	-	-	24.0	2.0	-	24.0	-	-
5.0	26.0	4.0	-	-	24.0	2.0	-	24.0	-	-
5.0	26.0	5.0	-	-	24.0	2.0	-	24.0	-	-
5.0	26.0	6.0	338.0	70.0	25.0	2.0	93.8	25.9	63.7	57.4
5.0	26.0	7.0	566.0	112.0	26.0	2.0	297.8	33.6	220.4	210.4
5.0	26.0	8.0	691.0	136.0	27.0	1.0	519.0	44.8	389.2	374.2
5.0	26.0	9.0	762.0	153.0	27.0	1.0	718.6	52.3	528.9	509.0
5.0	26.0	10.0	819.0	153.0	28.0	1.0	874.1	59.0	623.6	600.1
5.0	26.0	11.0	839.0	159.0	28.0	2.0	958.7	57.5	690.8	664.4
5.0	26.0	12.0	843.0	159.0	28.0	2.0	976.8	58.3	700.8	674.0
5.0	26.0	13.0	797.0	181.0	29.0	2.0	924.8	57.9	664.7	639.4
5.0	26.0	14.0	770.0	171.0	28.0	3.0	808.1	50.8	602.4	579.7
5.0	26.0	15.0	436.0	272.0	28.0	3.0	557.5	44.0	427.9	411.7
5.0	26.0	16.0	632.0	132.0	28.0	3.0	423.2	39.7	319.2	306.5
5.0	26.0	17.0	288.0	118.0	27.0	3.0	176.8	31.7	131.2	123.4
5.0	26.0	18.0	94.0	42.0	26.0	3.0	34.3	25.9	29.0	23.4
5.0	26.0	19.0	-	-	26.0	3.0	-	26.0	-	-
5.0	26.0	20.0	-	-	25.0	3.0	-	25.0	-	-
5.0	26.0	21.0	-	-	25.0	3.0	-	25.0	-	-
5.0	26.0	22.0	-	-	25.0	3.0	-	25.0	-	-
5.0	26.0	23.0	-	-	24.0	3.0	-	24.0	-	-
5.0	27.0	-	-	-	24.0	3.0	-	24.0	-	-
5.0	27.0	1.0	-	-	24.0	2.0	-	24.0	-	-
5.0	27.0	2.0	-	-	24.0	2.0	-	24.0	-	-
5.0	27.0	3.0	-	-	24.0	2.0	-	24.0	-	-
5.0	27.0	4.0	-	-	24.0	2.0	-	24.0	-	-
5.0	27.0	5.0	-	-	24.0	2.0	-	24.0	-	-
5.0	27.0	6.0	354.0	67.0	25.0	2.0	92.6	25.9	62.0	55.7
5.0	27.0	7.0	584.0	105.0	26.0	2.0	296.8	33.6	218.8	208.9
5.0	27.0	8.0	707.0	127.0	27.0	2.0	518.6	42.0	394.0	378.9
5.0	27.0	9.0	778.0	141.0	28.0	2.0	718.0	49.6	536.2	516.1
5.0	27.0	10.0	820.0	148.0	28.0	2.0	869.2	54.5	635.9	611.9
5.0	27.0	11.0	837.0	155.0	29.0	3.0	952.3	55.2	695.1	668.5
5.0	27.0	12.0	540.0	399.0	29.0	3.0	927.2	54.8	678.3	652.4
5.0	27.0	13.0	551.0	366.0	29.0	3.0	879.1	53.5	647.4	622.9
5.0	27.0	14.0	511.0	320.0	28.0	3.0	739.7	48.9	557.4	536.5
5.0	27.0	15.0	387.0	292.0	28.0	3.0	541.2	43.4	417.2	401.3
5.0	27.0	16.0	333.0	210.0	27.0	3.0	355.2	36.9	276.8	265.3
5.0	27.0	17.0	248.0	123.0	27.0	3.0	172.0	31.3	129.5	121.8
5.0	27.0	18.0	141.0	43.0	26.0	2.0	35.1	26.0	29.7	24.0
5.0	27.0	19.0	-	-	26.0	2.0	-	26.0	-	-
5.0	27.0	20.0	-	-	25.0	2.0	-	25.0	-	-
5.0	27.0	21.0	-	-	25.0	2.0	-	25.0	-	-
5.0	27.0	22.0	-	-	25.0	2.0	-	25.0	-	-
5.0	27.0	23.0	-	-	25.0	2.0	-	25.0	-	-
5.0	28.0	-	-	-	25.0	1.0	-	25.0	-	-
5.0	28.0	1.0	-	-	25.0	1.0	-	25.0	-	-
5.0	28.0	2.0	-	-	24.0	1.0	-	24.0	-	-
5.0	28.0	3.0	-	-	24.0	1.0	-	24.0	-	-
5.0	28.0	4.0	-	-	24.0	1.0	-	24.0	-	-
5.0	28.0	5.0	-	-	24.0	1.0	-	24.0	-	-
5.0	28.0	6.0	404.0	57.0	25.0	1.0	89.0	25.9	56.7	50.5
5.0	28.0	7.0	609.0	96.0	26.0	2.0	296.2	33.6	217.4	207.5
5.0	28.0	8.0	726.0	117.0	27.0	2.0	519.6	42.0	394.4	379.3

5.0	28.0	9.0	792.0	130.0	27.0	2.0	716.8	48.6	538.0	517.9
5.0	28.0	10.0	459.0	363.0	28.0	2.0	763.5	51.6	567.7	546.4
5.0	28.0	11.0	394.0	428.0	28.0	2.0	801.3	52.8	592.5	570.2
5.0	28.0	12.0	451.0	433.0	28.0	2.0	872.6	54.9	638.0	613.8
5.0	28.0	13.0	441.0	400.0	29.0	2.0	809.3	54.4	593.1	570.8
5.0	28.0	14.0	578.0	295.0	28.0	3.0	770.5	49.5	578.7	557.0
5.0	28.0	15.0	756.0	132.0	28.0	3.0	636.6	45.9	481.6	463.5
5.0	28.0	16.0	667.0	116.0	27.0	3.0	424.3	39.0	320.3	307.6
5.0	28.0	17.0	517.0	89.0	27.0	3.0	205.4	32.5	142.8	134.8
5.0	28.0	18.0	157.0	42.0	26.0	3.0	34.3	26.0	29.1	23.4
5.0	28.0	19.0	-	-	26.0	3.0	-	26.0	-	-
5.0	28.0	20.0	-	-	25.0	2.0	-	25.0	-	-
5.0	28.0	21.0	-	-	25.0	2.0	-	25.0	-	-
5.0	28.0	22.0	-	-	25.0	2.0	-	25.0	-	-
5.0	28.0	23.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	-	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	1.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	2.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	3.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	4.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	5.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	6.0	216.0	72.0	25.0	2.0	84.5	25.7	61.7	55.4
5.0	29.0	7.0	-	91.0	26.0	2.0	86.3	27.1	72.7	66.2
5.0	29.0	8.0	554.0	181.0	26.0	3.0	483.3	37.7	377.0	362.5
5.0	29.0	9.0	423.0	310.0	27.0	3.0	617.5	43.5	477.2	459.3
5.0	29.0	10.0	492.0	357.0	27.0	3.0	785.9	48.3	594.8	572.4
5.0	29.0	11.0	42.0	426.0	27.0	3.0	454.8	40.3	359.1	345.2
5.0	29.0	12.0	17.0	316.0	27.0	3.0	320.0	35.6	258.6	247.6
5.0	29.0	13.0	430.0	402.0	27.0	4.0	800.6	46.0	613.6	590.5
5.0	29.0	14.0	234.0	416.0	27.0	3.0	597.4	44.0	462.2	444.8
5.0	29.0	15.0	55.0	309.0	27.0	3.0	332.1	36.4	266.8	255.6
5.0	29.0	16.0	206.0	232.0	26.0	3.0	315.7	34.1	251.8	240.9
5.0	29.0	17.0	248.0	124.0	26.0	2.0	173.1	30.9	130.8	123.0
5.0	29.0	18.0	236.0	40.0	25.0	2.0	30.7	24.8	26.1	20.6
5.0	29.0	19.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	20.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	21.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	22.0	-	-	25.0	2.0	-	25.0	-	-
5.0	29.0	23.0	-	-	24.0	2.0	-	24.0	-	-
5.0	30.0	-	-	-	24.0	2.0	-	24.0	-	-
5.0	30.0	1.0	-	-	24.0	2.0	-	24.0	-	-
5.0	30.0	2.0	-	-	24.0	2.0	-	24.0	-	-
5.0	30.0	3.0	-	-	24.0	2.0	-	24.0	-	-
5.0	30.0	4.0	-	-	24.0	2.0	-	24.0	-	-
5.0	30.0	5.0	-	-	24.0	2.0	-	24.0	-	-
5.0	30.0	6.0	413.0	58.0	24.0	2.0	90.4	24.8	57.8	51.6
5.0	30.0	7.0	632.0	88.0	25.0	2.0	295.5	32.5	216.8	206.9
5.0	30.0	8.0	366.0	244.0	25.0	2.0	436.8	37.6	343.2	329.7
5.0	30.0	9.0	6.0	196.0	26.0	2.0	191.1	32.0	157.3	148.9
5.0	30.0	10.0	34.0	372.0	26.0	2.0	389.7	36.8	313.1	300.5
5.0	30.0	11.0	160.0	497.0	27.0	2.0	641.0	45.9	491.7	473.2
5.0	30.0	12.0	410.0	433.0	27.0	2.0	828.9	52.1	615.1	591.9
5.0	30.0	13.0	477.0	397.0	27.0	2.0	838.9	53.1	619.1	595.7
5.0	30.0	14.0	268.0	409.0	27.0	2.0	621.6	47.1	473.1	455.4
5.0	30.0	15.0	73.0	320.0	26.0	2.0	354.4	37.6	283.0	271.3
5.0	30.0	16.0	171.0	235.0	26.0	2.0	302.2	34.9	240.7	230.2
5.0	30.0	17.0	53.0	129.0	26.0	1.0	132.1	30.5	106.8	99.6
5.0	30.0	18.0	105.0	42.0	25.0	1.0	34.3	24.8	29.2	23.6
5.0	30.0	19.0	-	-	25.0	2.0	-	25.0	-	-
5.0	30.0	20.0	-	-	25.0	2.0	-	25.0	-	-
5.0	30.0	21.0	-	-	25.0	2.0	-	25.0	-	-
5.0	30.0	22.0	-	-	25.0	2.0	-	25.0	-	-
5.0	30.0	23.0	-	-	25.0	2.0	-	25.0	-	-
5.0	31.0	-	-	-	25.0	2.0	-	25.0	-	-
5.0	31.0	1.0	-	-	24.0	1.0	-	24.0	-	-
5.0	31.0	2.0	-	-	24.0	1.0	-	24.0	-	-
5.0	31.0	3.0	-	-	24.0	1.0	-	24.0	-	-
5.0	31.0	4.0	-	-	24.0	1.0	-	24.0	-	-
5.0	31.0	5.0	-	-	24.0	1.0	-	24.0	-	-
5.0	31.0	6.0	143.0	76.0	25.0	1.0	80.6	25.6	61.8	55.5
5.0	31.0	7.0	526.0	115.0	26.0	1.0	285.4	34.5	210.8	201.0
5.0	31.0	8.0	567.0	176.0	26.0	1.0	486.3	42.6	369.8	355.5
5.0	31.0	9.0	815.0	112.0	27.0	1.0	712.4	52.0	524.9	505.2
5.0	31.0	10.0	507.0	352.0	27.0	1.0	793.0	55.6	576.9	555.2
5.0	31.0	11.0	463.0	418.0	28.0	2.0	858.7	54.5	629.1	605.4
5.0	31.0	12.0	433.0	431.0	28.0	2.0	851.6	54.5	623.8	600.3
5.0	31.0	13.0	76.0	456.0	27.0	3.0	513.5	42.0	401.8	386.5
5.0	31.0	14.0	23.0	320.0	27.0	3.0	324.6	36.0	261.9	250.8
5.0	31.0	15.0	172.0	337.0	27.0	3.0	438.5	38.3	348.1	334.5
5.0	31.0	16.0	168.0	236.0	26.0	3.0	301.7	34.1	241.4	230.9
5.0	31.0	17.0	449.0	98.0	26.0	3.0	197.4	30.8	140.8	132.8

5.0	31.0	18.0	189.0	42.0	25.0	3.0	32.2	24.9	27.4	21.8
5.0	31.0	19.0	-	-	25.0	2.0	-	25.0	-	-
5.0	31.0	20.0	-	-	25.0	2.0	-	25.0	-	-
5.0	31.0	21.0	-	-	25.0	2.0	-	25.0	-	-
5.0	31.0	22.0	-	-	25.0	2.0	-	25.0	-	-
5.0	31.0	23.0	-	-	25.0	2.0	-	25.0	-	-
6.0	1.0	-	-	-	25.0	2.0	-	25.0	-	-
6.0	1.0	1.0	-	-	25.0	2.0	-	25.0	-	-
6.0	1.0	2.0	-	-	25.0	1.0	-	25.0	-	-
6.0	1.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	1.0	4.0	-	-	25.0	1.0	-	25.0	-	-
6.0	1.0	5.0	-	-	25.0	-	-	25.0	-	-
6.0	1.0	6.0	372.0	65.0	25.0	-	91.7	26.1	60.5	54.2
6.0	1.0	7.0	594.0	100.0	26.0	-	293.4	37.7	211.1	201.4
6.0	1.0	8.0	711.0	122.0	27.0	-	512.9	49.1	375.4	360.9
6.0	1.0	9.0	778.0	136.0	28.0	-	709.5	58.5	504.6	485.7
6.0	1.0	10.0	831.0	136.0	28.0	1.0	859.7	58.6	614.9	591.7
6.0	1.0	11.0	849.0	142.0	28.0	1.0	947.9	61.9	666.3	641.0
6.0	1.0	12.0	851.0	145.0	28.0	2.0	967.6	58.0	695.3	668.7
6.0	1.0	13.0	876.0	118.0	28.0	2.0	929.2	57.0	671.0	645.5
6.0	1.0	14.0	849.0	114.0	28.0	2.0	813.1	53.8	596.2	573.7
6.0	1.0	15.0	803.0	106.0	28.0	2.0	642.2	48.6	478.7	460.7
6.0	1.0	16.0	726.0	94.0	28.0	2.0	432.3	41.9	320.6	307.8
6.0	1.0	17.0	593.0	73.0	27.0	2.0	209.6	33.5	141.9	133.8
6.0	1.0	18.0	311.0	37.0	26.0	2.0	28.4	25.9	24.0	18.5
6.0	1.0	19.0	-	-	26.0	2.0	-	26.0	-	-
6.0	1.0	20.0	-	-	26.0	2.0	-	26.0	-	-
6.0	1.0	21.0	-	-	26.0	2.0	-	26.0	-	-
6.0	1.0	22.0	-	-	25.0	2.0	-	25.0	-	-
6.0	1.0	23.0	-	-	25.0	2.0	-	25.0	-	-
6.0	2.0	-	-	-	25.0	2.0	-	25.0	-	-
6.0	2.0	1.0	-	-	25.0	2.0	-	25.0	-	-
6.0	2.0	2.0	-	-	25.0	2.0	-	25.0	-	-
6.0	2.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	2.0	4.0	-	-	25.0	1.0	-	25.0	-	-
6.0	2.0	5.0	-	-	25.0	1.0	-	25.0	-	-
6.0	2.0	6.0	446.0	54.0	26.0	1.0	89.1	26.9	54.8	48.6
6.0	2.0	7.0	655.0	81.0	27.0	1.0	295.1	36.0	211.8	202.1
6.0	2.0	8.0	757.0	100.0	27.0	1.0	517.0	44.7	386.3	371.5
6.0	2.0	9.0	812.0	114.0	28.0	1.0	710.7	53.0	520.6	501.1
6.0	2.0	10.0	844.0	125.0	28.0	2.0	859.7	54.2	629.8	606.0
6.0	2.0	11.0	859.0	131.0	29.0	2.0	946.3	58.1	679.7	653.8
6.0	2.0	12.0	861.0	134.0	29.0	2.0	966.4	58.9	690.9	664.5
6.0	2.0	13.0	846.0	135.0	29.0	2.0	917.4	57.7	660.2	635.1
6.0	2.0	14.0	816.0	132.0	29.0	2.0	803.2	54.4	586.9	564.9
6.0	2.0	15.0	1.0	157.0	28.0	3.0	150.0	33.3	122.7	115.1
6.0	2.0	16.0	43.0	216.0	28.0	3.0	224.0	33.0	182.3	173.3
6.0	2.0	17.0	546.0	83.0	27.0	3.0	208.2	31.8	144.2	136.1
6.0	2.0	18.0	263.0	42.0	26.0	3.0	32.2	26.0	27.3	21.6
6.0	2.0	19.0	-	-	26.0	3.0	-	26.0	-	-
6.0	2.0	20.0	-	-	26.0	3.0	-	26.0	-	-
6.0	2.0	21.0	-	-	26.0	3.0	-	26.0	-	-
6.0	2.0	22.0	-	-	26.0	3.0	-	26.0	-	-
6.0	2.0	23.0	-	-	26.0	3.0	-	26.0	-	-
6.0	3.0	-	-	-	26.0	2.0	-	26.0	-	-
6.0	3.0	1.0	-	-	25.0	2.0	-	25.0	-	-
6.0	3.0	2.0	-	-	25.0	2.0	-	25.0	-	-
6.0	3.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	3.0	4.0	-	-	25.0	1.0	-	25.0	-	-
6.0	3.0	5.0	-	-	25.0	1.0	-	25.0	-	-
6.0	3.0	6.0	430.0	57.0	26.0	1.0	90.1	27.0	56.4	50.2
6.0	3.0	7.0	648.0	85.0	27.0	2.0	296.1	34.6	214.3	204.5
6.0	3.0	8.0	757.0	102.0	28.0	2.0	518.3	43.0	390.7	375.7
6.0	3.0	9.0	816.0	115.0	28.0	2.0	713.9	49.4	533.1	513.1
6.0	3.0	10.0	866.0	113.0	28.0	2.0	866.5	54.4	634.1	610.1
6.0	3.0	11.0	882.0	118.0	29.0	2.0	955.1	58.3	685.0	658.9
6.0	3.0	12.0	884.0	120.0	29.0	3.0	974.8	56.0	708.5	681.3
6.0	3.0	13.0	878.0	115.0	29.0	3.0	927.5	54.9	677.8	652.0
6.0	3.0	14.0	852.0	112.0	28.0	3.0	813.4	50.9	605.6	582.8
6.0	3.0	15.0	807.0	104.0	28.0	3.0	642.6	46.2	485.0	466.8
6.0	3.0	16.0	172.0	237.0	28.0	3.0	304.6	36.9	240.3	229.8
6.0	3.0	17.0	109.0	135.0	27.0	3.0	150.7	30.6	119.4	111.9
6.0	3.0	18.0	37.0	44.0	27.0	3.0	39.4	27.0	33.2	27.5
6.0	3.0	19.0	-	-	27.0	3.0	-	27.0	-	-
6.0	3.0	20.0	-	-	26.0	3.0	-	26.0	-	-
6.0	3.0	21.0	-	-	26.0	3.0	-	26.0	-	-
6.0	3.0	22.0	-	-	26.0	3.0	-	26.0	-	-
6.0	3.0	23.0	-	-	26.0	3.0	-	26.0	-	-
6.0	4.0	-	-	-	26.0	3.0	-	26.0	-	-
6.0	4.0	1.0	-	-	26.0	2.0	-	26.0	-	-
6.0	4.0	2.0	-	-	26.0	2.0	-	26.0	-	-

6.0	4.0	3.0	-	-	25.0	2.0	-	25.0	-	-
6.0	4.0	4.0	-	-	25.0	2.0	-	25.0	-	-
6.0	4.0	5.0	-	-	25.0	1.0	-	25.0	-	-
6.0	4.0	6.0	410.0	60.0	26.0	1.0	90.8	27.0	57.9	51.7
6.0	4.0	7.0	631.0	89.0	27.0	2.0	293.8	34.5	213.2	203.4
6.0	4.0	8.0	745.0	106.0	27.0	2.0	515.0	41.9	390.5	375.5
6.0	4.0	9.0	426.0	307.0	28.0	2.0	613.8	46.6	466.7	449.2
6.0	4.0	10.0	846.0	125.0	28.0	2.0	860.0	53.9	631.2	607.4
6.0	4.0	11.0	865.0	129.0	28.0	3.0	948.8	54.1	696.6	670.0
6.0	4.0	12.0	869.0	130.0	29.0	3.0	969.3	55.8	705.0	678.0
6.0	4.0	13.0	865.0	124.0	29.0	3.0	923.8	54.7	675.6	649.8
6.0	4.0	14.0	839.0	120.0	29.0	4.0	810.4	49.8	607.0	584.2
6.0	4.0	15.0	532.0	237.0	28.0	4.0	587.5	43.2	452.2	435.1
6.0	4.0	16.0	214.0	234.0	28.0	4.0	321.5	36.2	253.7	242.8
6.0	4.0	17.0	572.0	79.0	27.0	4.0	211.4	31.7	145.7	137.6
6.0	4.0	18.0	287.0	41.0	27.0	3.0	31.9	27.0	26.9	21.3
6.0	4.0	19.0	-	-	26.0	3.0	-	26.0	-	-
6.0	4.0	20.0	-	-	26.0	3.0	-	26.0	-	-
6.0	4.0	21.0	-	-	26.0	3.0	-	26.0	-	-
6.0	4.0	22.0	-	-	26.0	3.0	-	26.0	-	-
6.0	4.0	23.0	-	-	26.0	3.0	-	26.0	-	-
6.0	5.0	-	-	-	26.0	3.0	-	26.0	-	-
6.0	5.0	1.0	-	-	26.0	3.0	-	26.0	-	-
6.0	5.0	2.0	-	-	26.0	3.0	-	26.0	-	-
6.0	5.0	3.0	-	-	26.0	3.0	-	26.0	-	-
6.0	5.0	4.0	-	-	26.0	2.0	-	26.0	-	-
6.0	5.0	5.0	-	-	26.0	2.0	-	26.0	-	-
6.0	5.0	6.0	374.0	64.0	27.0	2.0	90.1	27.9	58.7	52.5
6.0	5.0	7.0	570.0	105.0	27.0	3.0	288.4	33.5	212.2	202.5
6.0	5.0	8.0	654.0	143.0	28.0	3.0	499.6	40.8	382.0	367.3
6.0	5.0	9.0	686.0	183.0	28.0	3.0	685.7	46.3	521.0	501.5
6.0	5.0	10.0	692.0	222.0	28.0	3.0	825.7	50.5	617.4	594.1
6.0	5.0	11.0	439.0	419.0	29.0	3.0	834.3	52.1	619.3	595.9
6.0	5.0	12.0	430.0	433.0	29.0	3.0	848.4	52.5	628.5	604.8
6.0	5.0	13.0	243.0	475.0	29.0	3.0	689.7	48.5	521.8	502.2
6.0	5.0	14.0	55.0	385.0	29.0	3.0	416.3	41.0	327.5	314.5
6.0	5.0	15.0	2.0	163.0	28.0	3.0	156.4	32.1	128.6	120.9
6.0	5.0	16.0	-	29.0	28.0	3.0	27.5	27.7	23.1	17.6
6.0	5.0	17.0	-	50.0	27.0	3.0	47.4	26.8	40.0	34.2
6.0	5.0	18.0	-	12.0	27.0	3.0	11.4	25.8	9.6	4.3
6.0	5.0	19.0	-	-	27.0	3.0	-	27.0	-	-
6.0	5.0	20.0	-	-	27.0	3.0	-	27.0	-	-
6.0	5.0	21.0	-	-	27.0	3.0	-	27.0	-	-
6.0	5.0	22.0	-	-	27.0	4.0	-	27.0	-	-
6.0	5.0	23.0	-	-	27.0	4.0	-	27.0	-	-
6.0	6.0	-	-	-	27.0	4.0	-	27.0	-	-
6.0	6.0	1.0	-	-	27.0	4.0	-	27.0	-	-
6.0	6.0	2.0	-	-	27.0	4.0	-	27.0	-	-
6.0	6.0	3.0	-	-	27.0	4.0	-	27.0	-	-
6.0	6.0	4.0	-	-	27.0	4.0	-	27.0	-	-
6.0	6.0	5.0	-	-	27.0	4.0	-	27.0	-	-
6.0	6.0	6.0	23.0	78.0	27.0	4.0	72.9	27.3	60.3	54.0
6.0	6.0	7.0	43.0	163.0	27.0	4.0	166.4	29.9	136.5	128.6
6.0	6.0	8.0	50.0	254.0	27.0	4.0	268.2	32.7	219.0	209.1
6.0	6.0	9.0	55.0	340.0	28.0	5.0	366.1	35.6	295.6	283.6
6.0	6.0	10.0	142.0	449.0	28.0	5.0	560.6	40.1	442.8	426.1
6.0	6.0	11.0	224.0	492.0	29.0	5.0	694.8	44.6	536.7	516.6
6.0	6.0	12.0	149.0	508.0	29.0	5.0	643.4	43.7	499.2	480.5
6.0	6.0	13.0	45.0	420.0	29.0	5.0	449.0	39.3	356.3	342.4
6.0	6.0	14.0	50.0	379.0	29.0	6.0	406.3	37.0	326.1	313.2
6.0	6.0	15.0	157.0	341.0	29.0	5.0	432.1	38.4	343.0	329.6
6.0	6.0	16.0	-	66.0	28.0	5.0	62.7	29.1	52.3	46.2
6.0	6.0	17.0	-	48.0	28.0	5.0	45.5	27.9	38.2	32.4
6.0	6.0	18.0	-	13.0	27.0	5.0	12.3	26.1	10.4	5.1
6.0	6.0	19.0	-	-	27.0	5.0	-	27.0	-	-
6.0	6.0	20.0	-	-	27.0	5.0	-	27.0	-	-
6.0	6.0	21.0	-	-	27.0	5.0	-	27.0	-	-
6.0	6.0	22.0	-	-	27.0	5.0	-	27.0	-	-
6.0	6.0	23.0	-	-	27.0	5.0	-	27.0	-	-
6.0	7.0	-	-	-	27.0	6.0	-	27.0	-	-
6.0	7.0	1.0	-	-	27.0	6.0	-	27.0	-	-
6.0	7.0	2.0	-	-	26.0	6.0	-	26.0	-	-
6.0	7.0	3.0	-	-	26.0	6.0	-	26.0	-	-
6.0	7.0	4.0	-	-	26.0	6.0	-	26.0	-	-
6.0	7.0	5.0	-	-	26.0	6.0	-	26.0	-	-
6.0	7.0	6.0	246.0	81.0	27.0	6.0	93.6	27.7	67.5	61.1
6.0	7.0	7.0	183.0	172.0	27.0	6.0	220.5	30.5	175.1	166.3
6.0	7.0	8.0	368.0	243.0	28.0	6.0	433.9	36.1	343.3	329.8
6.0	7.0	9.0	451.0	296.0	28.0	6.0	620.2	40.3	487.2	468.9
6.0	7.0	10.0	403.0	382.0	29.0	6.0	727.6	43.8	563.8	542.7
6.0	7.0	11.0	81.0	473.0	30.0	6.0	536.5	41.1	421.8	405.8

6.0	7.0	12.0	749.0	209.0	30.0	5.0	933.8	50.8	698.2	671.4
6.0	7.0	13.0	286.0	465.0	30.0	5.0	722.8	47.0	551.2	530.5
6.0	7.0	14.0	218.0	422.0	30.0	4.0	588.9	45.0	453.3	436.2
6.0	7.0	15.0	287.0	324.0	29.0	4.0	504.7	41.7	393.2	378.1
6.0	7.0	16.0	289.0	225.0	29.0	4.0	349.5	37.7	272.4	261.0
6.0	7.0	17.0	316.0	131.0	28.0	4.0	197.4	32.5	146.4	138.2
6.0	7.0	18.0	107.0	55.0	27.0	4.0	46.6	27.3	39.2	33.4
6.0	7.0	19.0	-	-	27.0	4.0	-	27.0	-	-
6.0	7.0	20.0	-	-	27.0	4.0	-	27.0	-	-
6.0	7.0	21.0	-	-	27.0	4.0	-	27.0	-	-
6.0	7.0	22.0	-	-	26.0	4.0	-	26.0	-	-
6.0	7.0	23.0	-	-	26.0	4.0	-	26.0	-	-
6.0	8.0	-	-	-	26.0	4.0	-	26.0	-	-
6.0	8.0	1.0	-	-	26.0	4.0	-	26.0	-	-
6.0	8.0	2.0	-	-	26.0	4.0	-	26.0	-	-
6.0	8.0	3.0	-	-	26.0	4.0	-	26.0	-	-
6.0	8.0	4.0	-	-	26.0	4.0	-	26.0	-	-
6.0	8.0	5.0	-	-	26.0	4.0	-	26.0	-	-
6.0	8.0	6.0	226.0	83.0	26.0	4.0	93.2	26.8	68.4	62.0
6.0	8.0	7.0	-	76.0	26.0	4.0	72.2	26.6	61.0	54.7
6.0	8.0	8.0	141.0	277.0	27.0	4.0	340.3	34.2	274.4	263.0
6.0	8.0	9.0	120.0	370.0	27.0	5.0	444.3	36.5	356.9	343.0
6.0	8.0	10.0	394.0	386.0	27.0	5.0	720.5	42.8	561.0	539.9
6.0	8.0	11.0	45.0	430.0	27.0	5.0	460.3	37.7	368.2	354.0
6.0	8.0	12.0	9.0	195.0	27.0	5.0	195.5	31.2	161.5	153.0
6.0	8.0	13.0	-	92.0	28.0	5.0	87.8	29.2	73.3	66.8
6.0	8.0	14.0	-	124.0	27.0	5.0	118.2	28.6	98.9	91.8
6.0	8.0	15.0	-	29.0	27.0	5.0	27.6	26.6	23.3	17.7
6.0	8.0	16.0	8.0	179.0	27.0	5.0	172.9	29.7	143.7	135.6
6.0	8.0	17.0	-	24.0	27.0	5.0	22.7	26.6	19.2	13.7
6.0	8.0	18.0	-	6.0	26.0	5.0	5.7	24.8	4.8	-
6.0	8.0	19.0	-	-	26.0	5.0	-	26.0	-	-
6.0	8.0	20.0	-	-	26.0	5.0	-	26.0	-	-
6.0	8.0	21.0	-	-	26.0	5.0	-	26.0	-	-
6.0	8.0	22.0	-	-	26.0	6.0	-	26.0	-	-
6.0	8.0	23.0	-	-	25.0	6.0	-	25.0	-	-
6.0	9.0	-	-	-	25.0	6.0	-	25.0	-	-
6.0	9.0	1.0	-	-	25.0	5.0	-	25.0	-	-
6.0	9.0	2.0	-	-	25.0	4.0	-	25.0	-	-
6.0	9.0	3.0	-	-	25.0	3.0	-	25.0	-	-
6.0	9.0	4.0	-	-	25.0	3.0	-	25.0	-	-
6.0	9.0	5.0	-	-	25.0	3.0	-	25.0	-	-
6.0	9.0	6.0	163.0	75.0	25.0	3.0	80.5	25.5	61.0	54.7
6.0	9.0	7.0	310.0	156.0	26.0	3.0	247.2	31.4	191.1	181.9
6.0	9.0	8.0	127.0	276.0	27.0	2.0	331.6	36.3	264.8	253.6
6.0	9.0	9.0	202.0	371.0	27.0	2.0	504.7	41.8	394.3	379.2
6.0	9.0	10.0	10.0	228.0	27.0	2.0	226.4	34.3	184.2	175.1
6.0	9.0	11.0	291.0	475.0	28.0	1.0	744.3	52.6	551.0	530.3
6.0	9.0	12.0	32.0	406.0	28.0	1.0	425.9	45.2	327.9	315.0
6.0	9.0	13.0	-	100.0	27.0	1.0	95.5	31.1	78.9	72.3
6.0	9.0	14.0	-	107.0	27.0	2.0	102.0	28.7	85.3	78.5
6.0	9.0	15.0	-	108.0	27.0	3.0	102.8	28.5	86.0	79.2
6.0	9.0	16.0	-	64.0	26.0	4.0	60.8	26.3	51.4	45.3
6.0	9.0	17.0	-	60.0	26.0	4.0	57.0	26.1	48.2	42.2
6.0	9.0	18.0	-	17.0	25.0	5.0	16.1	24.1	13.8	8.4
6.0	9.0	19.0	-	-	25.0	5.0	-	25.0	-	-
6.0	9.0	20.0	-	-	25.0	5.0	-	25.0	-	-
6.0	9.0	21.0	-	-	25.0	5.0	-	25.0	-	-
6.0	9.0	22.0	-	-	25.0	5.0	-	25.0	-	-
6.0	9.0	23.0	-	-	26.0	5.0	-	26.0	-	-
6.0	10.0	-	-	-	26.0	4.0	-	26.0	-	-
6.0	10.0	1.0	-	-	26.0	4.0	-	26.0	-	-
6.0	10.0	2.0	-	-	26.0	4.0	-	26.0	-	-
6.0	10.0	3.0	-	-	26.0	4.0	-	26.0	-	-
6.0	10.0	4.0	-	-	25.0	3.0	-	25.0	-	-
6.0	10.0	5.0	-	-	25.0	3.0	-	25.0	-	-
6.0	10.0	6.0	319.0	70.0	26.0	4.0	88.8	26.7	60.7	54.5
6.0	10.0	7.0	420.0	136.0	26.0	4.0	264.7	31.4	200.9	191.5
6.0	10.0	8.0	669.0	133.0	27.0	4.0	495.1	38.5	382.4	367.7
6.0	10.0	9.0	745.0	146.0	27.0	4.0	689.2	43.8	530.0	510.2
6.0	10.0	10.0	790.0	153.0	28.0	4.0	838.3	48.8	632.1	608.2
6.0	10.0	11.0	296.0	473.0	28.0	3.0	746.8	48.9	563.7	542.6
6.0	10.0	12.0	80.0	483.0	28.0	3.0	547.5	43.6	425.2	409.1
6.0	10.0	13.0	11.0	225.0	28.0	3.0	225.4	34.4	183.2	174.2
6.0	10.0	14.0	3.0	161.0	28.0	3.0	156.0	31.5	128.7	121.0
6.0	10.0	15.0	8.0	214.0	28.0	2.0	208.8	33.3	170.6	161.9
6.0	10.0	16.0	28.0	208.0	28.0	2.0	209.6	33.5	170.5	161.8
6.0	10.0	17.0	-	109.0	27.0	2.0	102.3	29.3	85.3	78.5
6.0	10.0	18.0	-	32.0	26.0	1.0	30.4	25.5	25.8	20.2
6.0	10.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	10.0	20.0	-	-	26.0	-	-	26.0	-	-

6.0	10.0	21.0	-	-	26.0	-	-	26.0	-	-
6.0	10.0	22.0	-	-	26.0	-	-	26.0	-	-
6.0	10.0	23.0	-	-	26.0	-	-	26.0	-	-
6.0	11.0	-	-	-	26.0	-	-	26.0	-	-
6.0	11.0	1.0	-	-	25.0	1.0	-	25.0	-	-
6.0	11.0	2.0	-	-	25.0	1.0	-	25.0	-	-
6.0	11.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	11.0	4.0	-	-	25.0	1.0	-	25.0	-	-
6.0	11.0	5.0	-	-	25.0	1.0	-	25.0	-	-
6.0	11.0	6.0	93.0	79.0	26.0	1.0	78.6	26.5	62.3	56.0
6.0	11.0	7.0	19.0	151.0	26.0	1.0	147.8	29.6	122.2	114.6
6.0	11.0	8.0	99.0	272.0	27.0	1.0	311.1	36.9	248.1	237.4
6.0	11.0	9.0	327.0	343.0	27.0	1.0	570.6	46.5	434.4	418.0
6.0	11.0	10.0	775.0	163.0	28.0	1.0	834.6	57.1	601.7	579.0
6.0	11.0	11.0	789.0	174.0	28.0	2.0	921.9	56.4	668.4	643.0
6.0	11.0	12.0	34.0	413.0	28.0	3.0	434.6	41.2	341.6	328.1
6.0	11.0	13.0	13.0	259.0	28.0	4.0	259.8	34.3	211.4	201.7
6.0	11.0	14.0	-	70.0	27.0	5.0	66.7	27.8	56.0	49.8
6.0	11.0	15.0	210.0	338.0	27.0	5.0	464.7	36.3	372.4	358.0
6.0	11.0	16.0	21.0	201.0	26.0	5.0	199.6	30.2	165.1	156.5
6.0	11.0	17.0	18.0	127.0	26.0	4.0	123.0	28.2	102.2	95.0
6.0	11.0	18.0	-	39.0	26.0	3.0	36.5	25.8	30.9	25.3
6.0	11.0	19.0	-	-	26.0	2.0	-	26.0	-	-
6.0	11.0	20.0	-	-	25.0	2.0	-	25.0	-	-
6.0	11.0	21.0	-	-	25.0	2.0	-	25.0	-	-
6.0	11.0	22.0	-	-	25.0	2.0	-	25.0	-	-
6.0	11.0	23.0	-	-	25.0	2.0	-	25.0	-	-
6.0	12.0	-	-	-	25.0	2.0	-	25.0	-	-
6.0	12.0	1.0	-	-	25.0	2.0	-	25.0	-	-
6.0	12.0	2.0	-	-	25.0	2.0	-	25.0	-	-
6.0	12.0	3.0	-	-	25.0	2.0	-	25.0	-	-
6.0	12.0	4.0	-	-	25.0	2.0	-	25.0	-	-
6.0	12.0	5.0	-	-	25.0	2.0	-	25.0	-	-
6.0	12.0	6.0	279.0	70.0	26.0	2.0	84.7	26.7	59.1	52.9
6.0	12.0	7.0	430.0	134.0	27.0	2.0	265.3	33.6	198.8	189.3
6.0	12.0	8.0	405.0	231.0	27.0	2.0	442.4	39.7	343.1	329.7
6.0	12.0	9.0	566.0	253.0	28.0	2.0	660.5	47.6	498.7	480.0
6.0	12.0	10.0	830.0	134.0	28.0	2.0	849.9	53.8	624.0	600.5
6.0	12.0	11.0	847.0	141.0	28.0	2.0	939.1	56.9	678.9	653.0
6.0	12.0	12.0	853.0	142.0	28.0	2.0	962.1	57.8	692.1	665.6
6.0	12.0	13.0	854.0	133.0	28.0	2.0	920.9	56.8	665.9	640.6
6.0	12.0	14.0	833.0	126.0	28.0	2.0	811.6	53.7	595.4	573.0
6.0	12.0	15.0	788.0	118.0	28.0	2.0	646.4	48.7	481.9	463.8
6.0	12.0	16.0	279.0	228.0	27.0	1.0	348.3	41.1	267.1	255.9
6.0	12.0	17.0	114.0	141.0	27.0	1.0	158.0	32.8	123.9	116.3
6.0	12.0	18.0	290.0	46.0	26.0	1.0	38.5	26.2	30.4	24.8
6.0	12.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	12.0	20.0	-	-	26.0	1.0	-	26.0	-	-
6.0	12.0	21.0	-	-	26.0	1.0	-	26.0	-	-
6.0	12.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	12.0	23.0	-	-	25.0	1.0	-	25.0	-	-
6.0	13.0	-	-	-	25.0	1.0	-	25.0	-	-
6.0	13.0	1.0	-	-	25.0	1.0	-	25.0	-	-
6.0	13.0	2.0	-	-	25.0	1.0	-	25.0	-	-
6.0	13.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	13.0	4.0	-	-	25.0	2.0	-	25.0	-	-
6.0	13.0	5.0	-	-	25.0	2.0	-	25.0	-	-
6.0	13.0	6.0	325.0	70.0	26.0	2.0	88.5	26.8	60.3	54.1
6.0	13.0	7.0	531.0	117.0	26.0	2.0	283.2	33.2	209.6	199.9
6.0	13.0	8.0	647.0	148.0	27.0	1.0	495.9	43.9	372.9	358.5
6.0	13.0	9.0	718.0	168.0	28.0	1.0	689.5	52.3	507.2	488.2
6.0	13.0	10.0	225.0	443.0	28.0	1.0	624.9	51.2	465.7	448.2
6.0	13.0	11.0	837.0	148.0	29.0	-	935.8	67.5	636.9	612.8
6.0	13.0	12.0	841.0	150.0	29.0	-	957.7	70.0	642.5	618.1
6.0	13.0	13.0	803.0	167.0	29.0	-	911.3	68.7	615.8	592.6
6.0	13.0	14.0	775.0	161.0	29.0	1.0	800.9	58.7	571.6	550.1
6.0	13.0	15.0	725.0	149.0	29.0	1.0	634.6	53.1	462.6	445.2
6.0	13.0	16.0	634.0	132.0	29.0	1.0	428.9	45.7	314.5	301.9
6.0	13.0	17.0	490.0	102.0	28.0	1.0	215.6	36.3	150.0	141.8
6.0	13.0	18.0	224.0	51.0	27.0	2.0	42.2	27.4	33.7	28.0
6.0	13.0	19.0	-	-	27.0	2.0	-	27.0	-	-
6.0	13.0	20.0	-	-	27.0	2.0	-	27.0	-	-
6.0	13.0	21.0	-	-	27.0	3.0	-	27.0	-	-
6.0	13.0	22.0	-	-	26.0	3.0	-	26.0	-	-
6.0	13.0	23.0	-	-	26.0	3.0	-	26.0	-	-
6.0	14.0	-	-	-	26.0	3.0	-	26.0	-	-
6.0	14.0	1.0	-	-	26.0	3.0	-	26.0	-	-
6.0	14.0	2.0	-	-	26.0	3.0	-	26.0	-	-
6.0	14.0	3.0	-	-	26.0	2.0	-	26.0	-	-
6.0	14.0	4.0	-	-	26.0	2.0	-	26.0	-	-
6.0	14.0	5.0	-	-	26.0	2.0	-	26.0	-	-

6.0	14.0	6.0	319.0	72.0	26.0	2.0	89.4	26.8	61.4	55.1
6.0	14.0	7.0	540.0	115.0	27.0	1.0	283.7	35.6	207.2	197.5
6.0	14.0	8.0	664.0	142.0	28.0	1.0	498.8	45.0	372.7	358.3
6.0	14.0	9.0	396.0	319.0	29.0	-	596.7	55.5	432.7	416.3
6.0	14.0	10.0	242.0	439.0	29.0	-	638.6	57.6	459.6	442.3
6.0	14.0	11.0	829.0	156.0	30.0	-	935.4	68.5	632.9	609.0
6.0	14.0	12.0	827.0	162.0	30.0	1.0	961.9	64.5	666.2	640.9
6.0	14.0	13.0	788.0	179.0	30.0	1.0	909.1	63.1	634.5	610.5
6.0	14.0	14.0	753.0	176.0	30.0	2.0	797.5	55.2	580.4	558.6
6.0	14.0	15.0	703.0	161.0	30.0	2.0	631.9	50.2	468.0	450.4
6.0	14.0	16.0	621.0	138.0	29.0	3.0	428.9	41.1	322.3	309.5
6.0	14.0	17.0	479.0	105.0	28.0	3.0	216.0	33.8	152.8	144.6
6.0	14.0	18.0	215.0	52.0	28.0	4.0	43.2	28.3	34.3	28.6
6.0	14.0	19.0	-	-	27.0	4.0	-	27.0	-	-
6.0	14.0	20.0	-	-	27.0	4.0	-	27.0	-	-
6.0	14.0	21.0	-	-	27.0	4.0	-	27.0	-	-
6.0	14.0	22.0	-	-	27.0	4.0	-	27.0	-	-
6.0	14.0	23.0	-	-	27.0	4.0	-	27.0	-	-
6.0	15.0	-	-	-	27.0	4.0	-	27.0	-	-
6.0	15.0	1.0	-	-	26.0	3.0	-	26.0	-	-
6.0	15.0	2.0	-	-	26.0	3.0	-	26.0	-	-
6.0	15.0	3.0	-	-	26.0	3.0	-	26.0	-	-
6.0	15.0	4.0	-	-	26.0	3.0	-	26.0	-	-
6.0	15.0	5.0	-	-	26.0	3.0	-	26.0	-	-
6.0	15.0	6.0	381.0	64.0	27.0	3.0	87.6	27.8	57.0	50.8
6.0	15.0	7.0	606.0	97.0	27.0	2.0	287.5	34.3	208.7	199.0
6.0	15.0	8.0	723.0	119.0	28.0	2.0	507.8	42.7	383.2	368.4
6.0	15.0	9.0	793.0	132.0	29.0	2.0	707.3	50.2	525.8	506.1
6.0	15.0	10.0	221.0	443.0	29.0	1.0	621.1	52.2	460.6	443.2
6.0	15.0	11.0	859.0	140.0	30.0	1.0	948.3	62.7	663.6	638.4
6.0	15.0	12.0	863.0	140.0	30.0	1.0	969.3	64.8	670.2	644.7
6.0	15.0	13.0	849.0	141.0	31.0	1.0	923.9	64.5	639.7	615.5
6.0	15.0	14.0	818.0	138.0	30.0	1.0	814.2	60.1	576.5	554.8
6.0	15.0	15.0	763.0	131.0	30.0	2.0	643.5	50.6	475.2	457.3
6.0	15.0	16.0	671.0	119.0	30.0	2.0	434.8	44.0	321.0	308.2
6.0	15.0	17.0	523.0	95.0	29.0	3.0	219.2	34.9	152.5	144.2
6.0	15.0	18.0	248.0	50.0	28.0	3.0	42.2	28.3	33.0	27.3
6.0	15.0	19.0	-	-	28.0	3.0	-	28.0	-	-
6.0	15.0	20.0	-	-	27.0	4.0	-	27.0	-	-
6.0	15.0	21.0	-	-	27.0	4.0	-	27.0	-	-
6.0	15.0	22.0	-	-	27.0	4.0	-	27.0	-	-
6.0	15.0	23.0	-	-	27.0	4.0	-	27.0	-	-
6.0	16.0	-	-	-	26.0	4.0	-	26.0	-	-
6.0	16.0	1.0	-	-	26.0	4.0	-	26.0	-	-
6.0	16.0	2.0	-	-	26.0	4.0	-	26.0	-	-
6.0	16.0	3.0	-	-	26.0	3.0	-	26.0	-	-
6.0	16.0	4.0	-	-	26.0	3.0	-	26.0	-	-
6.0	16.0	5.0	-	-	26.0	3.0	-	26.0	-	-
6.0	16.0	6.0	370.0	63.0	26.0	3.0	85.5	26.7	56.0	49.9
6.0	16.0	7.0	590.0	98.0	27.0	3.0	282.7	33.4	206.4	196.8
6.0	16.0	8.0	700.0	122.0	27.0	4.0	497.7	38.6	383.4	368.7
6.0	16.0	9.0	305.0	348.0	28.0	4.0	558.0	41.7	435.6	419.1
6.0	16.0	10.0	211.0	444.0	28.0	4.0	613.3	43.2	476.9	458.9
6.0	16.0	11.0	106.0	485.0	29.0	4.0	570.9	43.3	443.9	427.1
6.0	16.0	12.0	23.0	367.0	29.0	4.0	374.6	38.5	298.5	286.4
6.0	16.0	13.0	158.0	484.0	29.0	4.0	618.9	43.8	479.9	461.9
6.0	16.0	14.0	12.0	251.0	29.0	3.0	249.4	36.3	200.8	191.4
6.0	16.0	15.0	113.0	340.0	29.0	3.0	402.0	39.1	318.3	305.6
6.0	16.0	16.0	435.0	195.0	29.0	3.0	393.6	39.4	301.7	289.5
6.0	16.0	17.0	482.0	102.0	28.0	3.0	214.8	33.6	151.9	143.7
6.0	16.0	18.0	231.0	51.0	27.0	3.0	43.0	27.3	33.9	28.2
6.0	16.0	19.0	-	-	27.0	3.0	-	27.0	-	-
6.0	16.0	20.0	-	-	27.0	3.0	-	27.0	-	-
6.0	16.0	21.0	-	-	27.0	3.0	-	27.0	-	-
6.0	16.0	22.0	-	-	26.0	3.0	-	26.0	-	-
6.0	16.0	23.0	-	-	26.0	3.0	-	26.0	-	-
6.0	17.0	-	-	-	26.0	4.0	-	26.0	-	-
6.0	17.0	1.0	-	-	26.0	4.0	-	26.0	-	-
6.0	17.0	2.0	-	-	26.0	4.0	-	26.0	-	-
6.0	17.0	3.0	-	-	26.0	4.0	-	26.0	-	-
6.0	17.0	4.0	-	-	26.0	4.0	-	26.0	-	-
6.0	17.0	5.0	-	-	26.0	4.0	-	26.0	-	-
6.0	17.0	6.0	399.0	59.0	26.0	4.0	84.7	26.6	54.2	48.1
6.0	17.0	7.0	49.0	163.0	27.0	4.0	167.6	30.0	137.2	129.3
6.0	17.0	8.0	725.0	110.0	27.0	4.0	499.9	38.4	385.2	370.4
6.0	17.0	9.0	784.0	126.0	28.0	5.0	693.8	43.4	534.4	514.4
6.0	17.0	10.0	814.0	140.0	28.0	5.0	839.4	47.0	638.9	614.7
6.0	17.0	11.0	830.0	147.0	28.0	5.0	927.0	49.2	698.5	671.7
6.0	17.0	12.0	54.0	456.0	29.0	5.0	495.7	41.0	390.0	375.1
6.0	17.0	13.0	-	130.0	29.0	5.0	124.2	31.7	102.3	95.2
6.0	17.0	14.0	5.0	172.0	28.0	4.0	168.2	31.1	138.9	131.0

6.0	17.0	15.0	-	108.0	28.0	4.0	102.8	29.6	85.6	78.8
6.0	17.0	16.0	2.0	167.0	28.0	4.0	158.9	30.8	131.5	123.7
6.0	17.0	17.0	52.0	138.0	27.0	4.0	140.8	29.5	114.7	107.3
6.0	17.0	18.0	257.0	50.0	27.0	4.0	42.9	27.0	33.4	27.7
6.0	17.0	19.0	-	-	26.0	4.0	-	26.0	-	-
6.0	17.0	20.0	-	-	26.0	4.0	-	26.0	-	-
6.0	17.0	21.0	-	-	26.0	5.0	-	26.0	-	-
6.0	17.0	22.0	-	-	26.0	5.0	-	26.0	-	-
6.0	17.0	23.0	-	-	26.0	5.0	-	26.0	-	-
6.0	18.0	-	-	-	26.0	5.0	-	26.0	-	-
6.0	18.0	1.0	-	-	26.0	5.0	-	26.0	-	-
6.0	18.0	2.0	-	-	25.0	4.0	-	25.0	-	-
6.0	18.0	3.0	-	-	25.0	4.0	-	25.0	-	-
6.0	18.0	4.0	-	-	25.0	3.0	-	25.0	-	-
6.0	18.0	5.0	-	-	25.0	3.0	-	25.0	-	-
6.0	18.0	6.0	392.0	60.0	26.0	3.0	84.7	26.7	54.6	48.4
6.0	18.0	7.0	603.0	93.0	26.0	2.0	281.1	33.1	204.7	195.2
6.0	18.0	8.0	709.0	116.0	26.0	2.0	495.6	40.3	378.3	363.7
6.0	18.0	9.0	348.0	335.0	27.0	2.0	576.1	44.5	443.1	426.4
6.0	18.0	10.0	49.0	396.0	27.0	3.0	424.2	38.8	337.4	324.1
6.0	18.0	11.0	62.0	454.0	28.0	3.0	499.1	41.3	392.1	377.1
6.0	18.0	12.0	19.0	341.0	28.0	3.0	345.6	37.5	276.8	265.3
6.0	18.0	13.0	90.0	468.0	28.0	3.0	536.9	42.0	420.2	404.3
6.0	18.0	14.0	760.0	165.0	28.0	2.0	793.6	51.7	588.5	566.3
6.0	18.0	15.0	706.0	155.0	28.0	2.0	629.6	48.2	471.4	453.7
6.0	18.0	16.0	290.0	229.0	27.0	1.0	355.7	41.3	272.6	261.2
6.0	18.0	17.0	-	57.0	27.0	1.0	54.1	29.1	45.1	39.2
6.0	18.0	18.0	-	17.0	26.0	-	16.1	23.9	13.8	8.4
6.0	18.0	19.0	-	-	25.0	-	-	25.0	-	-
6.0	18.0	20.0	-	-	25.0	-	-	25.0	-	-
6.0	18.0	21.0	-	-	24.0	-	-	24.0	-	-
6.0	18.0	22.0	-	-	24.0	-	-	24.0	-	-
6.0	18.0	23.0	-	-	24.0	-	-	24.0	-	-
6.0	19.0	-	-	-	24.0	-	-	24.0	-	-
6.0	19.0	1.0	-	-	24.0	-	-	24.0	-	-
6.0	19.0	2.0	-	-	24.0	1.0	-	24.0	-	-
6.0	19.0	3.0	-	-	24.0	2.0	-	24.0	-	-
6.0	19.0	4.0	-	-	24.0	2.0	-	24.0	-	-
6.0	19.0	5.0	-	-	24.0	3.0	-	24.0	-	-
6.0	19.0	6.0	144.0	77.0	25.0	3.0	78.9	25.5	60.8	54.5
6.0	19.0	7.0	51.0	162.0	25.0	4.0	167.2	27.9	138.1	130.2
6.0	19.0	8.0	613.0	158.0	26.0	4.0	484.0	37.0	377.1	362.6
6.0	19.0	9.0	673.0	188.0	27.0	5.0	673.3	41.9	523.2	503.6
6.0	19.0	10.0	742.0	187.0	27.0	6.0	825.8	43.8	639.2	615.0
6.0	19.0	11.0	208.0	492.0	28.0	6.0	677.4	42.1	529.9	510.0
6.0	19.0	12.0	14.0	279.0	28.0	7.0	281.0	33.2	229.8	219.6
6.0	19.0	13.0	403.0	412.0	28.0	7.0	781.6	41.9	611.8	588.8
6.0	19.0	14.0	755.0	177.0	28.0	7.0	801.4	43.0	622.0	598.6
6.0	19.0	15.0	724.0	155.0	27.0	6.0	642.1	40.3	500.5	481.8
6.0	19.0	16.0	309.0	225.0	27.0	6.0	361.3	34.4	286.2	274.4
6.0	19.0	17.0	559.0	91.0	26.0	6.0	226.4	30.1	160.5	152.0
6.0	19.0	18.0	297.0	49.0	25.0	5.0	43.2	25.1	33.2	27.5
6.0	19.0	19.0	-	-	25.0	5.0	-	25.0	-	-
6.0	19.0	20.0	-	-	25.0	5.0	-	25.0	-	-
6.0	19.0	21.0	-	-	25.0	5.0	-	25.0	-	-
6.0	19.0	22.0	-	-	25.0	5.0	-	25.0	-	-
6.0	19.0	23.0	-	-	25.0	5.0	-	25.0	-	-
6.0	20.0	-	-	-	24.0	5.0	-	24.0	-	-
6.0	20.0	1.0	-	-	24.0	4.0	-	24.0	-	-
6.0	20.0	2.0	-	-	24.0	4.0	-	24.0	-	-
6.0	20.0	3.0	-	-	24.0	4.0	-	24.0	-	-
6.0	20.0	4.0	-	-	24.0	4.0	-	24.0	-	-
6.0	20.0	5.0	-	-	24.0	4.0	-	24.0	-	-
6.0	20.0	6.0	380.0	64.0	25.0	5.0	85.8	25.6	56.5	50.3
6.0	20.0	7.0	604.0	100.0	26.0	5.0	287.0	31.3	211.2	201.5
6.0	20.0	8.0	472.0	207.0	27.0	6.0	452.9	35.6	357.2	343.3
6.0	20.0	9.0	552.0	255.0	27.0	6.0	648.9	39.8	510.0	490.9
6.0	20.0	10.0	10.0	228.0	27.0	6.0	226.3	31.7	186.5	177.4
6.0	20.0	11.0	343.0	452.0	27.0	6.0	769.0	41.8	602.3	579.6
6.0	20.0	12.0	842.0	164.0	27.0	6.0	977.8	47.0	745.6	716.8
6.0	20.0	13.0	834.0	160.0	27.0	5.0	933.8	48.7	705.5	678.4
6.0	20.0	14.0	814.0	151.0	27.0	5.0	825.2	46.2	630.0	606.2
6.0	20.0	15.0	773.0	136.0	27.0	5.0	657.3	42.3	507.1	488.1
6.0	20.0	16.0	693.0	120.0	26.0	5.0	448.8	36.3	344.8	331.3
6.0	20.0	17.0	547.0	96.0	26.0	4.0	228.5	31.5	161.8	153.3
6.0	20.0	18.0	255.0	54.0	25.0	4.0	47.0	25.3	36.7	30.9
6.0	20.0	19.0	-	-	25.0	4.0	-	25.0	-	-
6.0	20.0	20.0	-	-	24.0	4.0	-	24.0	-	-
6.0	20.0	21.0	-	-	24.0	4.0	-	24.0	-	-
6.0	20.0	22.0	-	-	24.0	3.0	-	24.0	-	-
6.0	20.0	23.0	-	-	24.0	3.0	-	24.0	-	-

6.0	21.0	-	-	-	24.0	3.0	-	24.0	-	-
6.0	21.0	1.0	-	-	24.0	3.0	-	24.0	-	-
6.0	21.0	2.0	-	-	24.0	3.0	-	24.0	-	-
6.0	21.0	3.0	-	-	24.0	3.0	-	24.0	-	-
6.0	21.0	4.0	-	-	24.0	3.0	-	24.0	-	-
6.0	21.0	5.0	-	-	24.0	3.0	-	24.0	-	-
6.0	21.0	6.0	394.0	60.0	25.0	4.0	83.8	25.6	54.3	48.1
6.0	21.0	7.0	613.0	93.0	26.0	4.0	282.7	31.8	206.7	197.1
6.0	21.0	8.0	719.0	117.0	26.0	5.0	500.3	36.6	388.9	374.0
6.0	21.0	9.0	415.0	308.0	27.0	5.0	600.3	40.3	471.3	453.6
6.0	21.0	10.0	808.0	151.0	27.0	5.0	846.9	46.0	648.2	623.6
6.0	21.0	11.0	828.0	157.0	27.0	5.0	933.7	48.4	706.6	679.5
6.0	21.0	12.0	834.0	157.0	28.0	5.0	956.8	50.1	717.8	690.2
6.0	21.0	13.0	827.0	152.0	27.0	5.0	914.8	48.2	692.8	666.3
6.0	21.0	14.0	803.0	144.0	27.0	5.0	809.6	45.8	619.4	596.0
6.0	21.0	15.0	603.0	216.0	27.0	5.0	620.3	41.4	481.7	463.6
6.0	21.0	16.0	637.0	131.0	27.0	5.0	433.1	36.9	332.6	319.5
6.0	21.0	17.0	298.0	131.0	26.0	4.0	196.7	30.7	148.3	140.1
6.0	21.0	18.0	134.0	54.0	26.0	4.0	47.0	26.2	38.0	32.2
6.0	21.0	19.0	-	-	26.0	3.0	-	26.0	-	-
6.0	21.0	20.0	-	-	26.0	3.0	-	26.0	-	-
6.0	21.0	21.0	-	-	26.0	3.0	-	26.0	-	-
6.0	21.0	22.0	-	-	25.0	3.0	-	25.0	-	-
6.0	21.0	23.0	-	-	25.0	3.0	-	25.0	-	-
6.0	22.0	-	-	-	25.0	2.0	-	25.0	-	-
6.0	22.0	1.0	-	-	25.0	2.0	-	25.0	-	-
6.0	22.0	2.0	-	-	25.0	2.0	-	25.0	-	-
6.0	22.0	3.0	-	-	25.0	2.0	-	25.0	-	-
6.0	22.0	4.0	-	-	25.0	2.0	-	25.0	-	-
6.0	22.0	5.0	-	-	25.0	2.0	-	25.0	-	-
6.0	22.0	6.0	341.0	66.0	26.0	2.0	83.6	26.7	56.2	50.0
6.0	22.0	7.0	579.0	100.0	27.0	3.0	278.1	33.2	202.9	193.4
6.0	22.0	8.0	706.0	119.0	27.0	3.0	494.7	39.7	378.7	364.1
6.0	22.0	9.0	782.0	128.0	28.0	3.0	691.9	46.5	524.4	504.7
6.0	22.0	10.0	774.0	167.0	28.0	2.0	833.1	53.4	612.8	589.7
6.0	22.0	11.0	802.0	169.0	29.0	2.0	926.4	57.4	667.7	642.3
6.0	22.0	12.0	813.0	167.0	29.0	2.0	952.9	58.5	682.9	656.9
6.0	22.0	13.0	837.0	141.0	29.0	2.0	914.0	57.5	658.2	633.2
6.0	22.0	14.0	818.0	132.0	29.0	2.0	808.0	54.5	590.1	567.9
6.0	22.0	15.0	778.0	120.0	29.0	2.0	646.1	49.6	479.5	461.5
6.0	22.0	16.0	665.0	121.0	28.0	2.0	437.5	42.1	326.7	313.7
6.0	22.0	17.0	529.0	94.0	28.0	2.0	223.0	34.9	155.5	147.2
6.0	22.0	18.0	267.0	51.0	27.0	2.0	45.2	27.6	34.4	28.6
6.0	22.0	19.0	-	-	27.0	2.0	-	27.0	-	-
6.0	22.0	20.0	-	-	26.0	3.0	-	26.0	-	-
6.0	22.0	21.0	-	-	26.0	3.0	-	26.0	-	-
6.0	22.0	22.0	-	-	26.0	3.0	-	26.0	-	-
6.0	22.0	23.0	-	-	26.0	3.0	-	26.0	-	-
6.0	23.0	-	-	-	26.0	2.0	-	26.0	-	-
6.0	23.0	1.0	-	-	26.0	2.0	-	26.0	-	-
6.0	23.0	2.0	-	-	26.0	2.0	-	26.0	-	-
6.0	23.0	3.0	-	-	26.0	2.0	-	26.0	-	-
6.0	23.0	4.0	-	-	26.0	1.0	-	26.0	-	-
6.0	23.0	5.0	-	-	26.0	1.0	-	26.0	-	-
6.0	23.0	6.0	446.0	52.0	27.0	1.0	79.7	27.6	48.4	42.4
6.0	23.0	7.0	662.0	77.0	27.0	1.0	282.0	35.4	200.3	190.9
6.0	23.0	8.0	766.0	93.0	28.0	-	501.9	49.5	364.2	350.0
6.0	23.0	9.0	824.0	104.0	29.0	-	697.1	58.9	493.6	475.1
6.0	23.0	10.0	864.0	107.0	29.0	-	848.6	65.1	584.4	562.4
6.0	23.0	11.0	285.0	474.0	30.0	-	735.6	63.4	512.8	493.6
6.0	23.0	12.0	412.0	431.0	30.0	1.0	826.4	59.6	588.7	566.6
6.0	23.0	13.0	241.0	476.0	30.0	1.0	688.3	55.8	500.6	481.8
6.0	23.0	14.0	785.0	150.0	29.0	2.0	801.5	53.5	588.7	566.6
6.0	23.0	15.0	738.0	139.0	29.0	2.0	638.2	49.4	474.6	456.8
6.0	23.0	16.0	657.0	122.0	28.0	2.0	435.1	42.0	325.3	312.3
6.0	23.0	17.0	516.0	97.0	28.0	2.0	223.0	34.9	156.2	147.8
6.0	23.0	18.0	247.0	52.0	27.0	2.0	45.9	27.6	35.1	29.3
6.0	23.0	19.0	-	-	27.0	2.0	-	27.0	-	-
6.0	23.0	20.0	-	-	27.0	3.0	-	27.0	-	-
6.0	23.0	21.0	-	-	27.0	3.0	-	27.0	-	-
6.0	23.0	22.0	-	-	27.0	3.0	-	27.0	-	-
6.0	23.0	23.0	-	-	27.0	3.0	-	27.0	-	-
6.0	24.0	-	-	-	27.0	3.0	-	27.0	-	-
6.0	24.0	1.0	-	-	26.0	2.0	-	26.0	-	-
6.0	24.0	2.0	-	-	26.0	2.0	-	26.0	-	-
6.0	24.0	3.0	-	-	26.0	2.0	-	26.0	-	-
6.0	24.0	4.0	-	-	26.0	2.0	-	26.0	-	-
6.0	24.0	5.0	-	-	26.0	2.0	-	26.0	-	-
6.0	24.0	6.0	321.0	67.0	27.0	2.0	82.2	27.7	55.7	49.6
6.0	24.0	7.0	559.0	104.0	28.0	1.0	274.6	36.2	197.9	188.5
6.0	24.0	8.0	-	155.0	28.0	1.0	147.0	32.9	120.4	112.9

6.0	24.0	9.0	-	77.0	29.0	1.0	73.3	30.5	60.8	54.5
6.0	24.0	10.0	845.0	120.0	29.0	1.0	844.6	55.9	612.8	589.7
6.0	24.0	11.0	865.0	124.0	29.0	1.0	937.2	62.4	656.7	631.7
6.0	24.0	12.0	870.0	126.0	29.0	1.0	962.9	63.6	670.3	644.8
6.0	24.0	13.0	350.0	407.0	29.0	1.0	725.8	56.7	525.3	505.6
6.0	24.0	14.0	501.0	330.0	29.0	2.0	741.4	52.0	549.6	529.0
6.0	24.0	15.0	533.0	241.0	29.0	2.0	596.9	48.0	448.5	431.6
6.0	24.0	16.0	707.0	105.0	29.0	3.0	443.3	41.4	331.7	318.6
6.0	24.0	17.0	572.0	84.0	28.0	3.0	225.6	34.1	156.3	147.9
6.0	24.0	18.0	298.0	48.0	27.0	3.0	43.9	27.4	32.6	26.8
6.0	24.0	19.0	-	-	27.0	3.0	-	27.0	-	-
6.0	24.0	20.0	-	-	27.0	3.0	-	27.0	-	-
6.0	24.0	21.0	-	-	27.0	3.0	-	27.0	-	-
6.0	24.0	22.0	-	-	27.0	3.0	-	27.0	-	-
6.0	24.0	23.0	-	-	27.0	3.0	-	27.0	-	-
6.0	25.0	-	-	-	27.0	3.0	-	27.0	-	-
6.0	25.0	1.0	-	-	27.0	3.0	-	27.0	-	-
6.0	25.0	2.0	-	-	27.0	3.0	-	27.0	-	-
6.0	25.0	3.0	-	-	26.0	3.0	-	26.0	-	-
6.0	25.0	4.0	-	-	26.0	2.0	-	26.0	-	-
6.0	25.0	5.0	-	-	26.0	2.0	-	26.0	-	-
6.0	25.0	6.0	316.0	67.0	27.0	2.0	81.5	27.6	55.4	49.3
6.0	25.0	7.0	552.0	106.0	28.0	2.0	273.8	34.9	198.8	189.4
6.0	25.0	8.0	291.0	254.0	28.0	1.0	397.4	41.6	306.3	294.0
6.0	25.0	9.0	247.0	358.0	29.0	1.0	524.1	47.4	397.3	382.1
6.0	25.0	10.0	791.0	154.0	29.0	1.0	834.3	57.8	599.0	576.4
6.0	25.0	11.0	813.0	159.0	30.0	1.0	926.9	63.0	647.3	622.8
6.0	25.0	12.0	817.0	161.0	30.0	1.0	951.3	64.2	660.2	635.1
6.0	25.0	13.0	794.0	168.0	30.0	1.0	906.0	62.9	632.9	608.9
6.0	25.0	14.0	767.0	162.0	30.0	2.0	799.2	55.2	581.6	559.8
6.0	25.0	15.0	718.0	149.0	29.0	2.0	635.3	49.3	472.8	455.1
6.0	25.0	16.0	643.0	128.0	29.0	2.0	435.2	43.0	324.1	311.2
6.0	25.0	17.0	509.0	99.0	28.0	3.0	224.0	34.0	158.1	149.7
6.0	25.0	18.0	247.0	53.0	27.0	3.0	47.2	27.5	36.0	30.2
6.0	25.0	19.0	-	-	27.0	3.0	-	27.0	-	-
6.0	25.0	20.0	-	-	27.0	3.0	-	27.0	-	-
6.0	25.0	21.0	-	-	27.0	3.0	-	27.0	-	-
6.0	25.0	22.0	-	-	27.0	3.0	-	27.0	-	-
6.0	25.0	23.0	-	-	27.0	3.0	-	27.0	-	-
6.0	26.0	-	-	-	27.0	3.0	-	27.0	-	-
6.0	26.0	1.0	-	-	26.0	2.0	-	26.0	-	-
6.0	26.0	2.0	-	-	26.0	2.0	-	26.0	-	-
6.0	26.0	3.0	-	-	26.0	2.0	-	26.0	-	-
6.0	26.0	4.0	-	-	26.0	1.0	-	26.0	-	-
6.0	26.0	5.0	-	-	27.0	1.0	-	27.0	-	-
6.0	26.0	6.0	327.0	66.0	27.0	-	81.2	27.7	54.8	48.6
6.0	26.0	7.0	551.0	106.0	28.0	-	273.1	38.8	194.4	185.1
6.0	26.0	8.0	204.0	267.0	28.0	-	361.9	44.2	276.3	264.8
6.0	26.0	9.0	482.0	261.0	29.0	-	602.7	54.7	438.2	421.7
6.0	26.0	10.0	395.0	358.0	29.0	1.0	693.2	53.9	509.0	489.9
6.0	26.0	11.0	453.0	413.0	29.0	1.0	837.3	58.8	599.2	576.6
6.0	26.0	12.0	793.0	180.0	29.0	1.0	946.7	62.7	662.6	637.4
6.0	26.0	13.0	435.0	404.0	29.0	2.0	804.9	54.6	589.4	567.2
6.0	26.0	14.0	786.0	151.0	28.0	2.0	804.7	53.1	592.5	570.2
6.0	26.0	15.0	740.0	140.0	28.0	2.0	642.1	48.6	479.8	461.8
6.0	26.0	16.0	307.0	228.0	27.0	2.0	365.0	39.0	282.9	271.2
6.0	26.0	17.0	139.0	146.0	27.0	1.0	170.7	33.3	132.8	125.0
6.0	26.0	18.0	60.0	54.0	26.0	1.0	48.0	26.6	39.5	33.7
6.0	26.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	26.0	20.0	-	-	26.0	1.0	-	26.0	-	-
6.0	26.0	21.0	-	-	26.0	1.0	-	26.0	-	-
6.0	26.0	22.0	-	-	26.0	1.0	-	26.0	-	-
6.0	26.0	23.0	-	-	26.0	1.0	-	26.0	-	-
6.0	27.0	-	-	-	26.0	1.0	-	26.0	-	-
6.0	27.0	1.0	-	-	26.0	1.0	-	26.0	-	-
6.0	27.0	2.0	-	-	26.0	1.0	-	26.0	-	-
6.0	27.0	3.0	-	-	26.0	1.0	-	26.0	-	-
6.0	27.0	4.0	-	-	26.0	1.0	-	26.0	-	-
6.0	27.0	5.0	-	-	26.0	-	-	26.0	-	-
6.0	27.0	6.0	-	52.0	27.0	-	49.0	25.8	41.5	35.6
6.0	27.0	7.0	30.0	153.0	27.0	1.0	152.1	30.6	124.7	117.1
6.0	27.0	8.0	50.0	248.0	28.0	1.0	261.3	36.2	209.6	199.9
6.0	27.0	9.0	782.0	126.0	28.0	1.0	688.0	51.0	509.0	489.9
6.0	27.0	10.0	818.0	136.0	29.0	1.0	836.3	58.7	597.5	575.0
6.0	27.0	11.0	403.0	419.0	29.0	1.0	796.1	58.2	571.4	550.0
6.0	27.0	12.0	439.0	432.0	29.0	1.0	854.0	59.7	607.8	584.9
6.0	27.0	13.0	438.0	404.0	29.0	1.0	807.9	58.6	578.4	556.7
6.0	27.0	14.0	768.0	162.0	29.0	1.0	801.0	58.2	573.4	551.9
6.0	27.0	15.0	720.0	150.0	29.0	2.0	638.7	49.4	475.2	457.4
6.0	27.0	16.0	641.0	130.0	28.0	2.0	437.3	42.1	327.4	314.4
6.0	27.0	17.0	505.0	101.0	28.0	2.0	225.7	35.0	159.0	150.5

6.0	27.0	18.0	247.0	53.0	27.0	2.0	47.7	27.6	36.1	30.3
6.0	27.0	19.0	-	-	26.0	2.0	-	26.0	-	-
6.0	27.0	20.0	-	-	26.0	2.0	-	26.0	-	-
6.0	27.0	21.0	-	-	26.0	2.0	-	26.0	-	-
6.0	27.0	22.0	-	-	26.0	2.0	-	26.0	-	-
6.0	27.0	23.0	-	-	26.0	2.0	-	26.0	-	-
6.0	28.0	-	-	-	26.0	2.0	-	26.0	-	-
6.0	28.0	1.0	-	-	25.0	2.0	-	25.0	-	-
6.0	28.0	2.0	-	-	25.0	2.0	-	25.0	-	-
6.0	28.0	3.0	-	-	25.0	2.0	-	25.0	-	-
6.0	28.0	4.0	-	-	25.0	2.0	-	25.0	-	-
6.0	28.0	5.0	-	-	25.0	2.0	-	25.0	-	-
6.0	28.0	6.0	287.0	67.0	26.0	2.0	78.4	26.5	54.5	48.4
6.0	28.0	7.0	561.0	103.0	27.0	2.0	272.5	33.8	198.2	188.8
6.0	28.0	8.0	683.0	127.0	28.0	1.0	487.5	44.6	364.0	349.8
6.0	28.0	9.0	756.0	142.0	28.0	1.0	684.8	52.1	503.8	484.9
6.0	28.0	10.0	247.0	434.0	29.0	1.0	636.6	52.5	471.1	453.4
6.0	28.0	11.0	820.0	157.0	29.0	1.0	931.6	61.3	657.0	632.1
6.0	28.0	12.0	829.0	156.0	30.0	1.0	952.2	64.2	660.6	635.5
6.0	28.0	13.0	843.0	136.0	30.0	2.0	916.9	58.6	656.6	631.6
6.0	28.0	14.0	817.0	132.0	30.0	2.0	810.1	55.5	588.4	566.3
6.0	28.0	15.0	769.0	124.0	29.0	2.0	647.3	49.7	480.6	462.6
6.0	28.0	16.0	692.0	110.0	29.0	3.0	443.3	41.5	331.9	318.8
6.0	28.0	17.0	557.0	88.0	28.0	3.0	227.4	34.1	158.6	150.2
6.0	28.0	18.0	297.0	49.0	27.0	3.0	45.8	27.4	33.6	27.8
6.0	28.0	19.0	-	-	27.0	3.0	-	27.0	-	-
6.0	28.0	20.0	-	-	27.0	3.0	-	27.0	-	-
6.0	28.0	21.0	-	-	27.0	3.0	-	27.0	-	-
6.0	28.0	22.0	-	-	26.0	3.0	-	26.0	-	-
6.0	28.0	23.0	-	-	26.0	3.0	-	26.0	-	-
6.0	29.0	-	-	-	26.0	3.0	-	26.0	-	-
6.0	29.0	1.0	-	-	26.0	2.0	-	26.0	-	-
6.0	29.0	2.0	-	-	26.0	2.0	-	26.0	-	-
6.0	29.0	3.0	-	-	26.0	2.0	-	26.0	-	-
6.0	29.0	4.0	-	-	26.0	2.0	-	26.0	-	-
6.0	29.0	5.0	-	-	26.0	2.0	-	26.0	-	-
6.0	29.0	6.0	368.0	59.0	26.0	2.0	77.3	26.5	50.4	44.4
6.0	29.0	7.0	366.0	140.0	27.0	2.0	244.5	33.0	184.5	175.4
6.0	29.0	8.0	702.0	117.0	28.0	2.0	487.5	41.9	368.6	354.3
6.0	29.0	9.0	767.0	133.0	28.0	2.0	683.6	48.5	512.6	493.4
6.0	29.0	10.0	199.0	442.0	28.0	2.0	600.2	46.9	457.7	440.5
6.0	29.0	11.0	847.0	133.0	29.0	2.0	929.0	56.7	672.5	646.9
6.0	29.0	12.0	851.0	136.0	29.0	2.0	955.1	58.6	684.3	658.2
6.0	29.0	13.0	839.0	136.0	29.0	2.0	913.6	57.5	658.0	633.0
6.0	29.0	14.0	812.0	132.0	29.0	2.0	806.5	54.5	589.3	567.1
6.0	29.0	15.0	768.0	122.0	29.0	2.0	645.3	49.6	479.3	461.3
6.0	29.0	16.0	694.0	108.0	29.0	2.0	442.9	43.3	328.7	315.7
6.0	29.0	17.0	562.0	86.0	28.0	2.0	227.3	35.1	157.6	149.2
6.0	29.0	18.0	306.0	48.0	27.0	2.0	45.4	27.6	33.0	27.2
6.0	29.0	19.0	-	-	27.0	2.0	-	27.0	-	-
6.0	29.0	20.0	-	-	27.0	3.0	-	27.0	-	-
6.0	29.0	21.0	-	-	27.0	3.0	-	27.0	-	-
6.0	29.0	22.0	-	-	27.0	3.0	-	27.0	-	-
6.0	29.0	23.0	-	-	27.0	3.0	-	27.0	-	-
6.0	30.0	-	-	-	26.0	3.0	-	26.0	-	-
6.0	30.0	1.0	-	-	26.0	3.0	-	26.0	-	-
6.0	30.0	2.0	-	-	26.0	3.0	-	26.0	-	-
6.0	30.0	3.0	-	-	26.0	3.0	-	26.0	-	-
6.0	30.0	4.0	-	-	26.0	2.0	-	26.0	-	-
6.0	30.0	5.0	-	-	26.0	2.0	-	26.0	-	-
6.0	30.0	6.0	379.0	56.0	27.0	2.0	75.7	27.5	48.5	42.5
6.0	30.0	7.0	601.0	89.0	27.0	2.0	270.8	33.8	195.1	185.8
6.0	30.0	8.0	713.0	111.0	28.0	2.0	488.2	42.0	368.6	354.3
6.0	30.0	9.0	775.0	126.0	28.0	2.0	682.2	48.4	511.6	492.4
6.0	30.0	10.0	811.0	138.0	28.0	2.0	831.9	53.3	612.1	589.0
6.0	30.0	11.0	829.0	145.0	29.0	2.0	923.5	57.4	665.9	640.6
6.0	30.0	12.0	15.0	295.0	29.0	2.0	297.5	40.2	235.0	224.7
6.0	30.0	13.0	12.0	253.0	29.0	2.0	253.3	36.3	204.1	194.5
6.0	30.0	14.0	115.0	425.0	29.0	2.0	508.3	43.5	394.5	379.4
6.0	30.0	15.0	329.0	319.0	29.0	3.0	532.6	43.4	411.2	395.6
6.0	30.0	16.0	175.0	247.0	28.0	3.0	318.8	36.9	252.0	241.1
6.0	30.0	17.0	14.0	130.0	28.0	2.0	125.2	31.5	102.6	95.5
6.0	30.0	18.0	-	42.0	27.0	2.0	39.4	26.9	33.2	27.5
6.0	30.0	19.0	-	-	26.0	2.0	-	26.0	-	-
6.0	30.0	20.0	-	-	25.0	2.0	-	25.0	-	-
6.0	30.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	30.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	30.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	-	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	1.0	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	2.0	-	-	25.0	1.0	-	25.0	-	-

7.0	1.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	4.0	-	-	25.0	2.0	-	25.0	-	-
7.0	1.0	5.0	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	6.0	266.0	63.0	26.0	1.0	72.5	26.3	50.7	44.7
7.0	1.0	7.0	89.0	169.0	27.0	2.0	184.6	31.1	148.6	140.4
7.0	1.0	8.0	210.0	269.0	27.0	1.0	366.4	39.0	287.2	275.4
7.0	1.0	9.0	161.0	365.0	28.0	1.0	466.6	44.4	359.7	345.8
7.0	1.0	10.0	171.0	443.0	29.0	1.0	577.3	49.5	434.2	417.8
7.0	1.0	11.0	273.0	476.0	29.0	1.0	726.8	54.8	531.6	511.7
7.0	1.0	12.0	59.0	461.0	29.0	1.0	505.9	48.6	382.5	367.8
7.0	1.0	13.0	-	98.0	29.0	1.0	93.6	33.6	76.4	69.8
7.0	1.0	14.0	-	120.0	28.0	2.0	114.4	30.1	95.0	88.0
7.0	1.0	15.0	3.0	170.0	28.0	2.0	163.8	31.7	134.9	127.0
7.0	1.0	16.0	71.0	238.0	27.0	2.0	259.1	33.8	209.6	199.9
7.0	1.0	17.0	30.0	135.0	26.0	2.0	133.3	29.4	109.6	102.3
7.0	1.0	18.0	-	37.0	26.0	2.0	35.1	25.8	29.7	24.1
7.0	1.0	19.0	-	-	25.0	2.0	-	25.0	-	-
7.0	1.0	20.0	-	-	25.0	2.0	-	25.0	-	-
7.0	1.0	21.0	-	-	25.0	2.0	-	25.0	-	-
7.0	1.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	2.0	-	-	-	25.0	2.0	-	25.0	-	-
7.0	2.0	1.0	-	-	25.0	2.0	-	25.0	-	-
7.0	2.0	2.0	-	-	25.0	2.0	-	25.0	-	-
7.0	2.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	2.0	4.0	-	-	24.0	1.0	-	24.0	-	-
7.0	2.0	5.0	-	-	24.0	1.0	-	24.0	-	-
7.0	2.0	6.0	2.0	65.0	24.0	-	60.2	23.2	51.6	45.5
7.0	2.0	7.0	22.0	147.0	25.0	-	144.5	29.7	119.3	111.7
7.0	2.0	8.0	14.0	206.0	25.0	-	202.3	33.4	165.0	156.5
7.0	2.0	9.0	344.0	332.0	26.0	-	568.3	49.4	425.9	409.8
7.0	2.0	10.0	100.0	432.0	26.0	-	502.7	49.9	377.5	362.9
7.0	2.0	11.0	305.0	466.0	26.0	1.0	747.4	52.2	554.4	533.7
7.0	2.0	12.0	229.0	501.0	27.0	1.0	713.6	53.3	526.2	506.5
7.0	2.0	13.0	54.0	436.0	27.0	2.0	473.2	42.4	369.6	355.3
7.0	2.0	14.0	27.0	337.0	27.0	2.0	347.3	37.8	277.7	266.2
7.0	2.0	15.0	93.0	339.0	27.0	1.0	387.2	40.7	304.4	292.1
7.0	2.0	16.0	165.0	248.0	27.0	1.0	315.2	38.5	247.4	236.7
7.0	2.0	17.0	84.0	145.0	27.0	1.0	156.5	32.5	124.4	116.8
7.0	2.0	18.0	38.0	56.0	26.0	1.0	50.8	26.6	42.2	36.3
7.0	2.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	2.0	20.0	-	-	26.0	1.0	-	26.0	-	-
7.0	2.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	2.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	2.0	23.0	-	-	25.0	2.0	-	25.0	-	-
7.0	3.0	-	-	-	25.0	1.0	-	25.0	-	-
7.0	3.0	1.0	-	-	25.0	1.0	-	25.0	-	-
7.0	3.0	2.0	-	-	25.0	1.0	-	25.0	-	-
7.0	3.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	3.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	3.0	5.0	-	-	25.0	1.0	-	25.0	-	-
7.0	3.0	6.0	168.0	68.0	26.0	1.0	70.9	26.3	53.3	47.2
7.0	3.0	7.0	488.0	115.0	26.0	1.0	258.1	33.5	189.7	180.5
7.0	3.0	8.0	426.0	218.0	27.0	1.0	435.3	41.8	333.0	319.9
7.0	3.0	9.0	715.0	166.0	27.0	1.0	678.0	50.6	502.9	484.0
7.0	3.0	10.0	804.0	149.0	28.0	2.0	840.0	53.6	617.4	594.1
7.0	3.0	11.0	825.0	155.0	28.0	2.0	929.8	56.6	673.2	647.6
7.0	3.0	12.0	502.0	418.0	28.0	2.0	903.2	56.2	655.6	630.8
7.0	3.0	13.0	809.0	163.0	28.0	2.0	918.6	56.5	665.3	640.0
7.0	3.0	14.0	784.0	155.0	28.0	2.0	810.9	53.7	595.2	572.8
7.0	3.0	15.0	161.0	348.0	28.0	2.0	444.4	43.0	344.8	331.3
7.0	3.0	16.0	39.0	223.0	28.0	3.0	229.8	34.2	186.1	177.0
7.0	3.0	17.0	33.0	136.0	27.0	2.0	135.1	30.3	110.5	103.1
7.0	3.0	18.0	-	46.0	26.0	2.0	42.8	26.0	36.2	30.4
7.0	3.0	19.0	-	-	26.0	2.0	-	26.0	-	-
7.0	3.0	20.0	-	-	26.0	2.0	-	26.0	-	-
7.0	3.0	21.0	-	-	26.0	2.0	-	26.0	-	-
7.0	3.0	22.0	-	-	26.0	2.0	-	26.0	-	-
7.0	3.0	23.0	-	-	26.0	2.0	-	26.0	-	-
7.0	4.0	-	-	-	26.0	2.0	-	26.0	-	-
7.0	4.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	4.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	4.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	4.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	4.0	5.0	-	-	26.0	2.0	-	26.0	-	-
7.0	4.0	6.0	343.0	60.0	26.0	2.0	74.7	26.4	49.7	43.7
7.0	4.0	7.0	576.0	97.0	27.0	2.0	269.1	33.7	194.6	185.3
7.0	4.0	8.0	68.0	254.0	27.0	3.0	276.2	33.8	223.9	213.8
7.0	4.0	9.0	81.0	350.0	28.0	3.0	392.9	38.0	313.3	300.8
7.0	4.0	10.0	131.0	440.0	28.0	3.0	540.5	42.2	422.3	406.3
7.0	4.0	11.0	263.0	478.0	28.0	3.0	719.9	47.3	548.1	527.5

7.0	4.0	12.0	431.0	431.0	29.0	2.0	847.3	54.9	619.6	596.2
7.0	4.0	13.0	341.0	446.0	29.0	2.0	757.9	52.9	560.1	539.1
7.0	4.0	14.0	372.0	381.0	29.0	2.0	683.9	50.5	511.3	492.1
7.0	4.0	15.0	302.0	327.0	29.0	2.0	523.1	45.7	399.3	384.1
7.0	4.0	16.0	559.0	162.0	28.0	2.0	430.1	41.4	325.1	312.2
7.0	4.0	17.0	352.0	124.0	28.0	2.0	208.0	34.5	152.5	144.2
7.0	4.0	18.0	104.0	58.0	27.0	2.0	52.7	27.7	42.3	36.5
7.0	4.0	19.0	-	-	27.0	2.0	-	27.0	-	-
7.0	4.0	20.0	-	-	27.0	2.0	-	27.0	-	-
7.0	4.0	21.0	-	-	27.0	2.0	-	27.0	-	-
7.0	4.0	22.0	-	-	26.0	2.0	-	26.0	-	-
7.0	4.0	23.0	-	-	26.0	3.0	-	26.0	-	-
7.0	5.0	-	-	-	26.0	3.0	-	26.0	-	-
7.0	5.0	1.0	-	-	26.0	3.0	-	26.0	-	-
7.0	5.0	2.0	-	-	26.0	3.0	-	26.0	-	-
7.0	5.0	3.0	-	-	26.0	3.0	-	26.0	-	-
7.0	5.0	4.0	-	-	26.0	3.0	-	26.0	-	-
7.0	5.0	5.0	-	-	26.0	3.0	-	26.0	-	-
7.0	5.0	6.0	297.0	66.0	27.0	3.0	76.3	27.5	52.7	46.6
7.0	5.0	7.0	560.0	102.0	27.0	3.0	268.5	33.0	195.6	186.2
7.0	5.0	8.0	680.0	128.0	28.0	3.0	484.7	40.4	369.5	355.2
7.0	5.0	9.0	749.0	146.0	28.0	3.0	682.5	46.2	517.9	498.5
7.0	5.0	10.0	577.0	313.0	29.0	3.0	806.2	50.9	601.3	578.7
7.0	5.0	11.0	816.0	162.0	29.0	3.0	934.2	54.5	684.2	658.1
7.0	5.0	12.0	523.0	406.0	29.0	3.0	912.9	54.4	669.4	643.9
7.0	5.0	13.0	545.0	373.0	29.0	3.0	880.9	53.5	648.7	624.1
7.0	5.0	14.0	476.0	338.0	29.0	4.0	732.9	47.8	555.5	534.7
7.0	5.0	15.0	392.0	302.0	28.0	4.0	561.2	42.4	435.2	418.8
7.0	5.0	16.0	538.0	168.0	28.0	4.0	426.0	38.7	326.8	313.9
7.0	5.0	17.0	38.0	138.0	28.0	4.0	138.3	31.2	112.4	105.0
7.0	5.0	18.0	52.0	56.0	27.0	4.0	49.9	27.2	41.0	35.1
7.0	5.0	19.0	-	-	27.0	4.0	-	27.0	-	-
7.0	5.0	20.0	-	-	27.0	4.0	-	27.0	-	-
7.0	5.0	21.0	-	-	27.0	4.0	-	27.0	-	-
7.0	5.0	22.0	-	-	27.0	4.0	-	27.0	-	-
7.0	5.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	6.0	-	-	-	27.0	3.0	-	27.0	-	-
7.0	6.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	6.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	6.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	6.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	6.0	5.0	-	-	26.0	2.0	-	26.0	-	-
7.0	6.0	6.0	156.0	68.0	27.0	2.0	69.5	27.3	52.5	46.4
7.0	6.0	7.0	542.0	103.0	28.0	3.0	263.7	33.8	191.5	182.3
7.0	6.0	8.0	605.0	155.0	28.0	3.0	471.0	40.0	360.8	346.7
7.0	6.0	9.0	771.0	127.0	28.0	3.0	679.5	46.1	515.8	496.5
7.0	6.0	10.0	482.0	349.0	29.0	3.0	759.6	49.8	570.2	548.8
7.0	6.0	11.0	291.0	470.0	29.0	2.0	739.0	52.0	548.7	528.1
7.0	6.0	12.0	418.0	431.0	28.0	2.0	835.5	53.7	615.0	591.8
7.0	6.0	13.0	194.0	485.0	28.0	2.0	656.0	49.1	494.9	476.3
7.0	6.0	14.0	72.0	406.0	28.0	1.0	451.9	45.5	347.2	333.6
7.0	6.0	15.0	48.0	312.0	28.0	1.0	331.3	40.4	261.0	250.0
7.0	6.0	16.0	138.0	249.0	28.0	1.0	303.7	38.8	238.5	228.1
7.0	6.0	17.0	20.0	131.0	27.0	1.0	127.8	31.4	104.5	97.3
7.0	6.0	18.0	-	44.0	27.0	1.0	41.1	27.1	34.6	28.9
7.0	6.0	19.0	-	-	27.0	-	-	27.0	-	-
7.0	6.0	20.0	-	-	27.0	-	-	27.0	-	-
7.0	6.0	21.0	-	-	27.0	-	-	27.0	-	-
7.0	6.0	22.0	-	-	27.0	-	-	27.0	-	-
7.0	6.0	23.0	-	-	26.0	-	-	26.0	-	-
7.0	7.0	-	-	-	26.0	-	-	26.0	-	-
7.0	7.0	1.0	-	-	26.0	1.0	-	26.0	-	-
7.0	7.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	7.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	7.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	7.0	5.0	-	-	26.0	2.0	-	26.0	-	-
7.0	7.0	6.0	335.0	56.0	26.0	2.0	69.8	26.2	46.3	40.3
7.0	7.0	7.0	515.0	108.0	26.0	3.0	259.9	31.7	191.5	182.3
7.0	7.0	8.0	37.0	234.0	26.0	2.0	241.3	32.7	197.1	187.8
7.0	7.0	9.0	57.0	333.0	26.0	2.0	359.7	36.1	289.6	277.7
7.0	7.0	10.0	189.0	441.0	27.0	2.0	591.4	44.4	457.0	439.8
7.0	7.0	11.0	45.0	427.0	27.0	2.0	457.4	41.5	359.0	345.1
7.0	7.0	12.0	16.0	303.0	27.0	1.0	306.3	38.6	244.0	233.4
7.0	7.0	13.0	17.0	312.0	27.0	1.0	314.8	38.0	251.5	240.7
7.0	7.0	14.0	24.0	328.0	26.0	1.0	333.5	37.7	266.8	255.5
7.0	7.0	15.0	104.0	342.0	26.0	2.0	398.3	37.7	317.8	305.1
7.0	7.0	16.0	262.0	238.0	26.0	4.0	355.6	34.5	283.0	271.3
7.0	7.0	17.0	165.0	145.0	26.0	5.0	178.3	29.5	140.5	132.5
7.0	7.0	18.0	-	44.0	26.0	6.0	41.1	26.0	34.8	29.0
7.0	7.0	19.0	-	-	25.0	6.0	-	25.0	-	-
7.0	7.0	20.0	-	-	25.0	6.0	-	25.0	-	-

7.0	7.0	21.0	-	-	25.0	5.0	-	25.0	-	-
7.0	7.0	22.0	-	-	25.0	5.0	-	25.0	-	-
7.0	7.0	23.0	-	-	25.0	4.0	-	25.0	-	-
7.0	8.0	-	-	-	25.0	4.0	-	25.0	-	-
7.0	8.0	1.0	-	-	25.0	4.0	-	25.0	-	-
7.0	8.0	2.0	-	-	25.0	4.0	-	25.0	-	-
7.0	8.0	3.0	-	-	25.0	4.0	-	25.0	-	-
7.0	8.0	4.0	-	-	26.0	4.0	-	26.0	-	-
7.0	8.0	5.0	-	-	26.0	4.0	-	26.0	-	-
7.0	8.0	6.0	135.0	68.0	26.0	4.0	67.8	26.2	52.2	46.1
7.0	8.0	7.0	154.0	161.0	27.0	4.0	196.8	30.6	156.2	147.8
7.0	8.0	8.0	314.0	243.0	27.0	4.0	397.7	36.0	314.7	302.1
7.0	8.0	9.0	235.0	355.0	28.0	4.0	510.2	40.3	401.3	386.0
7.0	8.0	10.0	328.0	410.0	28.0	4.0	683.9	44.7	527.3	507.5
7.0	8.0	11.0	480.0	408.0	28.0	4.0	860.6	49.3	648.2	623.6
7.0	8.0	12.0	448.0	433.0	28.0	4.0	867.4	50.0	651.3	626.6
7.0	8.0	13.0	260.0	473.0	28.0	4.0	710.1	46.3	543.6	523.2
7.0	8.0	14.0	330.0	399.0	28.0	4.0	667.8	44.9	514.4	495.1
7.0	8.0	15.0	46.0	310.0	28.0	4.0	328.2	36.6	263.6	252.5
7.0	8.0	16.0	184.0	247.0	28.0	4.0	324.8	35.6	258.4	247.4
7.0	8.0	17.0	60.0	142.0	27.0	4.0	147.9	30.2	119.9	112.4
7.0	8.0	18.0	13.0	52.0	27.0	4.0	48.1	27.2	40.2	34.4
7.0	8.0	19.0	-	-	26.0	4.0	-	26.0	-	-
7.0	8.0	20.0	-	-	26.0	4.0	-	26.0	-	-
7.0	8.0	21.0	-	-	26.0	3.0	-	26.0	-	-
7.0	8.0	22.0	-	-	26.0	3.0	-	26.0	-	-
7.0	8.0	23.0	-	-	26.0	3.0	-	26.0	-	-
7.0	9.0	-	-	-	26.0	3.0	-	26.0	-	-
7.0	9.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	9.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	9.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	9.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	9.0	5.0	-	-	26.0	1.0	-	26.0	-	-
7.0	9.0	6.0	-	31.0	26.0	1.0	29.4	24.7	25.0	19.5
7.0	9.0	7.0	106.0	161.0	27.0	1.0	182.1	31.6	145.5	137.4
7.0	9.0	8.0	125.0	264.0	27.0	1.0	316.8	37.3	251.5	240.7
7.0	9.0	9.0	18.0	265.0	27.0	1.0	265.1	36.3	213.4	203.6
7.0	9.0	10.0	11.0	243.0	28.0	1.0	241.6	36.2	194.7	185.4
7.0	9.0	11.0	100.0	479.0	28.0	1.0	560.4	46.8	427.9	411.7
7.0	9.0	12.0	398.0	434.0	29.0	1.0	817.6	57.5	589.3	567.1
7.0	9.0	13.0	503.0	393.0	29.0	1.0	863.0	60.1	612.8	589.7
7.0	9.0	14.0	460.0	342.0	29.0	1.0	725.4	56.2	525.7	506.0
7.0	9.0	15.0	664.0	179.0	29.0	1.0	635.9	52.7	465.5	448.0
7.0	9.0	16.0	589.0	151.0	29.0	1.0	438.3	46.0	323.3	310.5
7.0	9.0	17.0	444.0	116.0	28.0	1.0	226.7	36.8	161.6	153.1
7.0	9.0	18.0	73.0	57.0	28.0	1.0	51.4	29.2	41.4	35.5
7.0	9.0	19.0	-	-	27.0	2.0	-	27.0	-	-
7.0	9.0	20.0	-	-	27.0	2.0	-	27.0	-	-
7.0	9.0	21.0	-	-	27.0	3.0	-	27.0	-	-
7.0	9.0	22.0	-	-	27.0	3.0	-	27.0	-	-
7.0	9.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	10.0	-	-	-	27.0	3.0	-	27.0	-	-
7.0	10.0	1.0	-	-	26.0	3.0	-	26.0	-	-
7.0	10.0	2.0	-	-	26.0	3.0	-	26.0	-	-
7.0	10.0	3.0	-	-	26.0	3.0	-	26.0	-	-
7.0	10.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	10.0	5.0	-	-	26.0	2.0	-	26.0	-	-
7.0	10.0	6.0	141.0	65.0	27.0	2.0	65.5	27.1	49.9	43.8
7.0	10.0	7.0	302.0	145.0	27.0	2.0	227.1	32.4	173.2	164.5
7.0	10.0	8.0	578.0	162.0	28.0	2.0	463.0	41.1	352.9	339.1
7.0	10.0	9.0	282.0	345.0	28.0	2.0	536.8	44.2	413.6	397.9
7.0	10.0	10.0	332.0	407.0	29.0	2.0	684.8	49.7	514.5	495.2
7.0	10.0	11.0	469.0	409.0	29.0	1.0	852.0	59.2	608.3	585.4
7.0	10.0	12.0	484.0	424.0	29.0	1.0	894.8	61.2	631.5	607.7
7.0	10.0	13.0	428.0	405.0	29.0	1.0	805.0	58.7	576.0	554.4
7.0	10.0	14.0	487.0	336.0	29.0	1.0	742.8	56.4	537.6	517.5
7.0	10.0	15.0	553.0	236.0	29.0	1.0	613.6	52.1	451.4	434.3
7.0	10.0	16.0	452.0	195.0	29.0	1.0	411.3	45.0	307.2	294.8
7.0	10.0	17.0	463.0	111.0	28.0	1.0	227.5	36.6	161.5	153.0
7.0	10.0	18.0	199.0	57.0	28.0	1.0	53.5	29.3	40.6	34.8
7.0	10.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	10.0	20.0	-	-	27.0	1.0	-	27.0	-	-
7.0	10.0	21.0	-	-	27.0	2.0	-	27.0	-	-
7.0	10.0	22.0	-	-	27.0	2.0	-	27.0	-	-
7.0	10.0	23.0	-	-	27.0	2.0	-	27.0	-	-
7.0	11.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	11.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	11.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	11.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	11.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	11.0	5.0	-	-	26.0	2.0	-	26.0	-	-

7.0	11.0	6.0	232.0	69.0	27.0	2.0	74.5	27.4	54.1	48.0
7.0	11.0	7.0	474.0	122.0	28.0	2.0	258.2	34.4	189.3	180.2
7.0	11.0	8.0	610.0	154.0	28.0	2.0	472.0	41.5	358.6	344.7
7.0	11.0	9.0	691.0	175.0	29.0	1.0	669.7	52.5	491.8	473.4
7.0	11.0	10.0	772.0	166.0	29.0	1.0	830.7	58.4	594.4	572.1
7.0	11.0	11.0	794.0	173.0	30.0	1.0	926.7	63.0	647.3	622.8
7.0	11.0	12.0	798.0	177.0	30.0	1.0	955.3	64.3	662.6	637.4
7.0	11.0	13.0	780.0	181.0	30.0	1.0	914.2	63.2	637.7	613.6
7.0	11.0	14.0	749.0	176.0	30.0	1.0	807.3	59.8	572.9	551.4
7.0	11.0	15.0	575.0	228.0	30.0	1.0	621.6	53.7	453.4	436.3
7.0	11.0	16.0	331.0	224.0	29.0	2.0	377.7	41.3	289.4	277.5
7.0	11.0	17.0	449.0	115.0	29.0	2.0	227.7	35.8	163.0	154.4
7.0	11.0	18.0	181.0	59.0	28.0	2.0	54.6	28.9	42.0	36.1
7.0	11.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	11.0	20.0	-	-	27.0	2.0	-	27.0	-	-
7.0	11.0	21.0	-	-	27.0	2.0	-	27.0	-	-
7.0	11.0	22.0	-	-	27.0	3.0	-	27.0	-	-
7.0	11.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	12.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	12.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	12.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	12.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	12.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	12.0	5.0	-	-	26.0	2.0	-	26.0	-	-
7.0	12.0	6.0	224.0	69.0	27.0	2.0	73.8	27.4	53.9	47.8
7.0	12.0	7.0	474.0	121.0	27.0	2.0	257.1	33.3	189.4	180.2
7.0	12.0	8.0	603.0	155.0	28.0	2.0	469.2	41.4	356.7	342.8
7.0	12.0	9.0	673.0	182.0	29.0	2.0	663.8	48.8	497.2	478.6
7.0	12.0	10.0	758.0	172.0	29.0	1.0	824.9	58.2	591.0	568.7
7.0	12.0	11.0	774.0	185.0	29.0	1.0	920.0	61.8	646.9	622.4
7.0	12.0	12.0	781.0	186.0	29.0	1.0	948.2	63.1	662.0	636.9
7.0	12.0	13.0	433.0	405.0	30.0	1.0	810.8	60.1	575.7	554.1
7.0	12.0	14.0	94.0	418.0	30.0	2.0	482.9	46.1	370.0	355.7
7.0	12.0	15.0	444.0	271.0	29.0	2.0	573.1	46.3	435.3	418.8
7.0	12.0	16.0	104.0	246.0	29.0	2.0	284.0	38.3	224.1	214.1
7.0	12.0	17.0	439.0	117.0	28.0	2.0	227.1	34.4	164.1	155.6
7.0	12.0	18.0	183.0	58.0	28.0	2.0	53.9	28.9	41.3	35.5
7.0	12.0	19.0	-	-	27.0	2.0	-	27.0	-	-
7.0	12.0	20.0	-	-	27.0	2.0	-	27.0	-	-
7.0	12.0	21.0	-	-	27.0	2.0	-	27.0	-	-
7.0	12.0	22.0	-	-	27.0	2.0	-	27.0	-	-
7.0	12.0	23.0	-	-	27.0	2.0	-	27.0	-	-
7.0	13.0	-	-	-	26.0	2.0	-	26.0	-	-
7.0	13.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	13.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	13.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	13.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	13.0	5.0	-	-	26.0	2.0	-	26.0	-	-
7.0	13.0	6.0	274.0	62.0	26.0	2.0	69.5	26.2	48.8	42.8
7.0	13.0	7.0	502.0	112.0	27.0	1.0	257.1	34.5	187.1	177.9
7.0	13.0	8.0	630.0	143.0	28.0	1.0	471.8	44.0	353.6	339.8
7.0	13.0	9.0	700.0	167.0	28.0	1.0	668.6	51.5	493.6	475.1
7.0	13.0	10.0	791.0	150.0	29.0	1.0	832.0	58.5	595.2	572.8
7.0	13.0	11.0	814.0	156.0	29.0	1.0	930.0	62.2	652.7	627.9
7.0	13.0	12.0	821.0	158.0	30.0	1.0	960.5	64.5	665.5	640.2
7.0	13.0	13.0	804.0	161.0	30.0	1.0	918.5	63.4	640.2	616.0
7.0	13.0	14.0	513.0	329.0	30.0	1.0	759.6	58.4	543.7	523.3
7.0	13.0	15.0	348.0	314.0	30.0	1.0	545.7	51.0	404.8	389.4
7.0	13.0	16.0	424.0	201.0	29.0	1.0	404.3	44.4	303.4	291.2
7.0	13.0	17.0	-	98.0	29.0	2.0	92.5	31.9	76.1	69.5
7.0	13.0	18.0	-	5.0	28.0	2.0	4.7	26.7	4.0	-
7.0	13.0	19.0	-	-	27.0	2.0	-	27.0	-	-
7.0	13.0	20.0	-	-	27.0	2.0	-	27.0	-	-
7.0	13.0	21.0	-	-	27.0	2.0	-	27.0	-	-
7.0	13.0	22.0	-	-	27.0	2.0	-	27.0	-	-
7.0	13.0	23.0	-	-	27.0	2.0	-	27.0	-	-
7.0	14.0	-	-	-	26.0	2.0	-	26.0	-	-
7.0	14.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	14.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	14.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	14.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	14.0	5.0	-	-	26.0	2.0	-	26.0	-	-
7.0	14.0	6.0	165.0	73.0	27.0	2.0	73.0	27.4	55.4	49.3
7.0	14.0	7.0	415.0	136.0	27.0	2.0	252.8	33.2	188.6	179.4
7.0	14.0	8.0	547.0	179.0	27.0	2.0	461.2	40.2	353.7	339.9
7.0	14.0	9.0	630.0	206.0	28.0	2.0	656.7	47.6	495.3	476.7
7.0	14.0	10.0	659.0	237.0	28.0	1.0	806.1	56.7	582.6	560.8
7.0	14.0	11.0	673.0	257.0	29.0	1.0	899.4	61.1	634.9	610.9
7.0	14.0	12.0	669.0	269.0	29.0	1.0	925.9	62.4	649.3	624.7
7.0	14.0	13.0	723.0	218.0	29.0	1.0	902.3	61.8	634.6	610.6
7.0	14.0	14.0	671.0	223.0	29.0	1.0	791.5	58.4	566.4	545.2

7.0	14.0	15.0	606.0	211.0	29.0	1.0	629.8	52.9	461.1	443.8
7.0	14.0	16.0	468.0	201.0	29.0	1.0	426.4	45.6	317.7	305.0
7.0	14.0	17.0	320.0	147.0	28.0	1.0	222.7	36.6	164.4	155.8
7.0	14.0	18.0	110.0	61.0	28.0	1.0	55.6	29.3	44.1	38.1
7.0	14.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	14.0	20.0	-	-	27.0	2.0	-	27.0	-	-
7.0	14.0	21.0	-	-	27.0	3.0	-	27.0	-	-
7.0	14.0	22.0	-	-	27.0	3.0	-	27.0	-	-
7.0	14.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	15.0	-	-	-	27.0	3.0	-	27.0	-	-
7.0	15.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	15.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	15.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	15.0	4.0	-	-	26.0	2.0	-	26.0	-	-
7.0	15.0	5.0	-	-	26.0	2.0	-	26.0	-	-
7.0	15.0	6.0	161.0	72.0	26.0	2.0	71.8	26.3	54.9	48.8
7.0	15.0	7.0	226.0	152.0	27.0	1.0	210.1	32.8	162.2	153.7
7.0	15.0	8.0	484.0	193.0	27.0	1.0	441.5	41.7	336.8	323.5
7.0	15.0	9.0	451.0	284.0	28.0	2.0	602.7	46.0	459.2	441.9
7.0	15.0	10.0	465.0	350.0	28.0	2.0	748.6	50.7	559.1	538.1
7.0	15.0	11.0	459.0	411.0	29.0	2.0	846.8	55.0	618.8	595.5
7.0	15.0	12.0	439.0	432.0	29.0	1.0	861.6	60.2	611.6	588.6
7.0	15.0	13.0	516.0	387.0	29.0	1.0	873.2	60.6	618.2	594.9
7.0	15.0	14.0	491.0	336.0	28.0	2.0	749.0	51.8	556.0	535.2
7.0	15.0	15.0	487.0	262.0	28.0	2.0	595.6	47.0	450.6	433.6
7.0	15.0	16.0	246.0	239.0	28.0	1.0	350.8	41.9	269.4	258.1
7.0	15.0	17.0	88.0	144.0	27.0	1.0	157.7	32.8	125.1	117.4
7.0	15.0	18.0	42.0	55.0	27.0	1.0	50.3	27.6	41.4	35.5
7.0	15.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	15.0	20.0	-	-	27.0	1.0	-	27.0	-	-
7.0	15.0	21.0	-	-	27.0	1.0	-	27.0	-	-
7.0	15.0	22.0	-	-	27.0	2.0	-	27.0	-	-
7.0	15.0	23.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	-	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	1.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	5.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	6.0	225.0	66.0	26.0	1.0	70.7	26.2	51.8	45.7
7.0	16.0	7.0	495.0	113.0	26.0	2.0	255.4	32.3	188.0	178.9
7.0	16.0	8.0	633.0	142.0	27.0	1.0	472.5	43.0	355.8	341.9
7.0	16.0	9.0	713.0	161.0	27.0	1.0	672.6	50.7	498.8	480.1
7.0	16.0	10.0	781.0	158.0	28.0	1.0	832.5	57.6	598.6	576.1
7.0	16.0	11.0	802.0	167.0	29.0	1.0	931.3	62.2	653.4	628.7
7.0	16.0	12.0	806.0	171.0	29.0	-	960.8	70.0	644.3	619.9
7.0	16.0	13.0	808.0	160.0	29.0	-	923.6	69.1	622.7	599.2
7.0	16.0	14.0	447.0	346.0	30.0	-	722.1	63.4	502.6	483.7
7.0	16.0	15.0	660.0	194.0	30.0	-	651.9	59.9	459.1	441.9
7.0	16.0	16.0	662.0	121.0	29.0	1.0	448.8	46.4	329.3	316.2
7.0	16.0	17.0	529.0	93.0	28.0	1.0	231.3	37.0	161.3	152.8
7.0	16.0	18.0	266.0	49.0	28.0	1.0	47.6	29.1	34.3	28.5
7.0	16.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	16.0	20.0	-	-	27.0	-	-	27.0	-	-
7.0	16.0	21.0	-	-	27.0	-	-	27.0	-	-
7.0	16.0	22.0	-	-	27.0	-	-	27.0	-	-
7.0	16.0	23.0	-	-	27.0	-	-	27.0	-	-
7.0	17.0	-	-	-	27.0	-	-	27.0	-	-
7.0	17.0	1.0	-	-	27.0	-	-	27.0	-	-
7.0	17.0	2.0	-	-	27.0	-	-	27.0	-	-
7.0	17.0	3.0	-	-	27.0	-	-	27.0	-	-
7.0	17.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	17.0	5.0	-	-	26.0	1.0	-	26.0	-	-
7.0	17.0	6.0	164.0	60.0	27.0	1.0	61.9	27.0	46.4	40.4
7.0	17.0	7.0	588.0	88.0	27.0	1.0	260.9	34.6	186.2	177.1
7.0	17.0	8.0	702.0	112.0	28.0	2.0	479.5	41.7	362.2	348.2
7.0	17.0	9.0	767.0	129.0	28.0	2.0	679.8	48.3	510.0	490.9
7.0	17.0	10.0	783.0	155.0	28.0	1.0	831.8	57.6	598.1	575.6
7.0	17.0	11.0	454.0	409.0	28.0	1.0	841.3	58.6	602.6	579.9
7.0	17.0	12.0	154.0	506.0	28.0	1.0	650.1	52.8	480.8	462.7
7.0	17.0	13.0	481.0	400.0	28.0	2.0	854.1	53.8	627.9	604.2
7.0	17.0	14.0	428.0	353.0	28.0	2.0	713.3	50.7	532.7	512.7
7.0	17.0	15.0	621.0	210.0	28.0	2.0	640.9	48.2	481.3	463.2
7.0	17.0	16.0	386.0	210.0	28.0	3.0	393.6	39.2	304.0	291.7
7.0	17.0	17.0	-	83.0	27.0	3.0	78.6	28.9	65.6	59.3
7.0	17.0	18.0	81.0	52.0	26.0	2.0	47.8	25.9	38.8	33.0
7.0	17.0	19.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	20.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	21.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	22.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	23.0	-	-	26.0	2.0	-	26.0	-	-

7.0	18.0	-	-	-	26.0	2.0	-	26.0	-	-
7.0	18.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	18.0	2.0	-	-	26.0	3.0	-	26.0	-	-
7.0	18.0	3.0	-	-	25.0	3.0	-	25.0	-	-
7.0	18.0	4.0	-	-	25.0	3.0	-	25.0	-	-
7.0	18.0	5.0	-	-	25.0	3.0	-	25.0	-	-
7.0	18.0	6.0	60.0	61.0	26.0	3.0	57.7	25.9	46.8	40.8
7.0	18.0	7.0	599.0	84.0	27.0	4.0	260.2	32.2	187.4	178.2
7.0	18.0	8.0	164.0	259.0	27.0	4.0	333.1	34.6	267.3	256.1
7.0	18.0	9.0	367.0	318.0	28.0	3.0	573.1	42.9	444.2	427.4
7.0	18.0	10.0	390.0	377.0	28.0	3.0	708.0	47.1	539.0	518.8
7.0	18.0	11.0	413.0	413.0	29.0	3.0	806.8	51.0	602.3	579.6
7.0	18.0	12.0	96.0	491.0	29.0	4.0	574.2	43.9	445.1	428.3
7.0	18.0	13.0	267.0	471.0	28.0	4.0	719.2	45.7	552.2	531.5
7.0	18.0	14.0	331.0	398.0	28.0	4.0	672.2	45.0	517.5	498.1
7.0	18.0	15.0	440.0	279.0	28.0	4.0	580.8	42.7	449.6	432.7
7.0	18.0	16.0	-	95.0	28.0	4.0	90.3	30.5	74.9	68.3
7.0	18.0	17.0	329.0	125.0	27.0	4.0	205.9	30.9	154.6	146.3
7.0	18.0	18.0	181.0	52.0	27.0	4.0	49.3	27.4	37.7	31.9
7.0	18.0	19.0	-	-	27.0	4.0	-	27.0	-	-
7.0	18.0	20.0	-	-	27.0	4.0	-	27.0	-	-
7.0	18.0	21.0	-	-	26.0	3.0	-	26.0	-	-
7.0	18.0	22.0	-	-	26.0	3.0	-	26.0	-	-
7.0	18.0	23.0	-	-	26.0	3.0	-	26.0	-	-
7.0	19.0	-	-	-	26.0	3.0	-	26.0	-	-
7.0	19.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	19.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	19.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	19.0	4.0	-	-	25.0	2.0	-	25.0	-	-
7.0	19.0	5.0	-	-	25.0	2.0	-	25.0	-	-
7.0	19.0	6.0	347.0	52.0	26.0	2.0	64.3	26.1	42.3	36.4
7.0	19.0	7.0	631.0	77.0	27.0	2.0	263.0	33.5	187.0	177.9
7.0	19.0	8.0	749.0	95.0	28.0	2.0	488.4	42.0	367.8	353.6
7.0	19.0	9.0	811.0	108.0	28.0	2.0	689.8	48.7	516.4	497.1
7.0	19.0	10.0	837.0	124.0	29.0	2.0	845.3	54.7	617.5	594.2
7.0	19.0	11.0	852.0	134.0	30.0	2.0	943.1	58.9	674.4	648.7
7.0	19.0	12.0	852.0	141.0	30.0	2.0	972.4	60.0	691.1	664.6
7.0	19.0	13.0	443.0	404.0	30.0	1.0	823.5	60.6	583.2	561.3
7.0	19.0	14.0	417.0	358.0	30.0	1.0	710.0	56.5	513.9	494.6
7.0	19.0	15.0	462.0	269.0	30.0	1.0	586.9	52.1	432.5	416.1
7.0	19.0	16.0	399.0	207.0	30.0	1.0	399.5	45.4	298.8	286.6
7.0	19.0	17.0	501.0	96.0	29.0	1.0	227.1	37.6	158.8	150.4
7.0	19.0	18.0	125.0	53.0	28.0	1.0	48.4	29.1	37.8	32.0
7.0	19.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	19.0	20.0	-	-	27.0	1.0	-	27.0	-	-
7.0	19.0	21.0	-	-	27.0	1.0	-	27.0	-	-
7.0	19.0	22.0	-	-	26.0	1.0	-	26.0	-	-
7.0	19.0	23.0	-	-	26.0	1.0	-	26.0	-	-
7.0	20.0	-	-	-	26.0	1.0	-	26.0	-	-
7.0	20.0	1.0	-	-	26.0	1.0	-	26.0	-	-
7.0	20.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	20.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	20.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	20.0	5.0	-	-	26.0	-	-	26.0	-	-
7.0	20.0	6.0	309.0	55.0	28.0	-	64.4	27.7	43.5	37.5
7.0	20.0	7.0	606.0	83.0	29.0	-	261.2	39.1	181.5	172.5
7.0	20.0	8.0	726.0	104.0	30.0	-	485.4	50.7	349.6	335.9
7.0	20.0	9.0	790.0	120.0	30.0	-	688.2	59.5	485.9	467.7
7.0	20.0	10.0	833.0	126.0	31.0	-	844.4	66.8	576.0	554.4
7.0	20.0	11.0	422.0	411.0	31.0	-	814.6	66.8	556.7	535.9
7.0	20.0	12.0	851.0	138.0	31.0	-	969.4	71.5	644.6	620.2
7.0	20.0	13.0	796.0	168.0	32.0	1.0	923.3	65.4	636.1	612.0
7.0	20.0	14.0	753.0	171.0	31.0	1.0	812.1	61.0	572.7	551.2
7.0	20.0	15.0	696.0	162.0	31.0	1.0	648.0	55.5	467.5	449.9
7.0	20.0	16.0	629.0	134.0	30.0	1.0	446.5	47.3	326.9	313.9
7.0	20.0	17.0	474.0	106.0	30.0	2.0	228.1	37.2	161.2	152.7
7.0	20.0	18.0	207.0	53.0	29.0	2.0	49.3	29.8	36.8	31.0
7.0	20.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	20.0	20.0	-	-	28.0	2.0	-	28.0	-	-
7.0	20.0	21.0	-	-	28.0	2.0	-	28.0	-	-
7.0	20.0	22.0	-	-	28.0	2.0	-	28.0	-	-
7.0	20.0	23.0	-	-	28.0	2.0	-	28.0	-	-
7.0	21.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	21.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	21.0	2.0	-	-	27.0	1.0	-	27.0	-	-
7.0	21.0	3.0	-	-	27.0	1.0	-	27.0	-	-
7.0	21.0	4.0	-	-	27.0	1.0	-	27.0	-	-
7.0	21.0	5.0	-	-	27.0	1.0	-	27.0	-	-
7.0	21.0	6.0	298.0	55.0	28.0	1.0	63.7	28.1	43.2	37.3
7.0	21.0	7.0	591.0	85.0	28.0	1.0	258.5	35.5	183.2	174.2
7.0	21.0	8.0	715.0	105.0	29.0	1.0	480.7	45.3	356.4	342.6

7.0	21.0	9.0	782.0	120.0	29.0	1.0	682.9	52.9	499.8	481.1
7.0	21.0	10.0	794.0	148.0	30.0	1.0	836.5	59.6	594.6	572.3
7.0	21.0	11.0	815.0	154.0	30.0	1.0	928.4	63.1	648.3	623.7
7.0	21.0	12.0	822.0	155.0	30.0	2.0	957.9	59.6	682.4	656.4
7.0	21.0	13.0	771.0	184.0	30.0	2.0	916.2	58.6	656.2	631.3
7.0	21.0	14.0	753.0	170.0	30.0	2.0	811.9	55.6	590.0	567.8
7.0	21.0	15.0	713.0	152.0	29.0	2.0	650.5	49.8	483.8	465.6
7.0	21.0	16.0	665.0	119.0	29.0	2.0	450.3	43.5	335.5	322.3
7.0	21.0	17.0	534.0	91.0	29.0	2.0	231.6	36.3	161.9	153.4
7.0	21.0	18.0	270.0	47.0	28.0	2.0	46.0	28.7	33.0	27.3
7.0	21.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	21.0	20.0	-	-	28.0	2.0	-	28.0	-	-
7.0	21.0	21.0	-	-	28.0	2.0	-	28.0	-	-
7.0	21.0	22.0	-	-	28.0	2.0	-	28.0	-	-
7.0	21.0	23.0	-	-	27.0	2.0	-	27.0	-	-
7.0	22.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	22.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	22.0	2.0	-	-	27.0	2.0	-	27.0	-	-
7.0	22.0	3.0	-	-	27.0	2.0	-	27.0	-	-
7.0	22.0	4.0	-	-	27.0	2.0	-	27.0	-	-
7.0	22.0	5.0	-	-	27.0	1.0	-	27.0	-	-
7.0	22.0	6.0	371.0	47.0	27.0	1.0	61.3	26.9	38.9	33.1
7.0	22.0	7.0	620.0	77.0	28.0	2.0	259.5	34.4	183.8	174.8
7.0	22.0	8.0	740.0	95.0	29.0	2.0	484.1	42.9	363.0	349.0
7.0	22.0	9.0	805.0	108.0	29.0	2.0	686.5	49.5	511.7	492.5
7.0	22.0	10.0	856.0	108.0	29.0	2.0	847.7	54.8	619.0	595.7
7.0	22.0	11.0	872.0	115.0	29.0	2.0	946.0	58.0	679.7	653.8
7.0	22.0	12.0	872.0	120.0	30.0	2.0	974.4	60.1	692.2	665.8
7.0	22.0	13.0	810.0	157.0	30.0	2.0	927.3	58.9	662.8	637.6
7.0	22.0	14.0	782.0	153.0	30.0	2.0	820.4	55.9	595.3	572.9
7.0	22.0	15.0	735.0	141.0	29.0	2.0	655.3	50.0	486.9	468.6
7.0	22.0	16.0	702.0	105.0	29.0	2.0	455.4	43.7	338.4	325.1
7.0	22.0	17.0	573.0	82.0	28.0	2.0	233.7	35.3	162.6	154.1
7.0	22.0	18.0	297.0	44.0	28.0	1.0	44.3	29.0	31.0	25.3
7.0	22.0	19.0	-	-	28.0	1.0	-	28.0	-	-
7.0	22.0	20.0	-	-	27.0	1.0	-	27.0	-	-
7.0	22.0	21.0	-	-	27.0	1.0	-	27.0	-	-
7.0	22.0	22.0	-	-	27.0	2.0	-	27.0	-	-
7.0	22.0	23.0	-	-	27.0	2.0	-	27.0	-	-
7.0	23.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	23.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	23.0	2.0	-	-	27.0	2.0	-	27.0	-	-
7.0	23.0	3.0	-	-	27.0	3.0	-	27.0	-	-
7.0	23.0	4.0	-	-	27.0	3.0	-	27.0	-	-
7.0	23.0	5.0	-	-	27.0	3.0	-	27.0	-	-
7.0	23.0	6.0	291.0	54.0	28.0	3.0	62.2	28.1	42.3	36.4
7.0	23.0	7.0	253.0	144.0	28.0	3.0	210.9	32.4	162.0	153.5
7.0	23.0	8.0	37.0	228.0	29.0	3.0	236.4	34.6	191.3	182.1
7.0	23.0	9.0	20.0	271.0	30.0	2.0	272.7	37.6	218.2	208.3
7.0	23.0	10.0	521.0	332.0	30.0	2.0	783.4	52.4	579.8	558.1
7.0	23.0	11.0	809.0	159.0	30.0	2.0	935.0	58.4	670.2	644.7
7.0	23.0	12.0	810.0	165.0	30.0	2.0	964.5	59.8	686.4	660.2
7.0	23.0	13.0	803.0	162.0	30.0	2.0	926.4	58.9	662.5	637.3
7.0	23.0	14.0	773.0	158.0	30.0	2.0	818.4	55.8	594.1	571.7
7.0	23.0	15.0	721.0	148.0	30.0	2.0	653.2	50.9	483.0	464.9
7.0	23.0	16.0	324.0	222.0	30.0	2.0	375.6	42.3	286.5	274.7
7.0	23.0	17.0	69.0	139.0	29.0	2.0	148.4	33.5	118.0	110.5
7.0	23.0	18.0	100.0	50.0	28.0	2.0	46.6	28.3	37.0	31.2
7.0	23.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	23.0	20.0	-	-	28.0	3.0	-	28.0	-	-
7.0	23.0	21.0	-	-	28.0	3.0	-	28.0	-	-
7.0	23.0	22.0	-	-	28.0	3.0	-	28.0	-	-
7.0	23.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	24.0	-	-	-	27.0	3.0	-	27.0	-	-
7.0	24.0	1.0	-	-	27.0	3.0	-	27.0	-	-
7.0	24.0	2.0	-	-	27.0	3.0	-	27.0	-	-
7.0	24.0	3.0	-	-	27.0	3.0	-	27.0	-	-
7.0	24.0	4.0	-	-	27.0	2.0	-	27.0	-	-
7.0	24.0	5.0	-	-	27.0	2.0	-	27.0	-	-
7.0	24.0	6.0	295.0	54.0	28.0	2.0	62.3	28.1	42.3	36.4
7.0	24.0	7.0	572.0	90.0	29.0	3.0	257.6	34.7	184.1	175.0
7.0	24.0	8.0	701.0	113.0	29.0	3.0	481.0	41.2	364.4	350.2
7.0	24.0	9.0	778.0	125.0	29.0	2.0	686.3	49.5	511.8	492.6
7.0	24.0	10.0	831.0	128.0	30.0	2.0	847.0	55.7	615.4	592.1
7.0	24.0	11.0	857.0	130.0	30.0	2.0	947.8	59.0	677.2	651.4
7.0	24.0	12.0	861.0	133.0	30.0	2.0	977.8	60.2	694.3	667.7
7.0	24.0	13.0	861.0	126.0	30.0	3.0	941.6	56.2	683.4	657.3
7.0	24.0	14.0	831.0	126.0	30.0	3.0	833.4	53.4	612.9	589.8
7.0	24.0	15.0	780.0	121.0	30.0	3.0	667.9	48.9	498.8	480.1
7.0	24.0	16.0	697.0	109.0	29.0	3.0	457.4	42.0	343.1	329.6
7.0	24.0	17.0	559.0	86.0	28.0	3.0	233.9	34.4	164.2	155.6

7.0	24.0	18.0	274.0	46.0	28.0	3.0	45.1	28.5	32.4	26.7
7.0	24.0	19.0	-	-	28.0	3.0	-	28.0	-	-
7.0	24.0	20.0	-	-	28.0	3.0	-	28.0	-	-
7.0	24.0	21.0	-	-	27.0	3.0	-	27.0	-	-
7.0	24.0	22.0	-	-	27.0	3.0	-	27.0	-	-
7.0	24.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	25.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	25.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	25.0	2.0	-	-	27.0	2.0	-	27.0	-	-
7.0	25.0	3.0	-	-	27.0	2.0	-	27.0	-	-
7.0	25.0	4.0	-	-	27.0	2.0	-	27.0	-	-
7.0	25.0	5.0	-	-	27.0	2.0	-	27.0	-	-
7.0	25.0	6.0	330.0	50.0	27.0	2.0	60.7	27.0	40.1	34.2
7.0	25.0	7.0	4.0	126.0	28.0	2.0	119.8	30.1	99.3	92.2
7.0	25.0	8.0	15.0	200.0	29.0	2.0	197.5	33.8	160.8	152.3
7.0	25.0	9.0	362.0	317.0	29.0	1.0	570.8	47.9	431.2	414.9
7.0	25.0	10.0	285.0	417.0	30.0	1.0	659.7	53.6	485.2	467.0
7.0	25.0	11.0	487.0	401.0	30.0	1.0	870.2	60.5	616.6	593.3
7.0	25.0	12.0	454.0	429.0	30.0	1.0	880.3	61.8	619.3	595.9
7.0	25.0	13.0	498.0	393.0	31.0	1.0	869.0	62.5	609.0	586.0
7.0	25.0	14.0	791.0	150.0	31.0	1.0	827.1	61.2	582.7	560.8
7.0	25.0	15.0	742.0	140.0	30.0	1.0	660.7	55.0	477.8	459.8
7.0	25.0	16.0	405.0	203.0	30.0	2.0	400.4	43.1	303.0	290.8
7.0	25.0	17.0	-	106.0	29.0	2.0	99.9	32.1	82.1	75.4
7.0	25.0	18.0	-	38.0	28.0	3.0	35.6	27.7	29.9	24.3
7.0	25.0	19.0	-	-	28.0	3.0	-	28.0	-	-
7.0	25.0	20.0	-	-	28.0	4.0	-	28.0	-	-
7.0	25.0	21.0	-	-	28.0	4.0	-	28.0	-	-
7.0	25.0	22.0	-	-	28.0	3.0	-	28.0	-	-
7.0	25.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	26.0	-	-	-	27.0	3.0	-	27.0	-	-
7.0	26.0	1.0	-	-	27.0	3.0	-	27.0	-	-
7.0	26.0	2.0	-	-	27.0	3.0	-	27.0	-	-
7.0	26.0	3.0	-	-	27.0	3.0	-	27.0	-	-
7.0	26.0	4.0	-	-	27.0	3.0	-	27.0	-	-
7.0	26.0	5.0	-	-	27.0	2.0	-	27.0	-	-
7.0	26.0	6.0	225.0	59.0	27.0	2.0	62.5	27.1	45.1	39.2
7.0	26.0	7.0	525.0	100.0	28.0	3.0	253.2	33.5	183.6	174.6
7.0	26.0	8.0	665.0	125.0	28.0	3.0	474.4	40.1	362.1	348.1
7.0	26.0	9.0	132.0	354.0	29.0	3.0	438.9	40.9	344.7	331.2
7.0	26.0	10.0	241.0	428.0	29.0	3.0	632.9	45.8	485.5	467.3
7.0	26.0	11.0	29.0	382.0	30.0	3.0	400.8	41.4	314.7	302.1
7.0	26.0	12.0	12.0	245.0	30.0	3.0	247.1	36.6	198.8	189.4
7.0	26.0	13.0	136.0	482.0	30.0	3.0	605.6	45.5	465.7	448.1
7.0	26.0	14.0	11.0	239.0	30.0	3.0	237.9	37.0	191.0	181.8
7.0	26.0	15.0	705.0	158.0	29.0	3.0	653.4	45.7	496.8	478.2
7.0	26.0	16.0	73.0	235.0	29.0	2.0	259.9	38.0	206.0	196.4
7.0	26.0	17.0	15.0	124.0	28.0	2.0	120.5	31.1	98.9	91.8
7.0	26.0	18.0	-	32.0	28.0	2.0	30.4	27.7	25.5	19.9
7.0	26.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	26.0	20.0	-	-	27.0	2.0	-	27.0	-	-
7.0	26.0	21.0	-	-	27.0	3.0	-	27.0	-	-
7.0	26.0	22.0	-	-	27.0	3.0	-	27.0	-	-
7.0	26.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	-	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	1.0	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	2.0	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	3.0	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	4.0	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	5.0	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	6.0	-	19.0	27.0	3.0	18.0	25.8	15.2	9.9
7.0	27.0	7.0	39.0	142.0	28.0	3.0	144.9	30.4	118.3	110.9
7.0	27.0	8.0	544.0	167.0	28.0	3.0	450.2	39.1	347.1	333.5
7.0	27.0	9.0	115.0	351.0	29.0	3.0	424.1	40.4	334.0	320.8
7.0	27.0	10.0	83.0	417.0	29.0	4.0	477.4	40.5	376.4	361.8
7.0	27.0	11.0	168.0	488.0	29.0	3.0	643.8	46.2	493.2	474.7
7.0	27.0	12.0	76.0	476.0	30.0	3.0	542.1	45.1	417.7	401.8
7.0	27.0	13.0	110.0	475.0	30.0	3.0	569.3	45.5	437.7	421.2
7.0	27.0	14.0	322.0	399.0	30.0	3.0	670.0	48.1	507.5	488.5
7.0	27.0	15.0	61.0	319.0	29.0	2.0	349.7	40.7	275.2	263.7
7.0	27.0	16.0	120.0	242.0	29.0	2.0	291.7	37.6	230.8	220.6
7.0	27.0	17.0	48.0	134.0	28.0	1.0	138.3	32.8	111.1	103.8
7.0	27.0	18.0	-	3.0	28.0	1.0	2.8	26.8	2.4	-
7.0	27.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	27.0	20.0	-	-	28.0	2.0	-	28.0	-	-
7.0	27.0	21.0	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	22.0	-	-	27.0	3.0	-	27.0	-	-
7.0	27.0	23.0	-	-	27.0	3.0	-	27.0	-	-
7.0	28.0	-	-	-	27.0	3.0	-	27.0	-	-
7.0	28.0	1.0	-	-	27.0	3.0	-	27.0	-	-
7.0	28.0	2.0	-	-	27.0	3.0	-	27.0	-	-

7.0	28.0	3.0	-	-	27.0	3.0	-	27.0	-	-
7.0	28.0	4.0	-	-	27.0	3.0	-	27.0	-	-
7.0	28.0	5.0	-	-	27.0	3.0	-	27.0	-	-
7.0	28.0	6.0	341.0	46.0	28.0	4.0	58.2	28.0	37.5	31.7
7.0	28.0	7.0	625.0	75.0	28.0	4.0	259.3	33.2	184.4	175.4
7.0	28.0	8.0	746.0	94.0	29.0	4.0	487.8	40.3	370.6	356.3
7.0	28.0	9.0	809.0	110.0	30.0	4.0	694.1	46.9	524.8	505.1
7.0	28.0	10.0	847.0	120.0	30.0	4.0	855.8	51.2	637.0	612.9
7.0	28.0	11.0	859.0	130.0	31.0	3.0	953.0	57.1	688.3	662.0
7.0	28.0	12.0	854.0	140.0	31.0	3.0	981.1	58.0	705.0	678.0
7.0	28.0	13.0	824.0	153.0	31.0	3.0	935.6	57.0	676.0	650.3
7.0	28.0	14.0	795.0	149.0	31.0	3.0	831.5	54.3	608.6	585.7
7.0	28.0	15.0	748.0	137.0	30.0	3.0	663.3	48.8	496.0	477.4
7.0	28.0	16.0	692.0	110.0	30.0	3.0	456.8	42.9	341.1	327.7
7.0	28.0	17.0	557.0	84.0	29.0	3.0	231.5	35.3	161.5	153.0
7.0	28.0	18.0	267.0	43.0	29.0	3.0	42.0	29.4	30.1	24.4
7.0	28.0	19.0	-	-	28.0	3.0	-	28.0	-	-
7.0	28.0	20.0	-	-	28.0	3.0	-	28.0	-	-
7.0	28.0	21.0	-	-	28.0	3.0	-	28.0	-	-
7.0	28.0	22.0	-	-	28.0	3.0	-	28.0	-	-
7.0	28.0	23.0	-	-	28.0	3.0	-	28.0	-	-
7.0	29.0	-	-	-	27.0	3.0	-	27.0	-	-
7.0	29.0	1.0	-	-	27.0	3.0	-	27.0	-	-
7.0	29.0	2.0	-	-	27.0	3.0	-	27.0	-	-
7.0	29.0	3.0	-	-	27.0	3.0	-	27.0	-	-
7.0	29.0	4.0	-	-	27.0	2.0	-	27.0	-	-
7.0	29.0	5.0	-	-	27.0	2.0	-	27.0	-	-
7.0	29.0	6.0	332.0	48.0	28.0	3.0	58.8	28.0	38.4	32.6
7.0	29.0	7.0	604.0	81.0	29.0	3.0	258.9	34.7	183.7	174.7
7.0	29.0	8.0	724.0	104.0	30.0	3.0	486.5	42.4	366.2	352.0
7.0	29.0	9.0	798.0	116.0	30.0	3.0	694.3	48.5	520.6	501.1
7.0	29.0	10.0	479.0	341.0	31.0	3.0	759.6	51.8	564.2	543.1
7.0	29.0	11.0	477.0	402.0	31.0	3.0	864.7	54.6	633.2	609.3
7.0	29.0	12.0	877.0	124.0	31.0	3.0	989.3	58.0	711.1	683.8
7.0	29.0	13.0	868.0	124.0	31.0	3.0	950.3	57.4	685.1	659.0
7.0	29.0	14.0	851.0	116.0	31.0	3.0	843.8	54.6	616.4	593.1
7.0	29.0	15.0	813.0	105.0	31.0	3.0	675.9	50.1	501.5	482.7
7.0	29.0	16.0	742.0	92.0	30.0	3.0	465.0	43.2	346.0	332.4
7.0	29.0	17.0	605.0	74.0	29.0	3.0	234.8	35.4	161.8	153.3
7.0	29.0	18.0	305.0	40.0	28.0	3.0	40.9	28.4	28.7	23.1
7.0	29.0	19.0	-	-	28.0	3.0	-	28.0	-	-
7.0	29.0	20.0	-	-	28.0	3.0	-	28.0	-	-
7.0	29.0	21.0	-	-	27.0	3.0	-	27.0	-	-
7.0	29.0	22.0	-	-	27.0	2.0	-	27.0	-	-
7.0	29.0	23.0	-	-	27.0	2.0	-	27.0	-	-
7.0	30.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	30.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	30.0	2.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	3.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	4.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	5.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	6.0	338.0	46.0	28.0	1.0	58.0	27.9	37.6	31.8
7.0	30.0	7.0	603.0	80.0	29.0	1.0	257.8	36.5	181.2	172.2
7.0	30.0	8.0	728.0	101.0	30.0	1.0	486.0	46.4	358.2	344.3
7.0	30.0	9.0	796.0	115.0	30.0	2.0	692.5	50.7	513.2	494.0
7.0	30.0	10.0	561.0	313.0	31.0	2.0	804.1	55.5	585.2	563.2
7.0	30.0	11.0	509.0	391.0	31.0	2.0	885.5	58.1	635.9	611.8
7.0	30.0	12.0	843.0	144.0	31.0	3.0	975.9	57.7	702.5	675.6
7.0	30.0	13.0	798.0	168.0	31.0	3.0	933.3	56.9	674.6	648.9
7.0	30.0	14.0	780.0	156.0	30.0	3.0	827.0	53.2	608.9	586.0
7.0	30.0	15.0	743.0	138.0	30.0	2.0	661.5	51.1	488.5	470.2
7.0	30.0	16.0	688.0	109.0	30.0	2.0	454.1	44.6	336.1	322.9
7.0	30.0	17.0	556.0	82.0	29.0	2.0	229.1	36.2	158.9	150.5
7.0	30.0	18.0	271.0	41.0	28.0	2.0	40.1	28.5	28.8	23.1
7.0	30.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	30.0	20.0	-	-	28.0	2.0	-	28.0	-	-
7.0	30.0	21.0	-	-	28.0	2.0	-	28.0	-	-
7.0	30.0	22.0	-	-	28.0	2.0	-	28.0	-	-
7.0	30.0	23.0	-	-	28.0	2.0	-	28.0	-	-
7.0	31.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	2.0	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	3.0	-	-	27.0	1.0	-	27.0	-	-
7.0	31.0	4.0	-	-	27.0	1.0	-	27.0	-	-
7.0	31.0	5.0	-	-	27.0	1.0	-	27.0	-	-
7.0	31.0	6.0	287.0	49.0	28.0	1.0	57.1	27.8	38.6	32.7
7.0	31.0	7.0	564.0	88.0	29.0	1.0	254.0	36.4	180.0	171.0
7.0	31.0	8.0	693.0	113.0	30.0	1.0	479.1	46.2	354.1	340.3
7.0	31.0	9.0	766.0	130.0	30.0	1.0	686.5	54.0	499.9	481.1
7.0	31.0	10.0	832.0	126.0	31.0	2.0	850.9	56.8	614.6	591.5
7.0	31.0	11.0	858.0	128.0	31.0	2.0	952.7	60.1	676.5	650.8

7.0	31.0	12.0	867.0	129.0	32.0	2.0	986.1	62.3	691.7	665.3
7.0	31.0	13.0	850.0	134.0	32.0	2.0	944.4	61.3	666.1	640.7
7.0	31.0	14.0	829.0	127.0	31.0	2.0	837.0	57.3	602.5	579.8
7.0	31.0	15.0	785.0	117.0	31.0	2.0	670.4	52.4	491.5	473.1
7.0	31.0	16.0	714.0	100.0	30.0	3.0	459.2	43.0	342.3	328.9
7.0	31.0	17.0	575.0	78.0	30.0	3.0	230.3	36.3	158.9	150.5
7.0	31.0	18.0	280.0	40.0	29.0	3.0	39.3	29.3	27.9	22.3
7.0	31.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	31.0	20.0	-	-	28.0	2.0	-	28.0	-	-
7.0	31.0	21.0	-	-	28.0	2.0	-	28.0	-	-
7.0	31.0	22.0	-	-	28.0	2.0	-	28.0	-	-
7.0	31.0	23.0	-	-	28.0	2.0	-	28.0	-	-
8.0	1.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	1.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	1.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	1.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	1.0	4.0	-	-	27.0	2.0	-	27.0	-	-
8.0	1.0	5.0	-	-	27.0	2.0	-	27.0	-	-
8.0	1.0	6.0	192.0	56.0	28.0	2.0	59.1	28.0	43.3	37.4
8.0	1.0	7.0	156.0	149.0	28.0	2.0	186.9	32.2	146.7	138.6
8.0	1.0	8.0	620.0	140.0	29.0	2.0	467.7	42.1	354.1	340.3
8.0	1.0	9.0	714.0	155.0	29.0	2.0	675.0	49.1	504.8	485.9
8.0	1.0	10.0	229.0	428.0	30.0	1.0	621.0	53.0	458.6	441.3
8.0	1.0	11.0	93.0	471.0	30.0	1.0	551.6	50.5	413.0	397.3
8.0	1.0	12.0	450.0	427.0	30.0	1.0	880.0	60.3	624.4	600.8
8.0	1.0	13.0	784.0	174.0	31.0	1.0	927.5	64.2	643.5	619.1
8.0	1.0	14.0	753.0	168.0	31.0	1.0	817.0	61.1	575.7	554.1
8.0	1.0	15.0	700.0	156.0	30.0	1.0	650.4	54.6	471.6	453.8
8.0	1.0	16.0	596.0	142.0	30.0	1.0	440.6	47.1	323.4	310.6
8.0	1.0	17.0	380.0	110.0	29.0	1.0	206.7	37.1	148.3	140.1
8.0	1.0	18.0	135.0	45.0	29.0	1.0	41.2	29.7	32.1	26.4
8.0	1.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	1.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	1.0	21.0	-	-	28.0	2.0	-	28.0	-	-
8.0	1.0	22.0	-	-	28.0	2.0	-	28.0	-	-
8.0	1.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	2.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	2.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	6.0	240.0	51.0	27.0	1.0	56.3	26.8	39.7	33.8
8.0	2.0	7.0	280.0	134.0	28.0	1.0	210.8	33.8	159.6	151.1
8.0	2.0	8.0	485.0	186.0	29.0	-	439.6	47.6	325.3	312.4
8.0	2.0	9.0	258.0	341.0	30.0	-	522.7	53.4	383.7	369.0
8.0	2.0	10.0	476.0	341.0	30.0	-	759.8	62.1	533.0	513.1
8.0	2.0	11.0	364.0	433.0	30.0	-	785.6	64.4	544.4	524.0
8.0	2.0	12.0	434.0	424.0	31.0	-	862.1	68.0	585.3	563.3
8.0	2.0	13.0	59.0	439.0	31.0	-	486.8	56.2	353.3	339.6
8.0	2.0	14.0	463.0	336.0	31.0	-	735.8	62.0	516.3	496.9
8.0	2.0	15.0	409.0	288.0	30.0	1.0	573.9	51.8	423.9	407.8
8.0	2.0	16.0	424.0	193.0	30.0	1.0	401.9	45.4	300.1	288.0
8.0	2.0	17.0	504.0	92.0	30.0	1.0	224.4	38.5	155.6	147.3
8.0	2.0	18.0	86.0	43.0	29.0	1.0	39.7	29.8	31.6	25.9
8.0	2.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	2.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	2.0	21.0	-	-	28.0	1.0	-	28.0	-	-
8.0	2.0	22.0	-	-	28.0	1.0	-	28.0	-	-
8.0	2.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	3.0	-	-	27.0	-	-	27.0	-	-
8.0	3.0	4.0	-	-	27.0	-	-	27.0	-	-
8.0	3.0	5.0	-	-	27.0	-	-	27.0	-	-
8.0	3.0	6.0	267.0	49.0	28.0	-	56.1	27.3	38.5	32.7
8.0	3.0	7.0	544.0	92.0	29.0	-	252.5	38.7	177.6	168.7
8.0	3.0	8.0	677.0	119.0	29.0	1.0	478.0	45.1	355.5	341.7
8.0	3.0	9.0	753.0	136.0	30.0	2.0	685.1	50.4	508.7	489.6
8.0	3.0	10.0	836.0	122.0	30.0	2.0	852.9	55.9	619.2	595.9
8.0	3.0	11.0	852.0	131.0	30.0	2.0	952.5	59.2	680.1	654.1
8.0	3.0	12.0	852.0	136.0	30.0	3.0	980.7	57.1	708.5	681.3
8.0	3.0	13.0	815.0	154.0	30.0	3.0	938.6	56.1	681.5	655.5
8.0	3.0	14.0	785.0	150.0	30.0	3.0	827.5	53.2	609.3	586.3
8.0	3.0	15.0	738.0	138.0	29.0	3.0	659.3	47.7	496.0	477.4
8.0	3.0	16.0	693.0	105.0	29.0	2.0	452.9	43.6	336.8	323.6
8.0	3.0	17.0	252.0	125.0	28.0	2.0	185.6	33.9	139.5	131.5
8.0	3.0	18.0	261.0	38.0	28.0	2.0	36.5	28.2	26.5	20.9
8.0	3.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	3.0	20.0	-	-	27.0	2.0	-	27.0	-	-

8.0	3.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	3.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	3.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	4.0	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	5.0	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	6.0	-	3.0	27.0	2.0	2.8	25.2	2.4	-
8.0	4.0	7.0	337.0	126.0	28.0	2.0	221.6	33.0	166.5	157.9
8.0	4.0	8.0	-	67.0	28.0	2.0	63.7	29.2	53.1	47.0
8.0	4.0	9.0	-	44.0	29.0	2.0	41.8	28.8	35.0	29.2
8.0	4.0	10.0	9.0	214.0	30.0	2.0	212.7	34.9	172.5	163.7
8.0	4.0	11.0	80.0	461.0	30.0	2.0	530.2	45.0	408.6	393.1
8.0	4.0	12.0	431.0	424.0	30.0	3.0	860.7	52.8	636.5	612.4
8.0	4.0	13.0	64.0	443.0	29.0	3.0	496.1	43.6	385.1	370.4
8.0	4.0	14.0	735.0	178.0	29.0	3.0	813.0	50.5	607.4	584.5
8.0	4.0	15.0	672.0	169.0	28.0	4.0	644.6	44.6	493.1	474.6
8.0	4.0	16.0	227.0	231.0	28.0	4.0	335.8	36.7	264.9	253.7
8.0	4.0	17.0	395.0	115.0	28.0	4.0	215.1	32.9	157.5	149.2
8.0	4.0	18.0	120.0	45.0	27.0	3.0	40.4	27.2	32.2	26.5
8.0	4.0	19.0	-	-	27.0	3.0	-	27.0	-	-
8.0	4.0	20.0	-	-	27.0	3.0	-	27.0	-	-
8.0	4.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	4.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	5.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	5.0	1.0	-	-	26.0	2.0	-	26.0	-	-
8.0	5.0	2.0	-	-	26.0	2.0	-	26.0	-	-
8.0	5.0	3.0	-	-	26.0	2.0	-	26.0	-	-
8.0	5.0	4.0	-	-	26.0	2.0	-	26.0	-	-
8.0	5.0	5.0	-	-	26.0	2.0	-	26.0	-	-
8.0	5.0	6.0	352.0	41.0	27.0	2.0	54.2	26.8	34.2	28.5
8.0	5.0	7.0	180.0	143.0	28.0	3.0	189.1	31.8	147.8	139.6
8.0	5.0	8.0	751.0	90.0	29.0	3.0	489.9	41.3	370.7	356.4
8.0	5.0	9.0	820.0	102.0	29.0	3.0	699.2	47.6	526.7	507.0
8.0	5.0	10.0	861.0	108.0	30.0	3.0	862.5	53.4	634.7	610.7
8.0	5.0	11.0	877.0	115.0	30.0	3.0	962.7	56.4	698.1	671.4
8.0	5.0	12.0	878.0	119.0	30.0	3.0	991.7	57.4	715.3	687.8
8.0	5.0	13.0	862.0	123.0	30.0	3.0	948.8	56.4	687.8	661.6
8.0	5.0	14.0	835.0	120.0	30.0	3.0	837.8	53.5	615.8	592.6
8.0	5.0	15.0	790.0	112.0	30.0	3.0	670.2	49.0	500.4	481.7
8.0	5.0	16.0	723.0	94.0	30.0	3.0	457.7	43.0	340.9	327.6
8.0	5.0	17.0	583.0	73.0	29.0	2.0	226.6	36.2	155.5	147.2
8.0	5.0	18.0	279.0	35.0	28.0	2.0	34.3	28.3	24.7	19.1
8.0	5.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	5.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	5.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	5.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	5.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	6.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	6.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	6.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	6.0	3.0	-	-	26.0	2.0	-	26.0	-	-
8.0	6.0	4.0	-	-	26.0	2.0	-	26.0	-	-
8.0	6.0	5.0	-	-	26.0	2.0	-	26.0	-	-
8.0	6.0	6.0	309.0	44.0	27.0	2.0	54.1	26.8	35.6	29.8
8.0	6.0	7.0	592.0	80.0	28.0	2.0	256.1	34.3	182.4	173.4
8.0	6.0	8.0	722.0	101.0	28.0	2.0	486.1	41.9	367.1	352.9
8.0	6.0	9.0	793.0	116.0	29.0	2.0	696.2	49.8	518.6	499.2
8.0	6.0	10.0	840.0	121.0	30.0	3.0	857.9	53.3	631.8	607.9
8.0	6.0	11.0	855.0	130.0	30.0	2.0	957.1	59.3	682.8	656.8
8.0	6.0	12.0	855.0	135.0	30.0	2.0	985.3	60.4	698.7	672.0
8.0	6.0	13.0	844.0	135.0	31.0	2.0	944.0	60.4	669.5	644.0
8.0	6.0	14.0	810.0	134.0	31.0	2.0	830.6	57.2	598.5	576.0
8.0	6.0	15.0	758.0	126.0	30.0	2.0	662.1	51.2	488.8	470.4
8.0	6.0	16.0	682.0	107.0	30.0	2.0	449.3	44.5	332.7	319.5
8.0	6.0	17.0	266.0	121.0	29.0	2.0	185.4	34.9	137.9	130.0
8.0	6.0	18.0	-	2.0	28.0	2.0	1.9	27.1	1.6	-
8.0	6.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	6.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	6.0	21.0	-	-	28.0	2.0	-	28.0	-	-
8.0	6.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	6.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	7.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	7.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	7.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	7.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	7.0	4.0	-	-	27.0	2.0	-	27.0	-	-
8.0	7.0	5.0	-	-	27.0	2.0	-	27.0	-	-

8.0	7.0	6.0	237.0	48.0	27.0	2.0	53.8	26.8	37.7	31.9
8.0	7.0	7.0	499.0	99.0	28.0	2.0	246.9	34.0	179.3	170.3
8.0	7.0	8.0	397.0	209.0	29.0	2.0	417.4	40.9	321.1	308.3
8.0	7.0	9.0	498.0	258.0	29.0	2.0	622.2	47.5	470.5	452.8
8.0	7.0	10.0	341.0	397.0	29.0	2.0	696.2	50.3	521.3	501.8
8.0	7.0	11.0	91.0	467.0	29.0	2.0	547.7	46.4	419.0	403.1
8.0	7.0	12.0	22.0	360.0	29.0	2.0	369.4	40.7	291.0	279.1
8.0	7.0	13.0	4.0	158.0	30.0	2.0	155.1	34.7	126.0	118.3
8.0	7.0	14.0	14.0	271.0	30.0	2.0	271.8	37.2	218.0	208.1
8.0	7.0	15.0	573.0	221.0	30.0	2.0	625.1	48.0	470.5	452.8
8.0	7.0	16.0	517.0	162.0	29.0	2.0	418.8	42.5	315.9	303.3
8.0	7.0	17.0	20.0	118.0	29.0	1.0	116.3	33.8	93.9	87.0
8.0	7.0	18.0	-	32.0	28.0	1.0	30.0	27.6	25.2	19.6
8.0	7.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	7.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	7.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	7.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	7.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	8.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	8.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	8.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	8.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	8.0	4.0	-	-	26.0	2.0	-	26.0	-	-
8.0	8.0	5.0	-	-	26.0	2.0	-	26.0	-	-
8.0	8.0	6.0	-	33.0	27.0	2.0	31.3	26.1	26.5	20.9
8.0	8.0	7.0	98.0	143.0	27.0	2.0	165.0	30.4	132.4	124.6
8.0	8.0	8.0	14.0	195.0	27.0	2.0	192.9	31.8	158.6	150.1
8.0	8.0	9.0	46.0	311.0	27.0	2.0	334.8	36.2	269.6	258.3
8.0	8.0	10.0	314.0	405.0	27.0	2.0	681.2	46.8	519.6	500.2
8.0	8.0	11.0	359.0	435.0	27.0	3.0	787.0	48.5	595.6	573.1
8.0	8.0	12.0	254.0	489.0	27.0	3.0	748.3	47.8	568.2	546.9
8.0	8.0	13.0	13.0	263.0	27.0	3.0	265.2	35.2	214.8	205.0
8.0	8.0	14.0	-	94.0	27.0	3.0	89.6	28.8	74.9	68.4
8.0	8.0	15.0	-	99.0	27.0	3.0	94.3	28.3	79.0	72.3
8.0	8.0	16.0	1.0	159.0	26.0	4.0	151.6	28.6	126.8	119.1
8.0	8.0	17.0	36.0	122.0	26.0	3.0	124.4	28.3	102.4	95.3
8.0	8.0	18.0	-	27.0	26.0	3.0	25.6	25.5	21.7	16.2
8.0	8.0	19.0	-	-	26.0	3.0	-	26.0	-	-
8.0	8.0	20.0	-	-	26.0	3.0	-	26.0	-	-
8.0	8.0	21.0	-	-	26.0	3.0	-	26.0	-	-
8.0	8.0	22.0	-	-	25.0	3.0	-	25.0	-	-
8.0	8.0	23.0	-	-	25.0	3.0	-	25.0	-	-
8.0	9.0	-	-	-	25.0	2.0	-	25.0	-	-
8.0	9.0	1.0	-	-	25.0	2.0	-	25.0	-	-
8.0	9.0	2.0	-	-	25.0	2.0	-	25.0	-	-
8.0	9.0	3.0	-	-	25.0	2.0	-	25.0	-	-
8.0	9.0	4.0	-	-	25.0	3.0	-	25.0	-	-
8.0	9.0	5.0	-	-	25.0	3.0	-	25.0	-	-
8.0	9.0	6.0	-	3.0	25.0	3.0	2.8	23.4	2.4	-
8.0	9.0	7.0	552.0	86.0	26.0	4.0	250.9	30.8	183.1	174.1
8.0	9.0	8.0	-	33.0	26.0	4.0	31.3	26.0	26.5	20.9
8.0	9.0	9.0	104.0	343.0	26.0	4.0	408.5	34.8	330.9	317.8
8.0	9.0	10.0	524.0	326.0	27.0	4.0	792.5	46.0	606.9	584.0
8.0	9.0	11.0	510.0	388.0	27.0	4.0	892.1	49.4	671.9	646.3
8.0	9.0	12.0	855.0	131.0	27.0	4.0	984.0	51.8	731.7	703.5
8.0	9.0	13.0	877.0	109.0	28.0	4.0	951.9	52.2	705.9	678.9
8.0	9.0	14.0	844.0	112.0	28.0	4.0	839.1	49.5	630.1	606.3
8.0	9.0	15.0	788.0	109.0	28.0	5.0	666.3	43.5	511.8	492.6
8.0	9.0	16.0	694.0	101.0	28.0	5.0	448.9	38.3	342.6	329.2
8.0	9.0	17.0	541.0	78.0	27.0	5.0	219.0	31.7	154.6	146.2
8.0	9.0	18.0	218.0	35.0	27.0	5.0	32.8	26.9	24.5	18.9
8.0	9.0	19.0	-	-	27.0	5.0	-	27.0	-	-
8.0	9.0	20.0	-	-	27.0	5.0	-	27.0	-	-
8.0	9.0	21.0	-	-	26.0	5.0	-	26.0	-	-
8.0	9.0	22.0	-	-	26.0	4.0	-	26.0	-	-
8.0	9.0	23.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	-	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	1.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	2.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	3.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	4.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	5.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	6.0	53.0	47.0	27.0	4.0	45.2	26.7	36.4	30.7
8.0	10.0	7.0	218.0	137.0	27.0	5.0	196.6	30.2	153.4	145.1
8.0	10.0	8.0	-	110.0	28.0	5.0	104.6	29.5	87.1	80.3
8.0	10.0	9.0	91.0	339.0	28.0	6.0	395.4	35.1	319.9	307.1
8.0	10.0	10.0	335.0	398.0	28.0	6.0	693.9	41.7	543.7	523.3
8.0	10.0	11.0	456.0	400.0	28.0	6.0	852.5	45.4	655.7	630.8
8.0	10.0	12.0	75.0	470.0	28.0	6.0	539.3	39.4	427.8	411.6
8.0	10.0	13.0	24.0	357.0	27.0	5.0	367.3	35.2	297.5	285.4
8.0	10.0	14.0	88.0	405.0	27.0	5.0	471.8	37.1	378.3	363.8

8.0	10.0	15.0	8.0	208.0	27.0	5.0	204.2	31.4	168.5	159.8
8.0	10.0	16.0	-	101.0	27.0	4.0	96.0	28.5	80.3	73.7
8.0	10.0	17.0	-	25.0	26.0	4.0	23.7	25.4	20.1	14.6
8.0	10.0	18.0	-	16.0	26.0	4.0	15.2	24.9	12.9	7.6
8.0	10.0	19.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	20.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	21.0	-	-	26.0	4.0	-	26.0	-	-
8.0	10.0	22.0	-	-	26.0	3.0	-	26.0	-	-
8.0	10.0	23.0	-	-	26.0	3.0	-	26.0	-	-
8.0	11.0	-	-	-	26.0	3.0	-	26.0	-	-
8.0	11.0	1.0	-	-	26.0	3.0	-	26.0	-	-
8.0	11.0	2.0	-	-	26.0	3.0	-	26.0	-	-
8.0	11.0	3.0	-	-	26.0	3.0	-	26.0	-	-
8.0	11.0	4.0	-	-	26.0	3.0	-	26.0	-	-
8.0	11.0	5.0	-	-	26.0	2.0	-	26.0	-	-
8.0	11.0	6.0	130.0	46.0	27.0	2.0	47.7	26.6	36.0	30.2
8.0	11.0	7.0	443.0	112.0	28.0	3.0	242.3	33.2	178.7	169.8
8.0	11.0	8.0	601.0	146.0	28.0	3.0	468.9	39.9	359.7	345.7
8.0	11.0	9.0	692.0	166.0	29.0	3.0	677.6	47.0	512.8	493.6
8.0	11.0	10.0	811.0	137.0	29.0	3.0	857.0	52.2	634.8	610.8
8.0	11.0	11.0	832.0	144.0	30.0	3.0	953.1	56.1	692.2	665.7
8.0	11.0	12.0	835.0	148.0	30.0	3.0	982.2	57.1	709.5	682.3
8.0	11.0	13.0	768.0	186.0	30.0	3.0	931.2	55.9	676.9	651.1
8.0	11.0	14.0	740.0	177.0	30.0	3.0	819.4	53.0	604.1	581.4
8.0	11.0	15.0	688.0	161.0	30.0	3.0	649.2	48.4	486.8	468.5
8.0	11.0	16.0	615.0	130.0	29.0	2.0	438.0	43.1	327.5	314.5
8.0	11.0	17.0	455.0	96.0	29.0	2.0	211.7	35.6	149.6	141.4
8.0	11.0	18.0	135.0	37.0	28.0	2.0	34.4	28.2	26.8	21.2
8.0	11.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	11.0	20.0	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	12.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	12.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	12.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	12.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	12.0	4.0	-	-	26.0	-	-	26.0	-	-
8.0	12.0	5.0	-	-	26.0	-	-	26.0	-	-
8.0	12.0	6.0	211.0	48.0	27.0	-	52.9	26.0	37.9	32.1
8.0	12.0	7.0	541.0	90.0	28.0	-	252.6	37.6	179.0	170.0
8.0	12.0	8.0	683.0	116.0	29.0	-	483.5	49.6	351.6	337.9
8.0	12.0	9.0	758.0	135.0	29.0	-	694.7	58.7	493.2	474.7
8.0	12.0	10.0	808.0	143.0	30.0	-	861.4	66.5	589.1	566.9
8.0	12.0	11.0	832.0	148.0	30.0	-	957.9	70.5	640.7	616.5
8.0	12.0	12.0	841.0	148.0	31.0	-	989.0	72.8	652.2	627.4
8.0	12.0	13.0	814.0	158.0	31.0	-	947.9	71.8	629.0	605.2
8.0	12.0	14.0	786.0	151.0	31.0	-	833.3	68.0	564.4	543.3
8.0	12.0	15.0	732.0	139.0	31.0	-	657.4	61.7	458.0	440.8
8.0	12.0	16.0	667.0	111.0	31.0	1.0	444.8	48.3	322.9	310.1
8.0	12.0	17.0	501.0	85.0	30.0	1.0	214.2	38.4	147.4	139.2
8.0	12.0	18.0	162.0	34.0	29.0	1.0	31.3	29.4	23.6	18.1
8.0	12.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	12.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	12.0	21.0	-	-	28.0	2.0	-	28.0	-	-
8.0	12.0	22.0	-	-	28.0	2.0	-	28.0	-	-
8.0	12.0	23.0	-	-	27.0	3.0	-	27.0	-	-
8.0	13.0	-	-	-	27.0	3.0	-	27.0	-	-
8.0	13.0	1.0	-	-	27.0	3.0	-	27.0	-	-
8.0	13.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	13.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	13.0	4.0	-	-	27.0	2.0	-	27.0	-	-
8.0	13.0	5.0	-	-	27.0	2.0	-	27.0	-	-
8.0	13.0	6.0	224.0	45.0	27.0	2.0	51.1	26.7	35.8	30.0
8.0	13.0	7.0	505.0	96.0	28.0	2.0	248.0	34.0	180.0	171.1
8.0	13.0	8.0	646.0	127.0	29.0	1.0	475.4	45.0	354.6	340.8
8.0	13.0	9.0	723.0	149.0	30.0	1.0	684.8	53.9	499.4	480.6
8.0	13.0	10.0	777.0	158.0	30.0	1.0	850.2	60.0	603.3	580.5
8.0	13.0	11.0	800.0	165.0	31.0	-	951.3	71.1	633.9	609.9
8.0	13.0	12.0	808.0	167.0	31.0	-	983.2	72.6	649.2	624.5
8.0	13.0	13.0	781.0	177.0	32.0	-	935.9	72.3	619.2	595.8
8.0	13.0	14.0	213.0	414.0	32.0	-	594.0	61.2	419.0	403.1
8.0	13.0	15.0	693.0	157.0	32.0	-	648.8	60.8	454.5	437.4
8.0	13.0	16.0	592.0	137.0	31.0	-	433.0	52.8	307.9	295.5
8.0	13.0	17.0	414.0	102.0	30.0	-	206.0	41.7	142.5	134.4
8.0	13.0	18.0	102.0	35.0	30.0	1.0	32.2	30.4	25.1	19.6
8.0	13.0	19.0	-	-	29.0	1.0	-	29.0	-	-
8.0	13.0	20.0	-	-	29.0	2.0	-	29.0	-	-
8.0	13.0	21.0	-	-	28.0	2.0	-	28.0	-	-
8.0	13.0	22.0	-	-	28.0	2.0	-	28.0	-	-
8.0	13.0	23.0	-	-	28.0	3.0	-	28.0	-	-

8.0	14.0	-	-	-	28.0	2.0	-	28.0	-	-
8.0	14.0	1.0	-	-	28.0	2.0	-	28.0	-	-
8.0	14.0	2.0	-	-	28.0	2.0	-	28.0	-	-
8.0	14.0	3.0	-	-	28.0	2.0	-	28.0	-	-
8.0	14.0	4.0	-	-	28.0	2.0	-	28.0	-	-
8.0	14.0	5.0	-	-	28.0	1.0	-	28.0	-	-
8.0	14.0	6.0	6.0	42.0	28.0	1.0	39.5	27.2	33.0	27.3
8.0	14.0	7.0	416.0	117.0	28.0	1.0	240.0	34.7	176.7	167.9
8.0	14.0	8.0	564.0	159.0	29.0	1.0	463.7	44.6	347.9	334.3
8.0	14.0	9.0	648.0	188.0	30.0	1.0	669.9	53.4	490.3	471.9
8.0	14.0	10.0	342.0	394.0	30.0	1.0	698.9	55.4	509.3	490.2
8.0	14.0	11.0	499.0	389.0	30.0	1.0	886.8	61.2	626.0	602.4
8.0	14.0	12.0	414.0	420.0	30.0	1.0	847.8	60.9	599.4	576.9
8.0	14.0	13.0	488.0	385.0	30.0	1.0	865.8	61.3	610.9	587.9
8.0	14.0	14.0	575.0	291.0	30.0	1.0	793.1	59.2	565.4	544.2
8.0	14.0	15.0	-	139.0	30.0	1.0	132.5	37.7	106.0	98.8
8.0	14.0	16.0	66.0	219.0	29.0	1.0	242.8	36.5	194.0	184.7
8.0	14.0	17.0	-	101.0	29.0	1.0	95.3	31.9	78.5	71.8
8.0	14.0	18.0	25.0	31.0	28.0	1.0	29.2	27.5	24.2	18.6
8.0	14.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	14.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	14.0	21.0	-	-	28.0	2.0	-	28.0	-	-
8.0	14.0	22.0	-	-	28.0	2.0	-	28.0	-	-
8.0	14.0	23.0	-	-	28.0	2.0	-	28.0	-	-
8.0	15.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	15.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	15.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	15.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	15.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	15.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	15.0	6.0	167.0	48.0	28.0	1.0	51.7	27.6	37.9	32.1
8.0	15.0	7.0	469.0	104.0	28.0	1.0	244.1	35.0	177.6	168.7
8.0	15.0	8.0	582.0	149.0	29.0	1.0	464.3	44.6	348.0	334.4
8.0	15.0	9.0	382.0	303.0	30.0	1.0	582.8	50.7	433.9	417.5
8.0	15.0	10.0	309.0	403.0	30.0	1.0	679.5	54.3	498.1	479.4
8.0	15.0	11.0	8.0	199.0	30.0	1.0	198.8	39.3	157.8	149.4
8.0	15.0	12.0	14.0	280.0	30.0	1.0	283.9	39.3	225.3	215.2
8.0	15.0	13.0	22.0	343.0	30.0	1.0	352.2	42.1	275.5	264.0
8.0	15.0	14.0	22.0	309.0	30.0	1.0	316.1	41.3	248.2	237.5
8.0	15.0	15.0	-	113.0	30.0	1.0	107.6	33.9	87.8	80.9
8.0	15.0	16.0	-	120.0	29.0	1.0	114.1	31.7	94.0	87.1
8.0	15.0	17.0	-	90.0	29.0	1.0	85.1	30.7	70.5	64.0
8.0	15.0	18.0	-	17.0	28.0	1.0	16.1	26.9	13.6	8.2
8.0	15.0	19.0	-	-	28.0	-	-	28.0	-	-
8.0	15.0	20.0	-	-	28.0	-	-	28.0	-	-
8.0	15.0	21.0	-	-	27.0	-	-	27.0	-	-
8.0	15.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	15.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	2.0	-	-	26.0	2.0	-	26.0	-	-
8.0	16.0	3.0	-	-	26.0	2.0	-	26.0	-	-
8.0	16.0	4.0	-	-	26.0	2.0	-	26.0	-	-
8.0	16.0	5.0	-	-	26.0	2.0	-	26.0	-	-
8.0	16.0	6.0	239.0	42.0	27.0	2.0	49.8	26.7	34.1	28.3
8.0	16.0	7.0	506.0	95.0	27.0	1.0	248.6	34.1	180.5	171.6
8.0	16.0	8.0	651.0	124.0	28.0	1.0	477.2	44.1	357.8	343.8
8.0	16.0	9.0	731.0	144.0	29.0	1.0	687.4	53.1	503.7	484.8
8.0	16.0	10.0	799.0	142.0	29.0	-	856.2	65.3	589.5	567.3
8.0	16.0	11.0	818.0	151.0	30.0	-	950.8	70.2	636.9	612.8
8.0	16.0	12.0	820.0	155.0	30.0	-	977.9	71.6	649.9	625.2
8.0	16.0	13.0	805.0	157.0	30.0	-	940.5	70.6	628.6	604.8
8.0	16.0	14.0	776.0	151.0	30.0	-	825.7	66.8	563.3	542.1
8.0	16.0	15.0	721.0	139.0	30.0	-	650.1	60.5	456.0	438.9
8.0	16.0	16.0	631.0	119.0	29.0	1.0	433.7	45.9	319.0	306.3
8.0	16.0	17.0	455.0	89.0	29.0	1.0	203.1	36.9	141.6	133.5
8.0	16.0	18.0	77.0	29.0	28.0	1.0	26.9	28.1	21.3	15.8
8.0	16.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	16.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	17.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	17.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	17.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	17.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	17.0	4.0	-	-	27.0	2.0	-	27.0	-	-
8.0	17.0	5.0	-	-	27.0	2.0	-	27.0	-	-
8.0	17.0	6.0	312.0	37.0	28.0	2.0	50.0	27.7	31.7	26.0
8.0	17.0	7.0	117.0	138.0	29.0	2.0	167.6	32.6	132.4	124.6
8.0	17.0	8.0	751.0	86.0	29.0	1.0	493.7	45.2	366.7	352.5

8.0	17.0	9.0	16.0	251.0	30.0	1.0	252.2	40.0	199.4	190.0
8.0	17.0	10.0	862.0	104.0	30.0	1.0	870.1	58.6	622.5	599.0
8.0	17.0	11.0	881.0	108.0	31.0	1.0	970.3	65.4	668.7	643.2
8.0	17.0	12.0	886.0	110.0	31.0	2.0	1,000.3	61.8	703.8	676.8
8.0	17.0	13.0	840.0	134.0	31.0	2.0	945.5	60.4	670.2	644.7
8.0	17.0	14.0	812.0	130.0	31.0	2.0	831.4	57.2	599.0	576.5
8.0	17.0	15.0	761.0	120.0	31.0	3.0	658.1	49.6	489.7	471.4
8.0	17.0	16.0	707.0	92.0	30.0	3.0	444.3	42.6	331.1	318.0
8.0	17.0	17.0	362.0	97.0	29.0	3.0	186.5	34.1	134.5	126.6
8.0	17.0	18.0	118.0	27.0	28.0	3.0	25.0	27.7	19.1	13.6
8.0	17.0	19.0	-	-	28.0	3.0	-	28.0	-	-
8.0	17.0	20.0	-	-	28.0	3.0	-	28.0	-	-
8.0	17.0	21.0	-	-	28.0	3.0	-	28.0	-	-
8.0	17.0	22.0	-	-	28.0	2.0	-	28.0	-	-
8.0	17.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	18.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	18.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	18.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	18.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	18.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	18.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	18.0	6.0	320.0	36.0	28.0	1.0	49.7	27.6	31.2	25.5
8.0	18.0	7.0	624.0	68.0	29.0	2.0	259.1	35.3	182.9	173.8
8.0	18.0	8.0	752.0	87.0	29.0	2.0	496.0	43.2	372.3	357.9
8.0	18.0	9.0	816.0	101.0	30.0	2.0	705.8	51.1	522.5	502.9
8.0	18.0	10.0	840.0	118.0	30.0	2.0	865.7	56.3	627.3	603.6
8.0	18.0	11.0	856.0	127.0	31.0	2.0	965.8	60.5	684.4	658.3
8.0	18.0	12.0	857.0	131.0	31.0	2.0	992.9	61.6	699.4	672.6
8.0	18.0	13.0	851.0	127.0	31.0	2.0	949.5	60.5	672.7	647.1
8.0	18.0	14.0	822.0	123.0	31.0	2.0	833.1	57.2	600.0	577.5
8.0	18.0	15.0	774.0	113.0	30.0	2.0	659.9	51.1	487.1	468.8
8.0	18.0	16.0	710.0	90.0	30.0	2.0	443.2	44.3	327.2	314.2
8.0	18.0	17.0	547.0	69.0	29.0	2.0	207.5	35.5	141.6	133.6
8.0	18.0	18.0	186.0	26.0	29.0	2.0	25.9	29.0	18.5	13.1
8.0	18.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	18.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	18.0	21.0	-	-	28.0	2.0	-	28.0	-	-
8.0	18.0	22.0	-	-	28.0	2.0	-	28.0	-	-
8.0	18.0	23.0	-	-	28.0	2.0	-	28.0	-	-
8.0	19.0	-	-	-	28.0	2.0	-	28.0	-	-
8.0	19.0	1.0	-	-	28.0	1.0	-	28.0	-	-
8.0	19.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	19.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	19.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	19.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	19.0	6.0	291.0	37.0	28.0	1.0	49.3	27.6	31.8	26.1
8.0	19.0	7.0	597.0	73.0	29.0	2.0	256.4	35.3	181.9	172.9
8.0	19.0	8.0	732.0	94.0	29.0	2.0	493.1	43.1	370.6	356.3
8.0	19.0	9.0	802.0	109.0	30.0	2.0	706.7	51.1	523.2	503.6
8.0	19.0	10.0	839.0	120.0	30.0	2.0	867.7	56.3	628.6	604.8
8.0	19.0	11.0	859.0	126.0	30.0	2.0	968.6	59.6	689.8	663.4
8.0	19.0	12.0	864.0	128.0	31.0	2.0	997.6	61.7	702.2	675.3
8.0	19.0	13.0	815.0	153.0	31.0	2.0	947.4	60.5	671.4	645.8
8.0	19.0	14.0	785.0	147.0	31.0	1.0	829.8	61.6	583.3	561.4
8.0	19.0	15.0	731.0	135.0	30.0	1.0	651.9	54.7	472.1	454.4
8.0	19.0	16.0	663.0	107.0	30.0	1.0	436.2	47.0	318.3	305.6
8.0	19.0	17.0	482.0	82.0	30.0	1.0	203.2	38.0	139.5	131.5
8.0	19.0	18.0	123.0	27.0	29.0	1.0	25.4	29.1	19.1	13.6
8.0	19.0	19.0	-	-	29.0	1.0	-	29.0	-	-
8.0	19.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	19.0	21.0	-	-	28.0	1.0	-	28.0	-	-
8.0	19.0	22.0	-	-	28.0	1.0	-	28.0	-	-
8.0	19.0	23.0	-	-	28.0	1.0	-	28.0	-	-
8.0	20.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	6.0	251.0	39.0	27.0	1.0	48.5	26.5	32.5	26.8
8.0	20.0	7.0	564.0	80.0	28.0	2.0	253.7	34.2	182.2	173.2
8.0	20.0	8.0	702.0	105.0	29.0	2.0	488.5	43.0	367.9	353.7
8.0	20.0	9.0	775.0	122.0	29.0	1.0	701.0	53.6	512.3	493.1
8.0	20.0	10.0	831.0	124.0	30.0	1.0	865.6	60.6	612.3	589.3
8.0	20.0	11.0	852.0	130.0	30.0	1.0	966.6	64.3	670.2	644.7
8.0	20.0	12.0	856.0	133.0	30.0	-	995.1	72.2	658.9	633.9
8.0	20.0	13.0	841.0	134.0	30.0	-	947.6	70.9	632.1	608.2
8.0	20.0	14.0	812.0	130.0	31.0	-	835.7	68.1	565.8	544.6
8.0	20.0	15.0	758.0	121.0	30.0	-	656.4	60.8	459.5	442.2
8.0	20.0	16.0	654.0	109.0	30.0	-	433.3	51.9	308.0	295.6
8.0	20.0	17.0	482.0	80.0	29.0	-	200.7	40.5	135.7	127.8

8.0	20.0	18.0	130.0	25.0	29.0	-	23.9	30.3	17.7	12.2
8.0	20.0	19.0	-	-	29.0	-	-	29.0	-	-
8.0	20.0	20.0	-	-	28.0	-	-	28.0	-	-
8.0	20.0	21.0	-	-	28.0	1.0	-	28.0	-	-
8.0	20.0	22.0	-	-	28.0	1.0	-	28.0	-	-
8.0	20.0	23.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	6.0	261.0	38.0	27.0	1.0	48.4	26.5	32.0	26.3
8.0	21.0	7.0	313.0	120.0	28.0	1.0	212.8	33.8	160.0	151.5
8.0	21.0	8.0	714.0	99.0	28.0	1.0	490.0	44.3	366.4	352.2
8.0	21.0	9.0	594.0	219.0	29.0	1.0	666.7	52.5	490.8	472.4
8.0	21.0	10.0	511.0	324.0	29.0	1.0	789.4	57.2	569.5	548.1
8.0	21.0	11.0	439.0	394.0	29.0	-	839.2	65.4	578.4	556.6
8.0	21.0	12.0	128.0	488.0	30.0	-	622.2	59.6	443.1	426.4
8.0	21.0	13.0	370.0	416.0	30.0	-	781.7	63.5	544.7	524.3
8.0	21.0	14.0	772.0	152.0	30.0	-	823.9	65.8	565.3	544.1
8.0	21.0	15.0	722.0	137.0	30.0	-	647.8	60.4	454.6	437.5
8.0	21.0	16.0	663.0	104.0	29.0	-	432.2	50.9	308.7	296.2
8.0	21.0	17.0	368.0	92.0	28.0	1.0	181.8	35.2	129.5	121.7
8.0	21.0	18.0	96.0	23.0	28.0	1.0	21.5	27.8	16.4	11.0
8.0	21.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	21.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	21.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	22.0	-	-	-	26.0	2.0	-	26.0	-	-
8.0	22.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	22.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	22.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	22.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	22.0	5.0	-	-	26.0	1.0	-	26.0	-	-
8.0	22.0	6.0	-	9.0	26.0	1.0	8.5	23.9	7.3	2.0
8.0	22.0	7.0	-	57.0	27.0	1.0	54.1	26.7	45.7	39.7
8.0	22.0	8.0	-	147.0	27.0	1.0	140.1	30.2	116.3	108.8
8.0	22.0	9.0	269.0	329.0	28.0	1.0	530.0	45.2	406.6	391.1
8.0	22.0	10.0	9.0	220.0	29.0	2.0	219.1	36.2	176.6	167.7
8.0	22.0	11.0	170.0	476.0	29.0	2.0	647.1	47.4	492.6	474.1
8.0	22.0	12.0	38.0	410.0	29.0	2.0	445.2	43.3	346.1	332.6
8.0	22.0	13.0	65.0	432.0	29.0	2.0	490.9	43.8	380.7	366.0
8.0	22.0	14.0	418.0	340.0	29.0	3.0	709.4	47.9	537.8	517.7
8.0	22.0	15.0	282.0	305.0	29.0	3.0	502.3	43.3	388.5	373.6
8.0	22.0	16.0	220.0	211.0	29.0	3.0	313.2	37.6	245.5	234.9
8.0	22.0	17.0	58.0	109.0	28.0	2.0	117.8	31.2	94.4	87.4
8.0	22.0	18.0	-	18.0	28.0	2.0	17.1	27.2	14.4	9.0
8.0	22.0	19.0	-	-	27.0	2.0	-	27.0	-	-
8.0	22.0	20.0	-	-	27.0	2.0	-	27.0	-	-
8.0	22.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	22.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	22.0	23.0	-	-	26.0	2.0	-	26.0	-	-
8.0	23.0	-	-	-	26.0	2.0	-	26.0	-	-
8.0	23.0	1.0	-	-	26.0	3.0	-	26.0	-	-
8.0	23.0	2.0	-	-	26.0	3.0	-	26.0	-	-
8.0	23.0	3.0	-	-	26.0	3.0	-	26.0	-	-
8.0	23.0	4.0	-	-	26.0	3.0	-	26.0	-	-
8.0	23.0	5.0	-	-	26.0	3.0	-	26.0	-	-
8.0	23.0	6.0	331.0	32.0	27.0	3.0	47.9	26.7	29.1	23.4
8.0	23.0	7.0	622.0	66.0	28.0	4.0	259.4	33.2	185.4	176.3
8.0	23.0	8.0	750.0	86.0	28.0	4.0	497.8	39.6	381.0	366.3
8.0	23.0	9.0	812.0	102.0	29.0	4.0	708.2	46.3	538.0	517.8
8.0	23.0	10.0	849.0	112.0	29.0	5.0	872.1	48.8	658.1	633.1
8.0	23.0	11.0	44.0	387.0	29.0	5.0	426.5	39.3	338.4	325.1
8.0	23.0	12.0	154.0	490.0	30.0	5.0	651.2	44.3	503.8	484.9
8.0	23.0	13.0	-	130.0	29.0	4.0	124.4	32.6	102.1	94.9
8.0	23.0	14.0	8.0	213.0	29.0	4.0	211.2	33.2	172.7	163.9
8.0	23.0	15.0	344.0	289.0	29.0	4.0	529.5	41.2	413.5	397.8
8.0	23.0	16.0	155.0	214.0	28.0	4.0	284.5	35.1	226.8	216.7
8.0	23.0	17.0	489.0	75.0	28.0	3.0	195.8	32.7	136.5	128.6
8.0	23.0	18.0	111.0	22.0	27.0	3.0	21.2	26.6	15.9	10.6
8.0	23.0	19.0	-	-	27.0	2.0	-	27.0	-	-
8.0	23.0	20.0	-	-	27.0	2.0	-	27.0	-	-
8.0	23.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	23.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	23.0	23.0	-	-	27.0	3.0	-	27.0	-	-
8.0	24.0	-	-	-	27.0	3.0	-	27.0	-	-
8.0	24.0	1.0	-	-	27.0	3.0	-	27.0	-	-
8.0	24.0	2.0	-	-	27.0	3.0	-	27.0	-	-

8.0	24.0	3.0	-	-	27.0	3.0	-	27.0	-	-
8.0	24.0	4.0	-	-	27.0	3.0	-	27.0	-	-
8.0	24.0	5.0	-	-	27.0	3.0	-	27.0	-	-
8.0	24.0	6.0	32.0	38.0	27.0	3.0	37.2	26.5	30.3	24.7
8.0	24.0	7.0	303.0	119.0	27.0	3.0	209.9	31.2	160.1	151.7
8.0	24.0	8.0	155.0	240.0	28.0	3.0	319.7	35.8	255.3	244.4
8.0	24.0	9.0	8.0	210.0	28.0	3.0	207.1	33.2	169.4	160.7
8.0	24.0	10.0	-	130.0	28.0	2.0	124.2	30.9	102.7	95.6
8.0	24.0	11.0	21.0	336.0	29.0	2.0	345.6	38.2	275.7	264.3
8.0	24.0	12.0	27.0	375.0	29.0	2.0	399.2	40.8	314.5	301.9
8.0	24.0	13.0	330.0	433.0	29.0	2.0	761.9	51.3	568.0	546.6
8.0	24.0	14.0	49.0	361.0	30.0	2.0	397.6	43.4	308.9	296.5
8.0	24.0	15.0	223.0	312.0	30.0	2.0	464.0	43.9	358.1	344.2
8.0	24.0	16.0	102.0	211.0	29.0	1.0	253.2	38.8	199.0	189.6
8.0	24.0	17.0	15.0	99.0	28.0	1.0	97.3	31.0	79.7	73.0
8.0	24.0	18.0	-	12.0	28.0	1.0	11.4	26.8	9.6	4.3
8.0	24.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	24.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	25.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	25.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	25.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	25.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	25.0	4.0	-	-	27.0	2.0	-	27.0	-	-
8.0	25.0	5.0	-	-	27.0	2.0	-	27.0	-	-
8.0	25.0	6.0	-	2.0	27.0	2.0	1.9	25.2	1.6	-
8.0	25.0	7.0	-	80.0	27.0	2.0	76.0	27.5	63.9	57.5
8.0	25.0	8.0	14.0	190.0	28.0	3.0	189.1	31.8	155.5	147.1
8.0	25.0	9.0	-	115.0	28.0	3.0	109.6	30.1	91.0	84.1
8.0	25.0	10.0	1.0	149.0	29.0	3.0	143.4	31.7	118.1	110.7
8.0	25.0	11.0	29.0	371.0	29.0	3.0	396.1	38.6	315.4	302.8
8.0	25.0	12.0	8.0	195.0	30.0	3.0	195.5	35.2	158.4	149.9
8.0	25.0	13.0	8.0	200.0	30.0	3.0	199.8	34.6	162.3	153.8
8.0	25.0	14.0	9.0	217.0	30.0	3.0	215.9	35.0	175.0	166.2
8.0	25.0	15.0	26.0	258.0	30.0	2.0	265.8	37.3	212.8	203.1
8.0	25.0	16.0	145.0	211.0	29.0	2.0	276.7	36.8	218.9	209.0
8.0	25.0	17.0	-	87.0	28.0	2.0	82.4	30.0	68.4	62.0
8.0	25.0	18.0	-	10.0	28.0	2.0	9.5	26.8	8.0	2.7
8.0	25.0	19.0	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	26.0	-	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	5.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	6.0	231.0	35.0	26.0	1.0	45.7	25.4	30.5	24.9
8.0	26.0	7.0	144.0	132.0	27.0	1.0	172.3	31.3	136.0	128.1
8.0	26.0	8.0	384.0	203.0	28.0	2.0	411.8	39.4	319.8	307.1
8.0	26.0	9.0	456.0	268.0	29.0	2.0	615.4	47.2	466.4	448.9
8.0	26.0	10.0	212.0	419.0	29.0	2.0	610.5	47.9	463.3	445.8
8.0	26.0	11.0	267.0	459.0	29.0	3.0	734.4	48.9	554.6	533.8
8.0	26.0	12.0	381.0	427.0	29.0	2.0	824.0	54.3	604.5	581.8
8.0	26.0	13.0	548.0	349.0	30.0	2.0	893.9	57.5	644.3	619.9
8.0	26.0	14.0	298.0	382.0	30.0	2.0	644.4	50.9	481.0	462.9
8.0	26.0	15.0	409.0	268.0	29.0	1.0	558.1	49.9	416.3	400.5
8.0	26.0	16.0	186.0	208.0	29.0	1.0	293.5	40.8	226.9	216.7
8.0	26.0	17.0	-	78.0	29.0	-	73.9	33.7	60.3	54.1
8.0	26.0	18.0	-	8.0	28.0	-	7.6	26.0	6.4	1.2
8.0	26.0	19.0	-	-	28.0	-	-	28.0	-	-
8.0	26.0	20.0	-	-	28.0	-	-	28.0	-	-
8.0	26.0	21.0	-	-	28.0	-	-	28.0	-	-
8.0	26.0	22.0	-	-	28.0	-	-	28.0	-	-
8.0	26.0	23.0	-	-	28.0	-	-	28.0	-	-
8.0	27.0	-	-	-	27.0	-	-	27.0	-	-
8.0	27.0	1.0	-	-	27.0	-	-	27.0	-	-
8.0	27.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	27.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	27.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	27.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	27.0	6.0	-	24.0	27.0	1.0	22.8	25.6	19.3	13.9
8.0	27.0	7.0	533.0	85.0	28.0	2.0	253.1	34.0	183.4	174.4
8.0	27.0	8.0	683.0	110.0	28.0	2.0	488.9	42.0	370.8	356.5
8.0	27.0	9.0	762.0	128.0	29.0	2.0	703.8	50.0	524.5	504.8
8.0	27.0	10.0	849.0	113.0	29.0	3.0	876.4	52.8	647.4	622.9
8.0	27.0	11.0	868.0	118.0	29.0	3.0	975.4	55.7	709.8	682.6

8.0	27.0	12.0	873.0	120.0	30.0	3.0	1,002.9	57.7	722.2	694.4
8.0	27.0	13.0	848.0	129.0	30.0	3.0	950.9	56.5	689.1	662.8
8.0	27.0	14.0	819.0	124.0	30.0	3.0	830.7	53.3	611.2	588.2
8.0	27.0	15.0	766.0	114.0	29.0	3.0	651.8	47.5	490.2	471.8
8.0	27.0	16.0	690.0	91.0	29.0	2.0	428.1	42.9	317.7	305.0
8.0	27.0	17.0	515.0	66.0	28.0	2.0	190.5	33.9	129.9	122.1
8.0	27.0	18.0	104.0	17.0	28.0	2.0	17.0	27.6	12.4	7.1
8.0	27.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	27.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	27.0	21.0	-	-	28.0	2.0	-	28.0	-	-
8.0	27.0	22.0	-	-	28.0	2.0	-	28.0	-	-
8.0	27.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	28.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	28.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	28.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	28.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	28.0	4.0	-	-	27.0	2.0	-	27.0	-	-
8.0	28.0	5.0	-	-	27.0	2.0	-	27.0	-	-
8.0	28.0	6.0	236.0	35.0	27.0	2.0	47.1	26.7	31.0	25.4
8.0	28.0	7.0	572.0	75.0	28.0	2.0	256.0	34.2	184.0	174.9
8.0	28.0	8.0	657.0	122.0	28.0	3.0	487.8	40.4	373.4	359.0
8.0	28.0	9.0	780.0	118.0	29.0	3.0	707.8	47.8	533.5	513.6
8.0	28.0	10.0	826.0	126.0	29.0	3.0	869.9	52.6	643.2	618.8
8.0	28.0	11.0	842.0	135.0	29.0	4.0	967.7	53.3	713.7	686.3
8.0	28.0	12.0	842.0	141.0	29.0	4.0	993.2	54.1	729.3	701.2
8.0	28.0	13.0	838.0	134.0	29.0	4.0	946.4	53.1	698.6	671.8
8.0	28.0	14.0	804.0	131.0	29.0	4.0	829.0	50.3	620.1	596.7
8.0	28.0	15.0	451.0	247.0	29.0	4.0	566.2	43.8	435.7	419.2
8.0	28.0	16.0	659.0	100.0	28.0	4.0	421.6	38.6	320.1	307.4
8.0	28.0	17.0	466.0	73.0	28.0	4.0	184.9	32.4	128.6	120.9
8.0	28.0	18.0	55.0	16.0	28.0	4.0	15.8	27.5	12.3	6.9
8.0	28.0	19.0	-	-	28.0	4.0	-	28.0	-	-
8.0	28.0	20.0	-	-	28.0	4.0	-	28.0	-	-
8.0	28.0	21.0	-	-	28.0	3.0	-	28.0	-	-
8.0	28.0	22.0	-	-	28.0	3.0	-	28.0	-	-
8.0	28.0	23.0	-	-	28.0	3.0	-	28.0	-	-
8.0	29.0	-	-	-	27.0	3.0	-	27.0	-	-
8.0	29.0	1.0	-	-	27.0	3.0	-	27.0	-	-
8.0	29.0	2.0	-	-	27.0	3.0	-	27.0	-	-
8.0	29.0	3.0	-	-	27.0	4.0	-	27.0	-	-
8.0	29.0	4.0	-	-	27.0	4.0	-	27.0	-	-
8.0	29.0	5.0	-	-	27.0	4.0	-	27.0	-	-
8.0	29.0	6.0	146.0	35.0	27.0	4.0	41.7	26.6	29.7	24.1
8.0	29.0	7.0	337.0	112.0	28.0	4.0	217.7	32.1	164.5	156.0
8.0	29.0	8.0	316.0	216.0	28.0	4.0	389.4	36.8	307.2	294.8
8.0	29.0	9.0	124.0	336.0	28.0	4.0	428.1	38.3	340.9	327.5
8.0	29.0	10.0	148.0	419.0	28.0	5.0	555.1	40.1	438.5	421.9
8.0	29.0	11.0	185.0	470.0	28.0	5.0	659.4	42.7	514.2	494.9
8.0	29.0	12.0	49.0	426.0	28.0	5.0	474.4	38.9	377.3	362.7
8.0	29.0	13.0	14.0	273.0	28.0	4.0	276.9	34.8	224.7	214.6
8.0	29.0	14.0	14.0	265.0	28.0	4.0	267.2	34.0	217.7	207.8
8.0	29.0	15.0	-	137.0	28.0	4.0	130.7	30.6	108.3	101.0
8.0	29.0	16.0	40.0	188.0	28.0	4.0	201.1	32.0	164.5	156.0
8.0	29.0	17.0	-	77.0	27.0	3.0	73.0	28.1	61.2	54.9
8.0	29.0	18.0	-	6.0	27.0	3.0	5.7	25.8	4.8	-
8.0	29.0	19.0	-	-	27.0	3.0	-	27.0	-	-
8.0	29.0	20.0	-	-	26.0	3.0	-	26.0	-	-
8.0	29.0	21.0	-	-	26.0	3.0	-	26.0	-	-
8.0	29.0	22.0	-	-	26.0	3.0	-	26.0	-	-
8.0	29.0	23.0	-	-	26.0	3.0	-	26.0	-	-
8.0	30.0	-	-	-	26.0	3.0	-	26.0	-	-
8.0	30.0	1.0	-	-	26.0	3.0	-	26.0	-	-
8.0	30.0	2.0	-	-	26.0	3.0	-	26.0	-	-
8.0	30.0	3.0	-	-	26.0	3.0	-	26.0	-	-
8.0	30.0	4.0	-	-	26.0	3.0	-	26.0	-	-
8.0	30.0	5.0	-	-	27.0	4.0	-	27.0	-	-
8.0	30.0	6.0	-	6.0	27.0	4.0	5.7	25.7	4.8	-
8.0	30.0	7.0	289.0	118.0	27.0	5.0	207.0	30.4	159.1	150.7
8.0	30.0	8.0	170.0	235.0	28.0	5.0	325.3	34.5	261.3	250.2
8.0	30.0	9.0	100.0	331.0	28.0	5.0	400.3	36.5	321.7	308.9
8.0	30.0	10.0	348.0	383.0	29.0	5.0	704.5	44.4	544.3	523.9
8.0	30.0	11.0	457.0	383.0	29.0	5.0	852.7	48.3	645.8	621.4
8.0	30.0	12.0	174.0	483.0	29.0	5.0	667.4	44.6	515.5	496.2
8.0	30.0	13.0	425.0	381.0	30.0	5.0	809.1	48.3	612.8	589.7
8.0	30.0	14.0	350.0	361.0	30.0	5.0	668.4	45.5	513.1	493.9
8.0	30.0	15.0	419.0	257.0	29.0	5.0	553.7	41.7	430.8	414.5
8.0	30.0	16.0	646.0	104.0	29.0	4.0	417.9	39.5	315.9	303.3
8.0	30.0	17.0	288.0	88.0	28.0	4.0	154.8	31.6	113.1	105.8
8.0	30.0	18.0	-	12.0	27.0	4.0	11.4	26.3	9.6	4.3
8.0	30.0	19.0	-	-	27.0	4.0	-	27.0	-	-
8.0	30.0	20.0	-	-	27.0	4.0	-	27.0	-	-

8.0	30.0	21.0	-	-	27.0	4.0	-	27.0	-	-
8.0	30.0	22.0	-	-	27.0	4.0	-	27.0	-	-
8.0	30.0	23.0	-	-	27.0	4.0	-	27.0	-	-
8.0	31.0	-	-	-	27.0	5.0	-	27.0	-	-
8.0	31.0	1.0	-	-	27.0	5.0	-	27.0	-	-
8.0	31.0	2.0	-	-	26.0	4.0	-	26.0	-	-
8.0	31.0	3.0	-	-	26.0	4.0	-	26.0	-	-
8.0	31.0	4.0	-	-	26.0	4.0	-	26.0	-	-
8.0	31.0	5.0	-	-	26.0	4.0	-	26.0	-	-
8.0	31.0	6.0	182.0	39.0	27.0	5.0	48.6	26.8	34.0	28.3
8.0	31.0	7.0	546.0	86.0	28.0	5.0	260.7	32.7	190.5	181.3
8.0	31.0	8.0	694.0	115.0	28.0	5.0	503.4	38.6	388.7	373.8
8.0	31.0	9.0	765.0	138.0	29.0	6.0	719.7	43.4	555.5	534.6
8.0	31.0	10.0	31.0	339.0	29.0	6.0	363.1	36.6	292.1	280.1
8.0	31.0	11.0	831.0	156.0	29.0	6.0	986.9	48.5	746.8	717.9
8.0	31.0	12.0	835.0	158.0	30.0	6.0	1,012.1	51.1	755.3	726.0
8.0	31.0	13.0	832.0	150.0	29.0	6.0	963.3	49.2	726.2	698.2
8.0	31.0	14.0	805.0	139.0	29.0	6.0	837.2	46.6	638.5	614.4
8.0	31.0	15.0	751.0	125.0	29.0	6.0	650.3	42.6	501.5	482.7
8.0	31.0	16.0	634.0	111.0	28.0	6.0	418.5	36.6	321.1	308.4
8.0	31.0	17.0	435.0	77.0	28.0	5.0	178.0	31.7	124.8	117.1
8.0	31.0	18.0	21.0	12.0	27.0	5.0	11.9	26.4	9.7	4.4
8.0	31.0	19.0	-	-	27.0	2.0	-	27.0	-	-
8.0	31.0	20.0	-	-	27.0	2.0	-	27.0	-	-
8.0	31.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	31.0	22.0	-	-	26.0	2.0	-	26.0	-	-
8.0	31.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	-	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	1.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	2.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	3.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	4.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	5.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	6.0	216.0	34.0	26.0	3.0	46.9	25.7	31.3	25.6
9.0	1.0	7.0	545.0	82.0	27.0	3.0	257.0	32.5	187.7	178.6
9.0	1.0	8.0	695.0	110.0	28.0	4.0	499.6	39.6	383.8	369.1
9.0	1.0	9.0	778.0	127.0	28.0	4.0	719.1	45.5	548.8	528.2
9.0	1.0	10.0	769.0	173.0	29.0	4.0	875.0	50.8	653.6	628.8
9.0	1.0	11.0	807.0	174.0	29.0	4.0	982.4	53.6	723.2	695.4
9.0	1.0	12.0	825.0	169.0	29.0	4.0	1,013.7	54.6	742.3	713.6
9.0	1.0	13.0	807.0	172.0	29.0	4.0	961.9	53.5	708.5	681.3
9.0	1.0	14.0	787.0	156.0	29.0	4.0	838.9	50.5	626.6	603.0
9.0	1.0	15.0	742.0	135.0	28.0	4.0	654.5	44.9	498.9	480.2
9.0	1.0	16.0	652.0	109.0	28.0	4.0	424.2	38.9	321.4	308.6
9.0	1.0	17.0	464.0	73.0	27.0	3.0	181.5	31.8	126.1	118.4
9.0	1.0	18.0	38.0	9.0	26.0	3.0	9.2	25.2	7.1	1.9
9.0	1.0	19.0	-	-	26.0	3.0	-	26.0	-	-
9.0	1.0	20.0	-	-	26.0	3.0	-	26.0	-	-
9.0	1.0	21.0	-	-	26.0	3.0	-	26.0	-	-
9.0	1.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	2.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	2.0	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	3.0	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	6.0	263.0	31.0	26.0	2.0	48.5	25.6	30.7	25.0
9.0	2.0	7.0	605.0	71.0	27.0	3.0	265.6	32.8	192.0	182.8
9.0	2.0	8.0	749.0	93.0	27.0	3.0	512.7	40.1	392.3	377.3
9.0	2.0	9.0	823.0	107.0	28.0	3.0	732.8	47.6	553.2	532.5
9.0	2.0	10.0	593.0	284.0	28.0	3.0	832.2	50.8	621.7	598.2
9.0	2.0	11.0	877.0	126.0	28.0	3.0	995.8	55.2	727.0	699.0
9.0	2.0	12.0	882.0	128.0	29.0	3.0	1,022.0	57.2	737.6	709.2
9.0	2.0	13.0	821.0	159.0	29.0	3.0	962.0	55.8	699.6	672.8
9.0	2.0	14.0	787.0	152.0	28.0	3.0	834.5	51.5	620.0	596.6
9.0	2.0	15.0	725.0	139.0	28.0	3.0	646.3	46.4	488.9	470.6
9.0	2.0	16.0	616.0	116.0	28.0	3.0	413.4	39.7	312.3	299.8
9.0	2.0	17.0	416.0	77.0	27.0	2.0	172.2	32.3	120.5	113.0
9.0	2.0	18.0	24.0	8.0	26.0	2.0	8.0	25.1	6.3	1.1
9.0	2.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	2.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	2.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	2.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	2.0	23.0	-	-	26.0	1.0	-	26.0	-	-
9.0	3.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	3.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	3.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	3.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	3.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	3.0	5.0	-	-	25.0	1.0	-	25.0	-	-

9.0	3.0	6.0	207.0	33.0	26.0	1.0	46.3	25.4	31.0	25.3
9.0	3.0	7.0	543.0	83.0	27.0	1.0	258.7	34.4	187.5	178.4
9.0	3.0	8.0	698.0	111.0	28.0	1.0	504.0	45.0	376.7	362.2
9.0	3.0	9.0	778.0	128.0	28.0	2.0	721.8	49.6	539.2	519.0
9.0	3.0	10.0	812.0	146.0	29.0	2.0	887.5	56.0	644.4	620.0
9.0	3.0	11.0	832.0	153.0	29.0	2.0	986.5	59.2	704.2	677.2
9.0	3.0	12.0	831.0	158.0	29.0	2.0	1,009.0	60.2	716.4	688.9
9.0	3.0	13.0	825.0	150.0	29.0	2.0	956.4	58.9	684.0	657.9
9.0	3.0	14.0	786.0	146.0	29.0	2.0	827.0	55.2	602.4	579.7
9.0	3.0	15.0	720.0	134.0	28.0	2.0	637.1	48.5	476.5	458.6
9.0	3.0	16.0	610.0	113.0	28.0	2.0	406.7	41.2	304.8	292.5
9.0	3.0	17.0	399.0	76.0	27.0	2.0	166.7	32.1	116.9	109.5
9.0	3.0	18.0	-	-	26.0	2.0	-	26.0	-	-
9.0	3.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	3.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	3.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	3.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	3.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	4.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	4.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	4.0	2.0	-	-	25.0	3.0	-	25.0	-	-
9.0	4.0	3.0	-	-	25.0	3.0	-	25.0	-	-
9.0	4.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	4.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	4.0	6.0	73.0	35.0	26.0	2.0	38.6	25.3	29.8	24.1
9.0	4.0	7.0	292.0	134.0	26.0	2.0	225.7	31.2	174.0	165.2
9.0	4.0	8.0	408.0	193.0	26.0	2.0	424.7	38.0	332.2	319.1
9.0	4.0	9.0	257.0	323.0	26.0	2.0	523.0	41.7	408.7	393.2
9.0	4.0	10.0	39.0	353.0	26.0	3.0	385.5	36.6	310.1	297.6
9.0	4.0	11.0	24.0	347.0	26.0	3.0	360.6	35.5	291.7	279.8
9.0	4.0	12.0	327.0	446.0	26.0	3.0	793.8	46.7	606.5	583.6
9.0	4.0	13.0	69.0	420.0	26.0	3.0	486.0	40.1	384.1	369.3
9.0	4.0	14.0	18.0	278.0	26.0	2.0	283.7	34.9	230.1	219.8
9.0	4.0	15.0	519.0	224.0	26.0	2.0	587.9	43.0	453.6	436.6
9.0	4.0	16.0	251.0	185.0	26.0	2.0	303.6	36.0	238.6	228.2
9.0	4.0	17.0	-	63.0	26.0	2.0	59.8	27.3	50.3	44.3
9.0	4.0	18.0	-	-	26.0	2.0	-	26.0	-	-
9.0	4.0	19.0	-	-	26.0	3.0	-	26.0	-	-
9.0	4.0	20.0	-	-	26.0	3.0	-	26.0	-	-
9.0	4.0	21.0	-	-	26.0	3.0	-	26.0	-	-
9.0	4.0	22.0	-	-	26.0	3.0	-	26.0	-	-
9.0	4.0	23.0	-	-	25.0	3.0	-	25.0	-	-
9.0	5.0	-	-	-	25.0	3.0	-	25.0	-	-
9.0	5.0	1.0	-	-	25.0	3.0	-	25.0	-	-
9.0	5.0	2.0	-	-	25.0	3.0	-	25.0	-	-
9.0	5.0	3.0	-	-	25.0	4.0	-	25.0	-	-
9.0	5.0	4.0	-	-	25.0	3.0	-	25.0	-	-
9.0	5.0	5.0	-	-	25.0	3.0	-	25.0	-	-
9.0	5.0	6.0	-	18.0	25.0	3.0	17.1	23.7	14.6	9.2
9.0	5.0	7.0	373.0	104.0	26.0	3.0	224.8	30.5	170.4	161.7
9.0	5.0	8.0	183.0	231.0	26.0	4.0	330.9	33.4	267.2	255.9
9.0	5.0	9.0	773.0	122.0	27.0	4.0	713.5	44.0	549.1	528.5
9.0	5.0	10.0	820.0	132.0	27.0	4.0	881.5	48.9	664.8	639.5
9.0	5.0	11.0	843.0	137.0	28.0	3.0	974.9	54.8	713.2	685.8
9.0	5.0	12.0	847.0	139.0	28.0	3.0	998.4	55.6	727.0	699.0
9.0	5.0	13.0	816.0	149.0	28.0	3.0	946.5	54.4	693.6	667.1
9.0	5.0	14.0	775.0	147.0	28.0	3.0	817.8	51.1	609.0	586.1
9.0	5.0	15.0	706.0	136.0	28.0	3.0	628.1	45.9	476.3	458.4
9.0	5.0	16.0	-	118.0	27.0	3.0	112.5	30.7	93.2	86.2
9.0	5.0	17.0	-	3.0	26.0	3.0	2.8	24.8	2.4	-
9.0	5.0	18.0	-	-	26.0	3.0	-	26.0	-	-
9.0	5.0	19.0	-	-	26.0	3.0	-	26.0	-	-
9.0	5.0	20.0	-	-	26.0	3.0	-	26.0	-	-
9.0	5.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	5.0	22.0	-	-	25.0	2.0	-	25.0	-	-
9.0	5.0	23.0	-	-	25.0	2.0	-	25.0	-	-
9.0	6.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	6.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	6.0	-	28.0	25.0	1.0	26.5	23.5	22.7	17.2
9.0	6.0	7.0	492.0	85.0	26.0	1.0	246.3	32.8	181.2	172.2
9.0	6.0	8.0	708.0	100.0	26.0	2.0	500.6	40.3	383.3	368.5
9.0	6.0	9.0	784.0	117.0	27.0	2.0	717.3	48.5	539.1	518.9
9.0	6.0	10.0	824.0	129.0	28.0	2.0	877.5	54.7	641.5	617.2
9.0	6.0	11.0	10.0	219.0	28.0	2.0	220.8	36.8	177.5	168.6
9.0	6.0	12.0	80.0	451.0	28.0	2.0	533.7	43.1	415.3	399.5
9.0	6.0	13.0	43.0	368.0	28.0	2.0	408.2	40.8	321.5	308.7
9.0	6.0	14.0	32.0	317.0	28.0	2.0	341.1	38.3	272.0	260.6

9.0	6.0	15.0	574.0	189.0	28.0	2.0	589.0	45.2	448.7	431.8
9.0	6.0	16.0	588.0	114.0	27.0	2.0	394.9	39.6	298.1	286.0
9.0	6.0	17.0	201.0	83.0	27.0	1.0	126.3	32.0	93.7	86.7
9.0	6.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	6.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	6.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	6.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	6.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	6.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	7.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	7.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	7.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	6.0	161.0	33.0	26.0	1.0	44.7	25.3	31.2	25.5
9.0	7.0	7.0	504.0	86.0	27.0	1.0	251.8	34.2	184.0	174.9
9.0	7.0	8.0	668.0	114.0	27.0	2.0	493.7	41.1	377.0	362.5
9.0	7.0	9.0	754.0	131.0	28.0	2.0	710.0	49.2	531.6	511.7
9.0	7.0	10.0	805.0	140.0	28.0	2.0	877.7	54.7	641.7	617.4
9.0	7.0	11.0	138.0	435.0	29.0	1.0	581.5	51.8	432.3	416.0
9.0	7.0	12.0	13.0	259.0	29.0	1.0	263.4	39.9	208.4	198.8
9.0	7.0	13.0	811.0	151.0	29.0	1.0	943.3	59.9	670.7	645.2
9.0	7.0	14.0	765.0	150.0	29.0	1.0	811.3	59.2	578.0	556.3
9.0	7.0	15.0	665.0	156.0	29.0	1.0	619.4	52.7	453.2	436.1
9.0	7.0	16.0	565.0	120.0	28.0	1.0	389.4	43.3	288.7	276.9
9.0	7.0	17.0	337.0	78.0	28.0	1.0	152.4	33.9	107.2	99.9
9.0	7.0	18.0	-	-	27.0	1.0	-	27.0	-	-
9.0	7.0	19.0	-	-	27.0	1.0	-	27.0	-	-
9.0	7.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	7.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	7.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	7.0	23.0	-	-	26.0	3.0	-	26.0	-	-
9.0	8.0	-	-	-	26.0	3.0	-	26.0	-	-
9.0	8.0	1.0	-	-	26.0	3.0	-	26.0	-	-
9.0	8.0	2.0	-	-	26.0	3.0	-	26.0	-	-
9.0	8.0	3.0	-	-	25.0	3.0	-	25.0	-	-
9.0	8.0	4.0	-	-	25.0	3.0	-	25.0	-	-
9.0	8.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	8.0	6.0	127.0	33.0	26.0	2.0	42.1	25.4	30.3	24.6
9.0	8.0	7.0	461.0	95.0	27.0	3.0	245.7	32.2	182.6	173.6
9.0	8.0	8.0	633.0	126.0	27.0	3.0	487.4	39.4	376.0	361.5
9.0	8.0	9.0	729.0	143.0	28.0	3.0	705.8	46.8	535.4	515.4
9.0	8.0	10.0	841.0	118.0	29.0	3.0	882.6	52.9	651.6	626.8
9.0	8.0	11.0	866.0	121.0	29.0	2.0	982.3	59.1	701.7	674.8
9.0	8.0	12.0	874.0	120.0	30.0	2.0	1,006.3	61.1	711.1	683.8
9.0	8.0	13.0	872.0	112.0	30.0	2.0	954.7	59.8	679.3	653.4
9.0	8.0	14.0	843.0	106.0	30.0	2.0	826.6	56.1	598.7	576.2
9.0	8.0	15.0	787.0	98.0	30.0	2.0	640.1	50.5	472.9	455.1
9.0	8.0	16.0	676.0	85.0	30.0	2.0	404.1	43.1	297.6	285.5
9.0	8.0	17.0	457.0	59.0	29.0	2.0	160.5	33.9	107.6	100.4
9.0	8.0	18.0	-	-	28.0	2.0	-	28.0	-	-
9.0	8.0	19.0	-	-	27.0	3.0	-	27.0	-	-
9.0	8.0	20.0	-	-	27.0	3.0	-	27.0	-	-
9.0	8.0	21.0	-	-	27.0	3.0	-	27.0	-	-
9.0	8.0	22.0	-	-	27.0	4.0	-	27.0	-	-
9.0	8.0	23.0	-	-	26.0	4.0	-	26.0	-	-
9.0	9.0	-	-	-	26.0	4.0	-	26.0	-	-
9.0	9.0	1.0	-	-	26.0	4.0	-	26.0	-	-
9.0	9.0	2.0	-	-	26.0	4.0	-	26.0	-	-
9.0	9.0	3.0	-	-	25.0	4.0	-	25.0	-	-
9.0	9.0	4.0	-	-	25.0	4.0	-	25.0	-	-
9.0	9.0	5.0	-	-	25.0	4.0	-	25.0	-	-
9.0	9.0	6.0	252.0	28.0	26.0	4.0	49.0	25.7	30.7	25.0
9.0	9.0	7.0	609.0	65.0	27.0	4.0	265.6	32.3	192.7	183.5
9.0	9.0	8.0	756.0	85.0	28.0	5.0	513.9	38.9	396.0	380.8
9.0	9.0	9.0	829.0	99.0	28.0	5.0	731.5	44.2	562.0	540.9
9.0	9.0	10.0	864.0	111.0	29.0	5.0	896.6	49.4	674.7	649.0
9.0	9.0	11.0	879.0	119.0	30.0	4.0	993.3	54.9	726.2	698.2
9.0	9.0	12.0	875.0	124.0	30.0	4.0	1,011.4	55.6	736.8	708.3
9.0	9.0	13.0	815.0	152.0	31.0	3.0	947.6	57.4	683.2	657.2
9.0	9.0	14.0	770.0	149.0	31.0	3.0	813.2	53.9	596.5	574.1
9.0	9.0	15.0	622.0	169.0	30.0	3.0	602.1	47.2	453.7	436.6
9.0	9.0	16.0	558.0	120.0	30.0	2.0	384.4	42.4	286.2	274.4
9.0	9.0	17.0	318.0	77.0	29.0	2.0	146.2	33.4	103.2	96.1
9.0	9.0	18.0	-	-	28.0	2.0	-	28.0	-	-
9.0	9.0	19.0	-	-	27.0	3.0	-	27.0	-	-
9.0	9.0	20.0	-	-	27.0	3.0	-	27.0	-	-
9.0	9.0	21.0	-	-	27.0	3.0	-	27.0	-	-
9.0	9.0	22.0	-	-	26.0	3.0	-	26.0	-	-
9.0	9.0	23.0	-	-	26.0	3.0	-	26.0	-	-

9.0	10.0	-	-	-	26.0	3.0	-	26.0	-	-
9.0	10.0	1.0	-	-	26.0	3.0	-	26.0	-	-
9.0	10.0	2.0	-	-	26.0	3.0	-	26.0	-	-
9.0	10.0	3.0	-	-	26.0	4.0	-	26.0	-	-
9.0	10.0	4.0	-	-	26.0	4.0	-	26.0	-	-
9.0	10.0	5.0	-	-	26.0	4.0	-	26.0	-	-
9.0	10.0	6.0	122.0	33.0	26.0	4.0	42.3	25.5	30.6	24.9
9.0	10.0	7.0	471.0	91.0	26.0	4.0	246.2	30.8	183.9	174.9
9.0	10.0	8.0	642.0	122.0	27.0	4.0	489.8	38.3	379.7	365.1
9.0	10.0	9.0	735.0	139.0	28.0	4.0	707.6	45.2	541.2	520.9
9.0	10.0	10.0	559.0	293.0	28.0	4.0	816.4	48.4	617.7	594.4
9.0	10.0	11.0	334.0	426.0	29.0	3.0	775.2	50.6	580.2	558.5
9.0	10.0	12.0	276.0	454.0	29.0	3.0	753.4	49.9	566.0	544.7
9.0	10.0	13.0	10.0	226.0	29.0	2.0	227.4	37.4	182.2	173.2
9.0	10.0	14.0	22.0	288.0	29.0	2.0	297.4	37.3	238.4	227.9
9.0	10.0	15.0	128.0	286.0	28.0	2.0	374.2	38.8	296.5	284.4
9.0	10.0	16.0	306.0	165.0	28.0	2.0	307.3	37.2	238.5	228.0
9.0	10.0	17.0	-	2.0	27.0	2.0	1.9	26.6	1.6	-
9.0	10.0	18.0	-	-	27.0	2.0	-	27.0	-	-
9.0	10.0	19.0	-	-	27.0	2.0	-	27.0	-	-
9.0	10.0	20.0	-	-	26.0	3.0	-	26.0	-	-
9.0	10.0	21.0	-	-	26.0	3.0	-	26.0	-	-
9.0	10.0	22.0	-	-	26.0	3.0	-	26.0	-	-
9.0	10.0	23.0	-	-	26.0	3.0	-	26.0	-	-
9.0	11.0	-	-	-	26.0	3.0	-	26.0	-	-
9.0	11.0	1.0	-	-	26.0	3.0	-	26.0	-	-
9.0	11.0	2.0	-	-	26.0	3.0	-	26.0	-	-
9.0	11.0	3.0	-	-	25.0	3.0	-	25.0	-	-
9.0	11.0	4.0	-	-	25.0	3.0	-	25.0	-	-
9.0	11.0	5.0	-	-	25.0	3.0	-	25.0	-	-
9.0	11.0	6.0	123.0	32.0	26.0	4.0	41.8	25.5	30.0	24.4
9.0	11.0	7.0	479.0	89.0	27.0	4.0	247.3	31.8	183.6	174.6
9.0	11.0	8.0	647.0	120.0	27.0	4.0	491.3	38.4	380.8	366.1
9.0	11.0	9.0	179.0	327.0	28.0	5.0	466.1	38.3	370.8	356.5
9.0	11.0	10.0	217.0	404.0	28.0	5.0	608.1	41.4	477.2	459.3
9.0	11.0	11.0	474.0	366.0	28.0	5.0	859.3	47.3	654.5	629.7
9.0	11.0	12.0	16.0	301.0	28.0	5.0	308.2	35.6	249.1	238.3
9.0	11.0	13.0	18.0	302.0	28.0	5.0	310.1	34.4	252.1	241.3
9.0	11.0	14.0	2.0	164.0	28.0	5.0	158.9	31.0	131.3	123.5
9.0	11.0	15.0	59.0	266.0	27.0	5.0	302.3	32.9	247.2	236.5
9.0	11.0	16.0	111.0	179.0	27.0	5.0	228.9	31.6	185.7	176.6
9.0	11.0	17.0	42.0	76.0	27.0	5.0	82.0	28.1	66.6	60.2
9.0	11.0	18.0	-	-	26.0	5.0	-	26.0	-	-
9.0	11.0	19.0	-	-	26.0	5.0	-	26.0	-	-
9.0	11.0	20.0	-	-	26.0	5.0	-	26.0	-	-
9.0	11.0	21.0	-	-	26.0	5.0	-	26.0	-	-
9.0	11.0	22.0	-	-	26.0	5.0	-	26.0	-	-
9.0	11.0	23.0	-	-	26.0	4.0	-	26.0	-	-
9.0	12.0	-	-	-	26.0	4.0	-	26.0	-	-
9.0	12.0	1.0	-	-	26.0	4.0	-	26.0	-	-
9.0	12.0	2.0	-	-	26.0	4.0	-	26.0	-	-
9.0	12.0	3.0	-	-	26.0	4.0	-	26.0	-	-
9.0	12.0	4.0	-	-	26.0	4.0	-	26.0	-	-
9.0	12.0	5.0	-	-	26.0	4.0	-	26.0	-	-
9.0	12.0	6.0	134.0	31.0	26.0	4.0	42.6	25.6	30.2	24.5
9.0	12.0	7.0	514.0	82.0	27.0	5.0	254.1	31.5	188.1	179.0
9.0	12.0	8.0	690.0	105.0	27.0	5.0	500.4	37.5	389.1	374.2
9.0	12.0	9.0	782.0	118.0	28.0	6.0	721.1	42.4	559.5	538.5
9.0	12.0	10.0	834.0	124.0	28.0	6.0	884.4	46.1	677.1	651.3
9.0	12.0	11.0	852.0	132.0	28.0	6.0	980.7	48.3	742.9	714.2
9.0	12.0	12.0	473.0	376.0	29.0	6.0	878.7	47.4	668.7	643.3
9.0	12.0	13.0	795.0	161.0	29.0	6.0	936.7	48.4	708.9	681.8
9.0	12.0	14.0	526.0	270.0	28.0	6.0	730.5	43.4	566.6	545.4
9.0	12.0	15.0	622.0	164.0	28.0	6.0	594.8	40.3	464.1	446.6
9.0	12.0	16.0	412.0	143.0	28.0	5.0	336.3	35.7	260.8	249.7
9.0	12.0	17.0	317.0	72.0	27.0	5.0	139.4	29.6	99.5	92.4
9.0	12.0	18.0	-	-	27.0	5.0	-	27.0	-	-
9.0	12.0	19.0	-	-	26.0	5.0	-	26.0	-	-
9.0	12.0	20.0	-	-	26.0	6.0	-	26.0	-	-
9.0	12.0	21.0	-	-	26.0	6.0	-	26.0	-	-
9.0	12.0	22.0	-	-	26.0	5.0	-	26.0	-	-
9.0	12.0	23.0	-	-	26.0	5.0	-	26.0	-	-
9.0	13.0	-	-	-	26.0	5.0	-	26.0	-	-
9.0	13.0	1.0	-	-	26.0	5.0	-	26.0	-	-
9.0	13.0	2.0	-	-	26.0	5.0	-	26.0	-	-
9.0	13.0	3.0	-	-	26.0	4.0	-	26.0	-	-
9.0	13.0	4.0	-	-	26.0	4.0	-	26.0	-	-
9.0	13.0	5.0	-	-	26.0	4.0	-	26.0	-	-
9.0	13.0	6.0	-	20.0	26.0	4.0	19.0	25.0	16.1	10.7
9.0	13.0	7.0	-	76.0	27.0	5.0	72.3	27.4	60.8	54.6
9.0	13.0	8.0	633.0	124.0	27.0	5.0	489.0	36.9	382.2	367.5

9.0	13.0	9.0	308.0	305.0	28.0	5.0	548.2	40.1	431.7	415.4
9.0	13.0	10.0	142.0	405.0	28.0	5.0	542.6	40.1	428.6	412.4
9.0	13.0	11.0	114.0	447.0	29.0	5.0	572.9	41.8	448.8	431.9
9.0	13.0	12.0	275.0	449.0	28.0	5.0	748.4	44.7	577.6	555.9
9.0	13.0	13.0	474.0	345.0	28.0	4.0	822.0	48.6	621.6	598.1
9.0	13.0	14.0	246.0	363.0	28.0	4.0	583.8	43.2	453.7	436.6
9.0	13.0	15.0	298.0	263.0	28.0	4.0	469.8	39.8	369.2	354.9
9.0	13.0	16.0	252.0	167.0	27.0	3.0	283.8	34.7	223.6	213.6
9.0	13.0	17.0	210.0	74.0	27.0	3.0	117.2	29.6	86.6	79.8
9.0	13.0	18.0	-	-	26.0	3.0	-	26.0	-	-
9.0	13.0	19.0	-	-	26.0	4.0	-	26.0	-	-
9.0	13.0	20.0	-	-	26.0	4.0	-	26.0	-	-
9.0	13.0	21.0	-	-	26.0	4.0	-	26.0	-	-
9.0	13.0	22.0	-	-	26.0	4.0	-	26.0	-	-
9.0	13.0	23.0	-	-	26.0	4.0	-	26.0	-	-
9.0	14.0	-	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	1.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	2.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	3.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	4.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	5.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	6.0	109.0	31.0	26.0	3.0	40.5	25.4	29.5	23.8
9.0	14.0	7.0	485.0	86.0	27.0	3.0	249.9	32.3	185.2	176.1
9.0	14.0	8.0	660.0	114.0	27.0	4.0	494.5	38.5	383.1	368.4
9.0	14.0	9.0	750.0	131.0	28.0	4.0	711.7	45.3	544.1	523.7
9.0	14.0	10.0	809.0	136.0	28.0	4.0	880.7	49.9	660.9	635.8
9.0	14.0	11.0	826.0	145.0	28.0	4.0	975.9	52.5	722.7	694.9
9.0	14.0	12.0	213.0	460.0	28.0	3.0	688.6	47.9	522.8	503.2
9.0	14.0	13.0	808.0	148.0	28.0	3.0	934.5	53.2	689.4	663.1
9.0	14.0	14.0	775.0	138.0	28.0	3.0	802.3	50.6	598.7	576.1
9.0	14.0	15.0	557.0	183.0	27.0	3.0	566.2	43.2	435.4	419.0
9.0	14.0	16.0	114.0	174.0	27.0	3.0	225.1	33.5	180.8	171.8
9.0	14.0	17.0	-	63.0	26.0	3.0	60.0	26.8	50.6	44.6
9.0	14.0	18.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	19.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	20.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	21.0	-	-	26.0	3.0	-	26.0	-	-
9.0	14.0	22.0	-	-	26.0	4.0	-	26.0	-	-
9.0	14.0	23.0	-	-	26.0	4.0	-	26.0	-	-
9.0	15.0	-	-	-	26.0	4.0	-	26.0	-	-
9.0	15.0	1.0	-	-	26.0	4.0	-	26.0	-	-
9.0	15.0	2.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	3.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	4.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	5.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	6.0	-	17.0	26.0	3.0	16.1	24.8	13.7	8.4
9.0	15.0	7.0	51.0	117.0	26.0	3.0	130.6	28.0	107.4	100.1
9.0	15.0	8.0	120.0	224.0	27.0	3.0	292.6	33.8	236.6	226.2
9.0	15.0	9.0	612.0	199.0	27.0	3.0	679.8	44.5	522.4	502.8
9.0	15.0	10.0	10.0	234.0	27.0	3.0	234.9	34.1	191.2	182.0
9.0	15.0	11.0	4.0	168.0	27.0	3.0	165.3	30.7	136.9	129.0
9.0	15.0	12.0	1.0	147.0	28.0	3.0	142.0	30.9	117.5	110.0
9.0	15.0	13.0	15.0	280.0	27.0	3.0	285.7	33.6	233.2	222.9
9.0	15.0	14.0	36.0	312.0	27.0	3.0	341.0	35.6	275.5	264.0
9.0	15.0	15.0	-	69.0	27.0	3.0	65.6	28.4	54.9	48.8
9.0	15.0	16.0	20.0	151.0	27.0	3.0	154.1	29.8	127.5	119.8
9.0	15.0	17.0	88.0	71.0	26.0	3.0	87.7	27.3	69.1	62.7
9.0	15.0	18.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	19.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	20.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	21.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	22.0	-	-	26.0	3.0	-	26.0	-	-
9.0	15.0	23.0	-	-	26.0	3.0	-	26.0	-	-
9.0	16.0	-	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	1.0	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	2.0	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	3.0	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	16.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	16.0	6.0	146.0	28.0	25.0	2.0	42.5	24.3	29.5	23.8
9.0	16.0	7.0	526.0	76.0	26.0	2.0	254.4	32.1	187.5	178.4
9.0	16.0	8.0	199.0	221.0	27.0	2.0	334.1	36.4	265.7	254.5
9.0	16.0	9.0	316.0	301.0	27.0	2.0	551.7	43.1	427.9	411.7
9.0	16.0	10.0	41.0	346.0	27.0	2.0	383.3	39.2	304.4	292.1
9.0	16.0	11.0	198.0	449.0	27.0	2.0	658.8	46.4	504.1	485.2
9.0	16.0	12.0	245.0	452.0	27.0	2.0	712.8	49.0	538.0	517.9
9.0	16.0	13.0	175.0	431.0	27.0	1.0	610.5	50.0	458.4	441.1
9.0	16.0	14.0	350.0	333.0	27.0	1.0	639.6	50.3	478.6	460.6
9.0	16.0	15.0	423.0	227.0	27.0	1.0	520.8	46.7	394.1	379.0
9.0	16.0	16.0	591.0	99.0	27.0	2.0	371.4	38.7	279.6	268.0
9.0	16.0	17.0	307.0	63.0	26.0	2.0	126.3	29.7	89.0	82.1

9.0	16.0	18.0	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	16.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	17.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	17.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	17.0	2.0	-	-	25.0	2.0	-	25.0	-	-
9.0	17.0	3.0	-	-	25.0	2.0	-	25.0	-	-
9.0	17.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	17.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	17.0	6.0	94.0	26.0	25.0	2.0	35.1	24.1	25.6	20.0
9.0	17.0	7.0	543.0	74.0	26.0	2.0	258.6	32.2	190.1	181.0
9.0	17.0	8.0	707.0	97.0	27.0	3.0	505.0	39.9	388.0	373.2
9.0	17.0	9.0	204.0	311.0	27.0	3.0	471.1	39.8	372.0	357.6
9.0	17.0	10.0	321.0	375.0	28.0	3.0	682.6	46.2	522.7	503.1
9.0	17.0	11.0	872.0	115.0	28.0	4.0	983.0	52.2	729.3	701.2
9.0	17.0	12.0	875.0	116.0	28.0	4.0	1,001.2	53.4	738.1	709.6
9.0	17.0	13.0	862.0	114.0	28.0	4.0	942.0	52.1	699.2	672.4
9.0	17.0	14.0	668.0	208.0	28.0	4.0	785.8	48.3	594.0	571.6
9.0	17.0	15.0	375.0	238.0	28.0	3.0	494.1	42.3	382.7	368.0
9.0	17.0	16.0	477.0	120.0	27.0	3.0	338.7	36.3	259.7	248.6
9.0	17.0	17.0	377.0	54.0	26.0	3.0	131.8	29.2	90.1	83.2
9.0	17.0	18.0	-	-	26.0	3.0	-	26.0	-	-
9.0	17.0	19.0	-	-	26.0	3.0	-	26.0	-	-
9.0	17.0	20.0	-	-	26.0	3.0	-	26.0	-	-
9.0	17.0	21.0	-	-	26.0	3.0	-	26.0	-	-
9.0	17.0	22.0	-	-	26.0	3.0	-	26.0	-	-
9.0	17.0	23.0	-	-	26.0	3.0	-	26.0	-	-
9.0	18.0	-	-	-	26.0	4.0	-	26.0	-	-
9.0	18.0	1.0	-	-	26.0	3.0	-	26.0	-	-
9.0	18.0	2.0	-	-	26.0	3.0	-	26.0	-	-
9.0	18.0	3.0	-	-	26.0	3.0	-	26.0	-	-
9.0	18.0	4.0	-	-	26.0	3.0	-	26.0	-	-
9.0	18.0	5.0	-	-	26.0	3.0	-	26.0	-	-
9.0	18.0	6.0	171.0	26.0	26.0	3.0	43.8	25.5	29.2	23.5
9.0	18.0	7.0	554.0	70.0	27.0	4.0	258.7	32.1	189.9	180.7
9.0	18.0	8.0	718.0	92.0	27.0	4.0	506.2	38.8	391.0	376.0
9.0	18.0	9.0	800.0	106.0	28.0	4.0	725.3	45.7	553.4	532.6
9.0	18.0	10.0	852.0	111.0	28.0	4.0	888.9	50.1	666.2	640.9
9.0	18.0	11.0	870.0	117.0	29.0	3.0	983.0	56.0	714.5	687.0
9.0	18.0	12.0	866.0	122.0	29.0	3.0	998.0	56.6	722.8	695.0
9.0	18.0	13.0	789.0	158.0	29.0	3.0	924.5	54.9	675.9	650.2
9.0	18.0	14.0	710.0	171.0	29.0	2.0	781.7	53.8	573.4	551.8
9.0	18.0	15.0	106.0	267.0	29.0	2.0	335.3	40.7	263.2	252.0
9.0	18.0	16.0	114.0	166.0	28.0	2.0	217.0	34.3	173.3	164.5
9.0	18.0	17.0	-	33.0	27.0	2.0	31.3	27.1	26.4	20.8
9.0	18.0	18.0	-	-	26.0	2.0	-	26.0	-	-
9.0	18.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	18.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	18.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	18.0	22.0	-	-	25.0	2.0	-	25.0	-	-
9.0	18.0	23.0	-	-	25.0	2.0	-	25.0	-	-
9.0	19.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	19.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	19.0	2.0	-	-	25.0	2.0	-	25.0	-	-
9.0	19.0	3.0	-	-	25.0	2.0	-	25.0	-	-
9.0	19.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	19.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	19.0	6.0	165.0	24.0	25.0	2.0	41.6	24.3	27.7	22.1
9.0	19.0	7.0	483.0	81.0	26.0	3.0	247.1	31.2	184.1	175.0
9.0	19.0	8.0	568.0	136.0	26.0	3.0	468.6	37.9	365.2	351.1
9.0	19.0	9.0	208.0	318.0	27.0	2.0	482.2	41.7	377.1	362.6
9.0	19.0	10.0	136.0	397.0	27.0	2.0	531.5	43.2	413.4	397.7
9.0	19.0	11.0	218.0	442.0	28.0	2.0	672.2	48.3	509.2	490.1
9.0	19.0	12.0	189.0	454.0	28.0	1.0	659.8	52.2	489.4	471.1
9.0	19.0	13.0	381.0	377.0	29.0	1.0	758.5	56.2	550.6	529.9
9.0	19.0	14.0	224.0	355.0	28.0	1.0	549.9	49.2	414.0	398.3
9.0	19.0	15.0	652.0	143.0	28.0	1.0	586.8	49.3	436.2	419.7
9.0	19.0	16.0	497.0	121.0	27.0	1.0	346.9	40.7	259.6	248.6
9.0	19.0	17.0	235.0	67.0	26.0	1.0	113.1	30.2	81.5	74.9
9.0	19.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	19.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	19.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	19.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	19.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	19.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	20.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	20.0	1.0	-	-	25.0	-	-	25.0	-	-
9.0	20.0	2.0	-	-	25.0	-	-	25.0	-	-

9.0	20.0	3.0	-	-	25.0	-	-	25.0	-	-
9.0	20.0	4.0	-	-	26.0	-	-	26.0	-	-
9.0	20.0	5.0	-	-	26.0	-	-	26.0	-	-
9.0	20.0	6.0	161.0	25.0	26.0	-	42.7	24.4	28.7	23.1
9.0	20.0	7.0	529.0	75.0	26.0	-	256.7	35.6	186.2	177.1
9.0	20.0	8.0	480.0	165.0	27.0	1.0	446.5	42.1	341.6	328.1
9.0	20.0	9.0	430.0	266.0	28.0	1.0	610.4	49.5	457.6	440.3
9.0	20.0	10.0	533.0	291.0	28.0	1.0	795.7	56.1	577.5	555.8
9.0	20.0	11.0	833.0	139.0	29.0	1.0	969.2	63.2	676.6	650.8
9.0	20.0	12.0	565.0	334.0	28.0	1.0	928.3	61.8	653.0	628.2
9.0	20.0	13.0	849.0	119.0	28.0	1.0	932.4	61.8	655.9	631.0
9.0	20.0	14.0	302.0	338.0	28.0	1.0	604.5	51.9	448.6	431.7
9.0	20.0	15.0	519.0	188.0	28.0	1.0	541.9	48.2	405.9	390.5
9.0	20.0	16.0	613.0	88.0	27.0	1.0	365.4	41.1	270.3	259.0
9.0	20.0	17.0	354.0	52.0	27.0	1.0	122.0	31.6	82.1	75.4
9.0	20.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	20.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	20.0	20.0	-	-	26.0	1.0	-	26.0	-	-
9.0	20.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	20.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	20.0	23.0	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	-	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	1.0	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	2.0	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	3.0	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	4.0	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	5.0	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	6.0	-	11.0	26.0	1.0	10.4	24.0	8.9	3.6
9.0	21.0	7.0	-	33.0	26.0	1.0	31.3	24.8	26.6	21.0
9.0	21.0	8.0	66.0	210.0	26.0	1.0	245.2	32.8	199.8	190.4
9.0	21.0	9.0	-	161.0	27.0	2.0	154.5	31.0	127.7	120.0
9.0	21.0	10.0	57.0	362.0	27.0	2.0	415.7	38.4	331.3	318.2
9.0	21.0	11.0	178.0	443.0	27.0	1.0	634.7	49.1	478.7	460.7
9.0	21.0	12.0	16.0	295.0	28.0	1.0	302.9	40.5	238.9	228.4
9.0	21.0	13.0	63.0	389.0	28.0	1.0	452.3	43.6	351.2	337.4
9.0	21.0	14.0	832.0	104.0	28.0	1.0	802.3	55.6	582.6	560.8
9.0	21.0	15.0	389.0	227.0	27.0	1.0	490.2	46.6	370.9	356.6
9.0	21.0	16.0	-	125.0	26.0	1.0	120.0	31.4	99.1	92.0
9.0	21.0	17.0	-	21.0	26.0	1.0	19.9	25.2	16.9	11.5
9.0	21.0	18.0	-	-	25.0	1.0	-	25.0	-	-
9.0	21.0	19.0	-	-	25.0	2.0	-	25.0	-	-
9.0	21.0	20.0	-	-	25.0	2.0	-	25.0	-	-
9.0	21.0	21.0	-	-	25.0	3.0	-	25.0	-	-
9.0	21.0	22.0	-	-	25.0	3.0	-	25.0	-	-
9.0	21.0	23.0	-	-	25.0	3.0	-	25.0	-	-
9.0	22.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	22.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	22.0	2.0	-	-	25.0	2.0	-	25.0	-	-
9.0	22.0	3.0	-	-	25.0	2.0	-	25.0	-	-
9.0	22.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	22.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	22.0	6.0	30.0	23.0	25.0	1.0	25.9	23.5	20.7	15.3
9.0	22.0	7.0	113.0	115.0	26.0	1.0	152.9	29.4	122.6	115.1
9.0	22.0	8.0	-	94.0	26.0	1.0	89.5	28.0	75.1	68.5
9.0	22.0	9.0	-	132.0	26.0	-	126.2	30.3	104.7	97.5
9.0	22.0	10.0	-	73.0	26.0	-	69.5	28.1	58.3	52.1
9.0	22.0	11.0	-	137.0	25.0	1.0	131.3	27.9	110.2	102.9
9.0	22.0	12.0	3.0	163.0	25.0	1.0	159.6	29.4	133.0	125.2
9.0	22.0	13.0	67.0	390.0	25.0	1.0	457.3	39.9	361.7	347.7
9.0	22.0	14.0	13.0	241.0	25.0	1.0	244.0	34.5	198.4	189.0
9.0	22.0	15.0	176.0	261.0	25.0	-	380.5	41.7	296.6	284.5
9.0	22.0	16.0	-	44.0	25.0	-	41.7	29.4	34.8	29.0
9.0	22.0	17.0	-	41.0	25.0	-	39.0	23.9	33.3	27.6
9.0	22.0	18.0	-	-	25.0	-	-	25.0	-	-
9.0	22.0	19.0	-	-	25.0	-	-	25.0	-	-
9.0	22.0	20.0	-	-	25.0	-	-	25.0	-	-
9.0	22.0	21.0	-	-	25.0	-	-	25.0	-	-
9.0	22.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	22.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	23.0	-	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	1.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	2.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	6.0	128.0	23.0	24.0	1.0	38.4	22.9	26.7	21.1
9.0	23.0	7.0	491.0	80.0	25.0	2.0	250.8	30.9	187.2	178.1
9.0	23.0	8.0	661.0	109.0	25.0	2.0	495.2	39.2	382.6	367.9
9.0	23.0	9.0	756.0	124.0	26.0	2.0	713.0	47.4	539.4	519.1
9.0	23.0	10.0	816.0	127.0	26.0	3.0	879.4	50.0	659.7	634.6
9.0	23.0	11.0	481.0	347.0	27.0	3.0	850.3	50.7	636.0	611.9

9.0	23.0	12.0	503.0	350.0	27.0	3.0	882.8	51.4	657.7	632.7
9.0	23.0	13.0	305.0	395.0	28.0	4.0	705.6	46.2	540.3	520.1
9.0	23.0	14.0	234.0	345.0	28.0	4.0	547.6	42.0	428.1	411.9
9.0	23.0	15.0	582.0	162.0	27.0	4.0	556.6	40.8	432.5	416.2
9.0	23.0	16.0	509.0	106.0	27.0	3.0	333.1	36.3	253.5	242.6
9.0	23.0	17.0	289.0	51.0	26.0	3.0	107.2	28.5	74.3	67.8
9.0	23.0	18.0	-	-	26.0	3.0	-	26.0	-	-
9.0	23.0	19.0	-	-	26.0	3.0	-	26.0	-	-
9.0	23.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	23.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	23.0	22.0	-	-	25.0	2.0	-	25.0	-	-
9.0	23.0	23.0	-	-	25.0	2.0	-	25.0	-	-
9.0	24.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	24.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	24.0	2.0	-	-	25.0	2.0	-	25.0	-	-
9.0	24.0	3.0	-	-	25.0	2.0	-	25.0	-	-
9.0	24.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	24.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	24.0	6.0	69.0	23.0	25.0	2.0	31.2	24.0	23.3	17.7
9.0	24.0	7.0	368.0	102.0	26.0	3.0	230.8	30.8	176.0	167.1
9.0	24.0	8.0	499.0	165.0	26.0	3.0	459.1	37.6	359.4	345.5
9.0	24.0	9.0	597.0	197.0	27.0	4.0	670.8	43.3	518.9	499.4
9.0	24.0	10.0	653.0	221.0	27.0	4.0	835.3	47.7	634.1	610.1
9.0	24.0	11.0	190.0	421.0	27.0	4.0	624.2	43.2	485.6	467.4
9.0	24.0	12.0	192.0	428.0	27.0	4.0	636.5	42.9	495.9	477.3
9.0	24.0	13.0	185.0	402.0	27.0	3.0	590.9	43.3	459.3	442.0
9.0	24.0	14.0	179.0	344.0	27.0	3.0	501.4	40.9	394.3	379.2
9.0	24.0	15.0	167.0	259.0	27.0	3.0	372.5	37.2	297.1	285.0
9.0	24.0	16.0	143.0	157.0	26.0	3.0	220.0	31.7	177.0	168.2
9.0	24.0	17.0	63.0	57.0	26.0	3.0	68.5	27.0	54.4	48.2
9.0	24.0	18.0	-	-	25.0	3.0	-	25.0	-	-
9.0	24.0	19.0	-	-	25.0	3.0	-	25.0	-	-
9.0	24.0	20.0	-	-	25.0	3.0	-	25.0	-	-
9.0	24.0	21.0	-	-	25.0	3.0	-	25.0	-	-
9.0	24.0	22.0	-	-	25.0	3.0	-	25.0	-	-
9.0	24.0	23.0	-	-	25.0	2.0	-	25.0	-	-
9.0	25.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	25.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	25.0	2.0	-	-	25.0	2.0	-	25.0	-	-
9.0	25.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	25.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	25.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	25.0	6.0	-	20.0	25.0	1.0	19.0	23.3	16.3	10.9
9.0	25.0	7.0	105.0	113.0	26.0	1.0	148.9	29.3	119.8	112.3
9.0	25.0	8.0	287.0	202.0	27.0	2.0	372.6	37.1	294.2	282.2
9.0	25.0	9.0	611.0	192.0	28.0	2.0	676.6	47.8	511.1	492.0
9.0	25.0	10.0	335.0	361.0	28.0	2.0	683.8	49.2	515.2	495.9
9.0	25.0	11.0	84.0	417.0	28.0	2.0	506.1	44.2	391.7	376.7
9.0	25.0	12.0	575.0	320.0	28.0	2.0	922.8	55.2	673.7	648.1
9.0	25.0	13.0	440.0	337.0	28.0	2.0	779.7	52.8	576.4	554.8
9.0	25.0	14.0	200.0	345.0	28.0	2.0	519.7	45.0	400.0	384.8
9.0	25.0	15.0	43.0	231.0	27.0	2.0	257.8	35.3	208.2	198.6
9.0	25.0	16.0	19.0	136.0	27.0	2.0	139.4	30.6	114.9	107.5
9.0	25.0	17.0	-	33.0	26.0	2.0	31.3	25.7	26.5	21.0
9.0	25.0	18.0	-	-	26.0	2.0	-	26.0	-	-
9.0	25.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	25.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	25.0	21.0	-	-	25.0	2.0	-	25.0	-	-
9.0	25.0	22.0	-	-	25.0	2.0	-	25.0	-	-
9.0	25.0	23.0	-	-	25.0	2.0	-	25.0	-	-
9.0	26.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	26.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	26.0	2.0	-	-	26.0	2.0	-	26.0	-	-
9.0	26.0	3.0	-	-	25.0	2.0	-	25.0	-	-
9.0	26.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	26.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	26.0	6.0	-	18.0	26.0	1.0	17.1	24.2	14.6	9.2
9.0	26.0	7.0	22.0	104.0	26.0	1.0	109.6	27.8	91.1	84.2
9.0	26.0	8.0	-	132.0	27.0	1.0	126.6	30.1	105.1	97.9
9.0	26.0	9.0	72.0	297.0	27.0	1.0	352.8	38.2	281.2	269.5
9.0	26.0	10.0	131.0	387.0	28.0	1.0	519.2	46.1	397.8	382.6
9.0	26.0	11.0	122.0	430.0	28.0	1.0	567.8	48.5	429.6	413.3
9.0	26.0	12.0	155.0	442.0	28.0	1.0	615.1	50.3	461.1	443.7
9.0	26.0	13.0	103.0	401.0	28.0	2.0	503.6	43.9	390.4	375.4
9.0	26.0	14.0	178.0	344.0	28.0	2.0	500.7	43.3	388.7	373.8
9.0	26.0	15.0	142.0	253.0	27.0	2.0	350.2	38.0	278.2	266.7
9.0	26.0	16.0	101.0	149.0	27.0	1.0	193.9	34.1	154.9	146.5
9.0	26.0	17.0	109.0	52.0	26.0	1.0	73.1	27.7	55.6	49.4
9.0	26.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	26.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	26.0	20.0	-	-	26.0	2.0	-	26.0	-	-

9.0	26.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	26.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	26.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	27.0	-	-	-	26.0	2.0	-	26.0	-	-
9.0	27.0	1.0	-	-	26.0	1.0	-	26.0	-	-
9.0	27.0	2.0	-	-	26.0	1.0	-	26.0	-	-
9.0	27.0	3.0	-	-	26.0	1.0	-	26.0	-	-
9.0	27.0	4.0	-	-	26.0	1.0	-	26.0	-	-
9.0	27.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	27.0	6.0	-	11.0	25.0	1.0	10.4	22.9	8.9	3.7
9.0	27.0	7.0	73.0	110.0	26.0	1.0	132.9	28.6	108.1	100.9
9.0	27.0	8.0	317.0	195.0	27.0	2.0	383.0	37.4	301.8	289.6
9.0	27.0	9.0	784.0	113.0	27.0	2.0	723.5	48.2	544.9	524.4
9.0	27.0	10.0	828.0	124.0	28.0	2.0	886.9	55.0	647.4	622.8
9.0	27.0	11.0	478.0	341.0	28.0	2.0	841.5	54.4	617.0	593.7
9.0	27.0	12.0	714.0	212.0	28.0	2.0	949.6	57.1	685.8	659.6
9.0	27.0	13.0	669.0	218.0	28.0	2.0	872.4	55.4	635.7	611.7
9.0	27.0	14.0	643.0	203.0	28.0	2.0	751.8	51.9	557.2	536.3
9.0	27.0	15.0	-	160.0	28.0	2.0	154.0	34.3	125.3	117.6
9.0	27.0	16.0	-	80.0	27.0	2.0	76.2	28.2	63.8	57.5
9.0	27.0	17.0	-	4.0	26.0	2.0	3.8	24.5	3.2	-
9.0	27.0	18.0	-	-	26.0	2.0	-	26.0	-	-
9.0	27.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	27.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	27.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	27.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	27.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	28.0	-	-	-	26.0	1.0	-	26.0	-	-
9.0	28.0	1.0	-	-	26.0	1.0	-	26.0	-	-
9.0	28.0	2.0	-	-	26.0	1.0	-	26.0	-	-
9.0	28.0	3.0	-	-	26.0	1.0	-	26.0	-	-
9.0	28.0	4.0	-	-	26.0	1.0	-	26.0	-	-
9.0	28.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	28.0	6.0	145.0	20.0	25.0	1.0	39.1	24.0	26.1	20.5
9.0	28.0	7.0	547.0	67.0	26.0	1.0	258.5	33.3	189.3	180.1
9.0	28.0	8.0	716.0	90.0	27.0	2.0	507.6	41.5	386.9	372.1
9.0	28.0	9.0	801.0	103.0	27.0	2.0	725.8	48.8	544.9	524.5
9.0	28.0	10.0	841.0	114.0	28.0	2.0	882.1	54.9	644.3	619.9
9.0	28.0	11.0	863.0	118.0	28.0	2.0	973.9	57.9	700.2	673.4
9.0	28.0	12.0	640.0	247.0	28.0	2.0	912.5	56.6	660.9	635.8
9.0	28.0	13.0	463.0	323.0	28.0	2.0	785.8	52.9	580.5	558.7
9.0	28.0	14.0	613.0	213.0	28.0	2.0	736.6	51.1	548.1	527.6
9.0	28.0	15.0	728.0	103.0	28.0	2.0	582.1	46.6	437.4	420.9
9.0	28.0	16.0	607.0	79.0	27.0	2.0	344.0	38.1	256.3	245.4
9.0	28.0	17.0	336.0	41.0	26.0	2.0	103.6	28.9	68.7	62.3
9.0	28.0	18.0	-	-	26.0	2.0	-	26.0	-	-
9.0	28.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	28.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	28.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	28.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	28.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	29.0	-	-	-	26.0	1.0	-	26.0	-	-
9.0	29.0	1.0	-	-	26.0	1.0	-	26.0	-	-
9.0	29.0	2.0	-	-	26.0	1.0	-	26.0	-	-
9.0	29.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	29.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	29.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	29.0	6.0	34.0	19.0	25.0	2.0	23.0	23.7	18.0	12.6
9.0	29.0	7.0	226.0	104.0	26.0	2.0	184.1	29.9	143.8	135.7
9.0	29.0	8.0	745.0	80.0	27.0	2.0	513.6	41.4	391.5	376.5
9.0	29.0	9.0	827.0	92.0	27.0	2.0	730.1	48.9	547.6	527.1
9.0	29.0	10.0	870.0	99.0	28.0	2.0	891.9	55.2	650.4	625.7
9.0	29.0	11.0	890.0	102.0	28.0	2.0	982.6	58.2	705.4	678.4
9.0	29.0	12.0	891.0	104.0	29.0	2.0	996.1	59.8	708.6	681.4
9.0	29.0	13.0	857.0	113.0	29.0	2.0	924.3	58.0	664.1	638.8
9.0	29.0	14.0	519.0	245.0	29.0	2.0	689.8	51.3	512.9	493.7
9.0	29.0	15.0	146.0	246.0	29.0	2.0	345.4	40.6	270.7	259.4
9.0	29.0	16.0	22.0	131.0	28.0	2.0	135.9	31.9	111.2	103.9
9.0	29.0	17.0	185.0	46.0	27.0	2.0	81.5	28.3	58.5	52.2
9.0	29.0	18.0	-	-	27.0	2.0	-	27.0	-	-
9.0	29.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	29.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	29.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	29.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	29.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	30.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	30.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	30.0	2.0	-	-	25.0	2.0	-	25.0	-	-
9.0	30.0	3.0	-	-	25.0	2.0	-	25.0	-	-
9.0	30.0	4.0	-	-	25.0	2.0	-	25.0	-	-
9.0	30.0	5.0	-	-	25.0	2.0	-	25.0	-	-

9.0	30.0	6.0	141.0	19.0	25.0	2.0	38.3	24.2	25.6	20.0
9.0	30.0	7.0	557.0	65.0	26.0	2.0	260.6	32.3	191.6	182.4
9.0	30.0	8.0	733.0	84.0	27.0	3.0	511.4	40.0	392.7	377.6
9.0	30.0	9.0	819.0	95.0	28.0	3.0	727.2	47.4	549.7	529.1
9.0	30.0	10.0	868.0	99.0	28.0	3.0	889.7	52.2	659.4	634.3
9.0	30.0	11.0	889.0	103.0	29.0	2.0	982.1	59.1	701.4	674.5
9.0	30.0	12.0	892.0	103.0	29.0	2.0	995.0	59.8	708.0	680.8
9.0	30.0	13.0	858.0	111.0	29.0	3.0	921.8	54.8	674.1	648.4
9.0	30.0	14.0	617.0	208.0	29.0	3.0	732.9	49.8	549.1	528.5
9.0	30.0	15.0	631.0	137.0	29.0	3.0	555.1	44.7	421.7	405.7
9.0	30.0	16.0	614.0	76.0	28.0	3.0	341.3	37.5	254.5	243.6
9.0	30.0	17.0	311.0	40.0	27.0	3.0	97.2	29.2	64.6	58.2
9.0	30.0	18.0	-	-	27.0	3.0	-	27.0	-	-
9.0	30.0	19.0	-	-	26.0	3.0	-	26.0	-	-
9.0	30.0	20.0	-	-	26.0	3.0	-	26.0	-	-
9.0	30.0	21.0	-	-	26.0	3.0	-	26.0	-	-
9.0	30.0	22.0	-	-	26.0	3.0	-	26.0	-	-
9.0	30.0	23.0	-	-	26.0	3.0	-	26.0	-	-
10.0	1.0	-	-	-	25.0	3.0	-	25.0	-	-
10.0	1.0	1.0	-	-	25.0	3.0	-	25.0	-	-
10.0	1.0	2.0	-	-	25.0	3.0	-	25.0	-	-
10.0	1.0	3.0	-	-	25.0	2.0	-	25.0	-	-
10.0	1.0	4.0	-	-	25.0	2.0	-	25.0	-	-
10.0	1.0	5.0	-	-	25.0	2.0	-	25.0	-	-
10.0	1.0	6.0	168.0	19.0	25.0	2.0	42.9	24.4	28.1	22.5
10.0	1.0	7.0	599.0	60.0	26.0	2.0	269.8	32.6	197.2	187.9
10.0	1.0	8.0	766.0	79.0	27.0	2.0	525.0	42.1	398.7	383.4
10.0	1.0	9.0	849.0	90.0	28.0	3.0	744.5	47.9	561.3	540.3
10.0	1.0	10.0	893.0	96.0	28.0	3.0	908.6	52.7	671.4	645.8
10.0	1.0	11.0	914.0	98.0	28.0	3.0	1,000.3	55.5	728.9	700.8
10.0	1.0	12.0	917.0	98.0	29.0	3.0	1,013.2	57.0	732.1	703.8
10.0	1.0	13.0	901.0	96.0	29.0	3.0	944.4	55.4	688.2	661.9
10.0	1.0	14.0	867.0	90.0	28.0	3.0	802.1	50.7	597.6	575.1
10.0	1.0	15.0	798.0	81.0	28.0	3.0	598.6	45.1	452.6	435.5
10.0	1.0	16.0	-	24.0	27.0	3.0	22.7	28.1	19.1	13.6
10.0	1.0	17.0	80.0	43.0	26.0	3.0	57.0	26.0	44.0	38.1
10.0	1.0	18.0	-	-	26.0	3.0	-	26.0	-	-
10.0	1.0	19.0	-	-	26.0	3.0	-	26.0	-	-
10.0	1.0	20.0	-	-	26.0	3.0	-	26.0	-	-
10.0	1.0	21.0	-	-	26.0	3.0	-	26.0	-	-
10.0	1.0	22.0	-	-	26.0	3.0	-	26.0	-	-
10.0	1.0	23.0	-	-	25.0	3.0	-	25.0	-	-
10.0	2.0	-	-	-	25.0	3.0	-	25.0	-	-
10.0	2.0	1.0	-	-	25.0	3.0	-	25.0	-	-
10.0	2.0	2.0	-	-	25.0	3.0	-	25.0	-	-
10.0	2.0	3.0	-	-	25.0	3.0	-	25.0	-	-
10.0	2.0	4.0	-	-	25.0	2.0	-	25.0	-	-
10.0	2.0	5.0	-	-	25.0	2.0	-	25.0	-	-
10.0	2.0	6.0	158.0	19.0	25.0	2.0	42.1	24.3	27.9	22.2
10.0	2.0	7.0	607.0	59.0	26.0	2.0	271.8	32.6	198.5	189.1
10.0	2.0	8.0	773.0	77.0	27.0	3.0	527.0	40.5	403.4	388.0
10.0	2.0	9.0	850.0	88.0	27.0	4.0	743.0	45.2	568.2	546.9
10.0	2.0	10.0	885.0	97.0	28.0	4.0	902.0	50.5	674.7	649.0
10.0	2.0	11.0	227.0	419.0	28.0	4.0	660.1	45.2	508.2	489.2
10.0	2.0	12.0	892.0	107.0	28.0	4.0	997.2	52.5	738.8	710.2
10.0	2.0	13.0	847.0	121.0	28.0	4.0	919.8	51.5	684.5	658.3
10.0	2.0	14.0	149.0	331.0	28.0	4.0	463.8	40.6	365.2	351.1
10.0	2.0	15.0	744.0	97.0	28.0	4.0	580.3	42.1	445.7	428.8
10.0	2.0	16.0	601.0	78.0	27.0	3.0	335.7	36.5	251.4	240.6
10.0	2.0	17.0	295.0	38.0	26.0	3.0	91.4	28.0	61.0	54.7
10.0	2.0	18.0	-	-	26.0	3.0	-	26.0	-	-
10.0	2.0	19.0	-	-	26.0	3.0	-	26.0	-	-
10.0	2.0	20.0	-	-	25.0	3.0	-	25.0	-	-
10.0	2.0	21.0	-	-	25.0	3.0	-	25.0	-	-
10.0	2.0	22.0	-	-	25.0	3.0	-	25.0	-	-
10.0	2.0	23.0	-	-	25.0	3.0	-	25.0	-	-
10.0	3.0	-	-	-	25.0	3.0	-	25.0	-	-
10.0	3.0	1.0	-	-	25.0	3.0	-	25.0	-	-
10.0	3.0	2.0	-	-	24.0	3.0	-	24.0	-	-
10.0	3.0	3.0	-	-	24.0	3.0	-	24.0	-	-
10.0	3.0	4.0	-	-	24.0	3.0	-	24.0	-	-
10.0	3.0	5.0	-	-	24.0	2.0	-	24.0	-	-
10.0	3.0	6.0	173.0	18.0	25.0	2.0	43.2	24.4	28.0	22.4
10.0	3.0	7.0	611.0	57.0	26.0	3.0	271.4	31.9	198.7	189.3
10.0	3.0	8.0	771.0	76.0	27.0	3.0	524.9	40.4	401.9	386.6
10.0	3.0	9.0	848.0	87.0	27.0	3.0	740.3	46.8	561.3	540.2
10.0	3.0	10.0	889.0	94.0	28.0	3.0	901.9	52.5	667.1	641.7
10.0	3.0	11.0	908.0	97.0	28.0	3.0	991.8	55.3	723.6	695.8
10.0	3.0	12.0	910.0	97.0	28.0	3.0	1,003.0	55.8	729.7	701.5
10.0	3.0	13.0	872.0	107.0	28.0	3.0	926.6	54.0	680.6	654.6
10.0	3.0	14.0	842.0	97.0	28.0	3.0	786.5	50.2	587.3	565.2

10.0	3.0	15.0	782.0	84.0	27.0	3.0	588.7	43.8	447.9	431.0
10.0	3.0	16.0	661.0	65.0	27.0	3.0	345.1	36.8	256.6	245.7
10.0	3.0	17.0	360.0	33.0	26.0	3.0	96.3	28.2	61.6	55.4
10.0	3.0	18.0	-	-	26.0	3.0	-	26.0	-	-
10.0	3.0	19.0	-	-	25.0	3.0	-	25.0	-	-
10.0	3.0	20.0	-	-	25.0	3.0	-	25.0	-	-
10.0	3.0	21.0	-	-	25.0	3.0	-	25.0	-	-
10.0	3.0	22.0	-	-	25.0	3.0	-	25.0	-	-
10.0	3.0	23.0	-	-	25.0	2.0	-	25.0	-	-
10.0	4.0	-	-	-	25.0	2.0	-	25.0	-	-
10.0	4.0	1.0	-	-	25.0	2.0	-	25.0	-	-
10.0	4.0	2.0	-	-	25.0	1.0	-	25.0	-	-
10.0	4.0	3.0	-	-	25.0	1.0	-	25.0	-	-
10.0	4.0	4.0	-	-	25.0	1.0	-	25.0	-	-
10.0	4.0	5.0	-	-	25.0	1.0	-	25.0	-	-
10.0	4.0	6.0	223.0	16.0	25.0	1.0	47.5	24.3	29.1	23.4
10.0	4.0	7.0	651.0	49.0	26.0	2.0	276.4	32.8	200.4	191.0
10.0	4.0	8.0	804.0	64.0	27.0	2.0	528.5	42.2	400.6	385.3
10.0	4.0	9.0	877.0	73.0	27.0	2.0	746.7	49.4	558.3	537.4
10.0	4.0	10.0	915.0	80.0	28.0	2.0	909.3	55.7	661.1	636.0
10.0	4.0	11.0	931.0	84.0	28.0	2.0	999.1	58.7	715.2	687.7
10.0	4.0	12.0	931.0	86.0	28.0	2.0	1,010.4	59.3	720.8	693.1
10.0	4.0	13.0	888.0	101.0	28.0	3.0	933.6	54.2	684.9	658.8
10.0	4.0	14.0	850.0	96.0	28.0	3.0	790.3	50.3	589.7	567.5
10.0	4.0	15.0	783.0	85.0	28.0	3.0	588.9	44.8	445.6	428.8
10.0	4.0	16.0	651.0	67.0	27.0	3.0	341.9	36.7	254.3	243.4
10.0	4.0	17.0	334.0	33.0	26.0	3.0	92.2	28.1	59.6	53.4
10.0	4.0	18.0	-	-	26.0	3.0	-	26.0	-	-
10.0	4.0	19.0	-	-	26.0	3.0	-	26.0	-	-
10.0	4.0	20.0	-	-	25.0	3.0	-	25.0	-	-
10.0	4.0	21.0	-	-	25.0	3.0	-	25.0	-	-
10.0	4.0	22.0	-	-	25.0	3.0	-	25.0	-	-
10.0	4.0	23.0	-	-	25.0	3.0	-	25.0	-	-
10.0	5.0	-	-	-	25.0	3.0	-	25.0	-	-
10.0	5.0	1.0	-	-	25.0	3.0	-	25.0	-	-
10.0	5.0	2.0	-	-	25.0	2.0	-	25.0	-	-
10.0	5.0	3.0	-	-	25.0	2.0	-	25.0	-	-
10.0	5.0	4.0	-	-	25.0	2.0	-	25.0	-	-
10.0	5.0	5.0	-	-	25.0	2.0	-	25.0	-	-
10.0	5.0	6.0	122.0	17.0	25.0	2.0	35.2	24.6	23.7	18.2
10.0	5.0	7.0	560.0	64.0	26.0	2.0	262.3	32.3	193.0	183.7
10.0	5.0	8.0	735.0	85.0	27.0	3.0	514.5	40.1	394.9	379.8
10.0	5.0	9.0	442.0	247.0	27.0	3.0	604.8	43.3	468.2	450.6
10.0	5.0	10.0	544.0	267.0	28.0	3.0	782.6	49.1	589.7	567.5
10.0	5.0	11.0	540.0	280.0	28.0	3.0	836.8	51.0	624.7	601.1
10.0	5.0	12.0	883.0	114.0	28.0	3.0	992.5	55.1	724.9	697.0
10.0	5.0	13.0	775.0	163.0	28.0	3.0	900.7	53.3	663.9	638.7
10.0	5.0	14.0	727.0	153.0	28.0	3.0	758.6	49.4	569.0	547.6
10.0	5.0	15.0	641.0	134.0	27.0	3.0	552.4	42.7	423.4	407.3
10.0	5.0	16.0	485.0	101.0	27.0	3.0	307.0	35.6	232.5	222.3
10.0	5.0	17.0	97.0	40.0	26.0	3.0	58.6	27.0	44.2	38.3
10.0	5.0	18.0	-	-	26.0	3.0	-	26.0	-	-
10.0	5.0	19.0	-	-	26.0	3.0	-	26.0	-	-
10.0	5.0	20.0	-	-	26.0	3.0	-	26.0	-	-
10.0	5.0	21.0	-	-	25.0	4.0	-	25.0	-	-
10.0	5.0	22.0	-	-	25.0	4.0	-	25.0	-	-
10.0	5.0	23.0	-	-	25.0	4.0	-	25.0	-	-
10.0	6.0	-	-	-	25.0	3.0	-	25.0	-	-
10.0	6.0	1.0	-	-	25.0	3.0	-	25.0	-	-
10.0	6.0	2.0	-	-	25.0	3.0	-	25.0	-	-
10.0	6.0	3.0	-	-	25.0	3.0	-	25.0	-	-
10.0	6.0	4.0	-	-	25.0	3.0	-	25.0	-	-
10.0	6.0	5.0	-	-	25.0	3.0	-	25.0	-	-
10.0	6.0	6.0	-	13.0	25.0	3.0	12.3	23.8	10.5	5.2
10.0	6.0	7.0	65.0	102.0	26.0	3.0	123.5	27.8	101.0	93.9
10.0	6.0	8.0	253.0	195.0	26.0	4.0	349.6	33.6	281.3	269.7
10.0	6.0	9.0	341.0	272.0	27.0	4.0	547.5	40.0	431.2	414.9
10.0	6.0	10.0	27.0	300.0	27.0	4.0	327.3	35.2	265.1	253.9
10.0	6.0	11.0	132.0	398.0	27.0	4.0	546.2	39.9	432.0	415.7
10.0	6.0	12.0	62.0	388.0	27.0	4.0	457.3	38.4	364.6	350.4
10.0	6.0	13.0	38.0	331.0	27.0	4.0	370.9	36.0	299.2	287.0
10.0	6.0	14.0	9.0	218.0	27.0	4.0	218.7	32.1	179.9	171.0
10.0	6.0	15.0	18.0	191.0	27.0	4.0	196.9	31.1	162.5	154.0
10.0	6.0	16.0	-	11.0	26.0	4.0	10.4	25.3	8.8	3.6
10.0	6.0	17.0	-	22.0	26.0	4.0	20.9	25.0	17.7	12.3
10.0	6.0	18.0	-	-	26.0	4.0	-	26.0	-	-
10.0	6.0	19.0	-	-	26.0	5.0	-	26.0	-	-
10.0	6.0	20.0	-	-	26.0	5.0	-	26.0	-	-
10.0	6.0	21.0	-	-	25.0	6.0	-	25.0	-	-
10.0	6.0	22.0	-	-	25.0	6.0	-	25.0	-	-
10.0	6.0	23.0	-	-	25.0	6.0	-	25.0	-	-

10.0	7.0	-	-	-	25.0	5.0	-	25.0	-	-
10.0	7.0	1.0	-	-	25.0	5.0	-	25.0	-	-
10.0	7.0	2.0	-	-	25.0	5.0	-	25.0	-	-
10.0	7.0	3.0	-	-	25.0	5.0	-	25.0	-	-
10.0	7.0	4.0	-	-	25.0	5.0	-	25.0	-	-
10.0	7.0	5.0	-	-	25.0	5.0	-	25.0	-	-
10.0	7.0	6.0	-	-	25.0	5.0	-	25.0	-	-
10.0	7.0	7.0	-	7.0	25.0	6.0	6.6	23.9	5.7	0.5
10.0	7.0	8.0	634.0	113.0	26.0	6.0	488.4	34.8	386.1	371.3
10.0	7.0	9.0	740.0	129.0	26.0	6.0	709.1	40.1	556.9	536.0
10.0	7.0	10.0	45.0	328.0	27.0	7.0	373.3	34.0	304.1	291.8
10.0	7.0	11.0	89.0	387.0	27.0	7.0	482.0	35.5	389.9	374.9
10.0	7.0	12.0	46.0	356.0	27.0	7.0	407.7	34.3	331.7	318.6
10.0	7.0	13.0	45.0	339.0	26.0	7.0	386.1	32.7	316.5	303.8
10.0	7.0	14.0	10.0	221.0	26.0	7.0	222.6	29.7	185.2	176.1
10.0	7.0	15.0	2.0	164.0	26.0	7.0	159.9	28.2	133.9	126.1
10.0	7.0	16.0	-	65.0	25.0	6.0	61.7	25.3	52.4	46.4
10.0	7.0	17.0	124.0	40.0	25.0	6.0	63.4	25.2	47.3	41.3
10.0	7.0	18.0	-	-	24.0	6.0	-	24.0	-	-
10.0	7.0	19.0	-	-	24.0	6.0	-	24.0	-	-
10.0	7.0	20.0	-	-	24.0	6.0	-	24.0	-	-
10.0	7.0	21.0	-	-	24.0	5.0	-	24.0	-	-
10.0	7.0	22.0	-	-	24.0	5.0	-	24.0	-	-
10.0	7.0	23.0	-	-	24.0	5.0	-	24.0	-	-
10.0	8.0	-	-	-	24.0	5.0	-	24.0	-	-
10.0	8.0	1.0	-	-	24.0	5.0	-	24.0	-	-
10.0	8.0	2.0	-	-	24.0	5.0	-	24.0	-	-
10.0	8.0	3.0	-	-	24.0	5.0	-	24.0	-	-
10.0	8.0	4.0	-	-	24.0	4.0	-	24.0	-	-
10.0	8.0	5.0	-	-	24.0	4.0	-	24.0	-	-
10.0	8.0	6.0	-	18.0	24.0	4.0	17.1	23.0	14.6	9.3
10.0	8.0	7.0	492.0	76.0	25.0	5.0	252.5	29.4	190.3	181.1
10.0	8.0	8.0	690.0	103.0	26.0	5.0	509.5	36.7	398.4	383.2
10.0	8.0	9.0	778.0	123.0	27.0	5.0	729.0	43.2	563.6	542.4
10.0	8.0	10.0	830.0	133.0	27.0	5.0	894.4	47.3	680.4	654.4
10.0	8.0	11.0	855.0	137.0	27.0	4.0	986.3	51.8	733.1	704.8
10.0	8.0	12.0	463.0	333.0	27.0	4.0	821.6	48.2	622.6	599.1
10.0	8.0	13.0	577.0	265.0	27.0	4.0	824.7	47.9	625.7	602.1
10.0	8.0	14.0	788.0	128.0	27.0	4.0	773.8	46.7	588.5	566.4
10.0	8.0	15.0	704.0	113.0	27.0	4.0	565.4	41.6	435.0	418.6
10.0	8.0	16.0	35.0	120.0	26.0	4.0	133.7	29.5	110.2	102.9
10.0	8.0	17.0	-	27.0	25.0	4.0	25.6	24.5	21.9	16.4
10.0	8.0	18.0	-	-	25.0	4.0	-	25.0	-	-
10.0	8.0	19.0	-	-	25.0	4.0	-	25.0	-	-
10.0	8.0	20.0	-	-	24.0	4.0	-	24.0	-	-
10.0	8.0	21.0	-	-	24.0	4.0	-	24.0	-	-
10.0	8.0	22.0	-	-	24.0	4.0	-	24.0	-	-
10.0	8.0	23.0	-	-	24.0	4.0	-	24.0	-	-
10.0	9.0	-	-	-	24.0	4.0	-	24.0	-	-
10.0	9.0	1.0	-	-	23.0	3.0	-	23.0	-	-
10.0	9.0	2.0	-	-	23.0	3.0	-	23.0	-	-
10.0	9.0	3.0	-	-	23.0	3.0	-	23.0	-	-
10.0	9.0	4.0	-	-	23.0	3.0	-	23.0	-	-
10.0	9.0	5.0	-	-	23.0	3.0	-	23.0	-	-
10.0	9.0	6.0	-	19.0	24.0	3.0	18.0	22.8	15.5	10.1
10.0	9.0	7.0	581.0	60.0	25.0	3.0	266.1	30.7	196.8	187.5
10.0	9.0	8.0	754.0	83.0	26.0	4.0	523.2	38.2	405.3	389.8
10.0	9.0	9.0	834.0	98.0	26.0	4.0	743.9	44.2	571.8	550.3
10.0	9.0	10.0	876.0	108.0	27.0	4.0	901.8	49.5	678.0	652.2
10.0	9.0	11.0	894.0	112.0	27.0	4.0	988.9	51.9	734.7	706.3
10.0	9.0	12.0	894.0	112.0	27.0	4.0	996.2	52.3	738.6	710.1
10.0	9.0	13.0	545.0	274.0	27.0	4.0	804.2	47.9	610.3	587.3
10.0	9.0	14.0	321.0	293.0	27.0	3.0	568.2	43.3	440.7	424.1
10.0	9.0	15.0	-	150.0	27.0	3.0	144.8	31.3	119.5	112.0
10.0	9.0	16.0	612.0	68.0	26.0	3.0	321.4	33.6	241.9	231.4
10.0	9.0	17.0	235.0	31.0	25.0	3.0	74.3	26.5	50.2	44.2
10.0	9.0	18.0	-	-	25.0	3.0	-	25.0	-	-
10.0	9.0	19.0	-	-	25.0	3.0	-	25.0	-	-
10.0	9.0	20.0	-	-	24.0	4.0	-	24.0	-	-
10.0	9.0	21.0	-	-	24.0	4.0	-	24.0	-	-
10.0	9.0	22.0	-	-	24.0	4.0	-	24.0	-	-
10.0	9.0	23.0	-	-	24.0	4.0	-	24.0	-	-
10.0	10.0	-	-	-	24.0	3.0	-	24.0	-	-
10.0	10.0	1.0	-	-	24.0	3.0	-	24.0	-	-
10.0	10.0	2.0	-	-	24.0	3.0	-	24.0	-	-
10.0	10.0	3.0	-	-	24.0	3.0	-	24.0	-	-
10.0	10.0	4.0	-	-	24.0	3.0	-	24.0	-	-
10.0	10.0	5.0	-	-	24.0	3.0	-	24.0	-	-
10.0	10.0	6.0	-	13.0	24.0	3.0	12.3	22.9	10.6	5.3
10.0	10.0	7.0	507.0	69.0	25.0	3.0	250.8	30.2	187.5	178.4
10.0	10.0	8.0	693.0	96.0	26.0	3.0	503.7	38.8	389.5	374.6

10.0	10.0	9.0	779.0	113.0	26.0	3.0	718.5	45.2	549.5	528.9
10.0	10.0	10.0	551.0	259.0	27.0	3.0	779.4	48.4	589.5	567.3
10.0	10.0	11.0	539.0	302.0	27.0	3.0	857.3	50.6	641.6	617.3
10.0	10.0	12.0	861.0	122.0	28.0	3.0	973.6	54.7	712.6	685.2
10.0	10.0	13.0	832.0	125.0	28.0	3.0	905.8	53.3	667.3	642.0
10.0	10.0	14.0	794.0	114.0	27.0	3.0	760.6	48.5	572.8	551.3
10.0	10.0	15.0	406.0	185.0	27.0	2.0	452.7	42.0	349.3	335.7
10.0	10.0	16.0	-	49.0	26.0	2.0	46.5	27.6	39.1	33.2
10.0	10.0	17.0	41.0	30.0	25.0	2.0	37.8	24.4	30.0	24.4
10.0	10.0	18.0	-	-	25.0	2.0	-	25.0	-	-
10.0	10.0	19.0	-	-	25.0	2.0	-	25.0	-	-
10.0	10.0	20.0	-	-	25.0	2.0	-	25.0	-	-
10.0	10.0	21.0	-	-	25.0	2.0	-	25.0	-	-
10.0	10.0	22.0	-	-	25.0	2.0	-	25.0	-	-
10.0	10.0	23.0	-	-	25.0	2.0	-	25.0	-	-
10.0	11.0	-	-	-	25.0	2.0	-	25.0	-	-
10.0	11.0	1.0	-	-	25.0	2.0	-	25.0	-	-
10.0	11.0	2.0	-	-	24.0	2.0	-	24.0	-	-
10.0	11.0	3.0	-	-	24.0	2.0	-	24.0	-	-
10.0	11.0	4.0	-	-	24.0	2.0	-	24.0	-	-
10.0	11.0	5.0	-	-	24.0	2.0	-	24.0	-	-
10.0	11.0	6.0	-	2.0	24.0	2.0	1.9	22.2	1.6	-
10.0	11.0	7.0	111.0	99.0	25.0	2.0	139.9	27.4	113.1	105.7
10.0	11.0	8.0	150.0	198.0	26.0	3.0	290.1	32.7	235.4	225.0
10.0	11.0	9.0	104.0	288.0	26.0	3.0	371.2	35.4	299.8	287.7
10.0	11.0	10.0	189.0	365.0	26.0	4.0	551.7	39.2	437.9	421.3
10.0	11.0	11.0	13.0	259.0	26.0	3.0	265.0	33.5	216.4	206.6
10.0	11.0	12.0	27.0	323.0	26.0	3.0	354.8	34.9	287.8	276.0
10.0	11.0	13.0	16.0	268.0	26.0	3.0	276.4	33.1	226.1	216.0
10.0	11.0	14.0	24.0	250.0	26.0	2.0	263.4	33.4	215.1	205.3
10.0	11.0	15.0	185.0	219.0	25.0	2.0	340.6	34.7	274.2	262.8
10.0	11.0	16.0	-	34.0	25.0	2.0	32.2	25.6	27.3	21.7
10.0	11.0	17.0	-	2.0	24.0	2.0	1.9	22.2	1.6	-
10.0	11.0	18.0	-	-	24.0	2.0	-	24.0	-	-
10.0	11.0	19.0	-	-	24.0	2.0	-	24.0	-	-
10.0	11.0	20.0	-	-	24.0	3.0	-	24.0	-	-
10.0	11.0	21.0	-	-	25.0	3.0	-	25.0	-	-
10.0	11.0	22.0	-	-	25.0	2.0	-	25.0	-	-
10.0	11.0	23.0	-	-	24.0	2.0	-	24.0	-	-
10.0	12.0	-	-	-	24.0	2.0	-	24.0	-	-
10.0	12.0	1.0	-	-	24.0	3.0	-	24.0	-	-
10.0	12.0	2.0	-	-	24.0	3.0	-	24.0	-	-
10.0	12.0	3.0	-	-	24.0	3.0	-	24.0	-	-
10.0	12.0	4.0	-	-	24.0	3.0	-	24.0	-	-
10.0	12.0	5.0	-	-	24.0	3.0	-	24.0	-	-
10.0	12.0	6.0	-	2.0	24.0	3.0	1.9	22.3	1.6	-
10.0	12.0	7.0	-	33.0	24.0	3.0	31.3	23.1	26.8	21.3
10.0	12.0	8.0	-	27.0	25.0	4.0	25.6	24.2	21.9	16.4
10.0	12.0	9.0	3.0	180.0	26.0	4.0	176.4	29.0	147.2	139.1
10.0	12.0	10.0	2.0	173.0	26.0	4.0	168.5	29.2	140.5	132.5
10.0	12.0	11.0	-	110.0	27.0	4.0	105.1	28.6	87.9	81.1
10.0	12.0	12.0	46.0	359.0	27.0	4.0	411.9	36.1	332.2	319.1
10.0	12.0	13.0	98.0	366.0	27.0	4.0	464.4	38.2	370.5	356.2
10.0	12.0	14.0	753.0	129.0	27.0	4.0	741.5	45.0	568.9	547.5
10.0	12.0	15.0	664.0	114.0	26.0	4.0	536.9	39.8	416.4	400.6
10.0	12.0	16.0	482.0	88.0	26.0	4.0	286.2	33.2	217.6	207.7
10.0	12.0	17.0	120.0	30.0	25.0	4.0	52.8	25.6	38.3	32.5
10.0	12.0	18.0	-	-	25.0	4.0	-	25.0	-	-
10.0	12.0	19.0	-	-	25.0	4.0	-	25.0	-	-
10.0	12.0	20.0	-	-	25.0	4.0	-	25.0	-	-
10.0	12.0	21.0	-	-	25.0	3.0	-	25.0	-	-
10.0	12.0	22.0	-	-	25.0	3.0	-	25.0	-	-
10.0	12.0	23.0	-	-	25.0	3.0	-	25.0	-	-
10.0	13.0	-	-	-	25.0	3.0	-	25.0	-	-
10.0	13.0	1.0	-	-	24.0	2.0	-	24.0	-	-
10.0	13.0	2.0	-	-	24.0	2.0	-	24.0	-	-
10.0	13.0	3.0	-	-	24.0	2.0	-	24.0	-	-
10.0	13.0	4.0	-	-	24.0	2.0	-	24.0	-	-
10.0	13.0	5.0	-	-	23.0	2.0	-	23.0	-	-
10.0	13.0	6.0	107.0	13.0	23.0	2.0	31.5	22.2	21.5	16.0
10.0	13.0	7.0	592.0	57.0	24.0	3.0	267.2	29.7	198.1	188.7
10.0	13.0	8.0	774.0	77.0	25.0	3.0	527.3	38.5	407.6	392.1
10.0	13.0	9.0	859.0	88.0	26.0	3.0	745.9	46.0	567.8	546.5
10.0	13.0	10.0	901.0	96.0	26.0	3.0	907.6	50.8	677.6	651.8
10.0	13.0	11.0	919.0	100.0	27.0	3.0	995.3	54.4	729.5	701.4
10.0	13.0	12.0	917.0	102.0	28.0	3.0	1,002.0	55.8	728.9	700.8
10.0	13.0	13.0	889.0	105.0	28.0	3.0	925.1	53.9	679.4	653.5
10.0	13.0	14.0	839.0	102.0	28.0	3.0	778.2	50.0	581.2	559.4
10.0	13.0	15.0	751.0	93.0	28.0	3.0	564.4	44.1	427.6	411.4
10.0	13.0	16.0	582.0	73.0	27.0	3.0	310.6	35.8	231.1	220.9
10.0	13.0	17.0	203.0	27.0	26.0	3.0	65.7	27.2	44.5	38.6

10.0	13.0	18.0	-	-	25.0	3.0	-	25.0	-	-
10.0	13.0	19.0	-	-	25.0	3.0	-	25.0	-	-
10.0	13.0	20.0	-	-	24.0	3.0	-	24.0	-	-
10.0	13.0	21.0	-	-	24.0	3.0	-	24.0	-	-
10.0	13.0	22.0	-	-	23.0	3.0	-	23.0	-	-
10.0	13.0	23.0	-	-	23.0	4.0	-	23.0	-	-
10.0	14.0	-	-	-	23.0	4.0	-	23.0	-	-
10.0	14.0	1.0	-	-	22.0	4.0	-	22.0	-	-
10.0	14.0	2.0	-	-	22.0	3.0	-	22.0	-	-
10.0	14.0	3.0	-	-	22.0	3.0	-	22.0	-	-
10.0	14.0	4.0	-	-	22.0	3.0	-	22.0	-	-
10.0	14.0	5.0	-	-	22.0	3.0	-	22.0	-	-
10.0	14.0	6.0	59.0	12.0	22.0	3.0	22.7	21.0	16.5	11.1
10.0	14.0	7.0	530.0	67.0	23.0	3.0	256.9	28.4	193.4	184.1
10.0	14.0	8.0	726.0	91.0	23.0	3.0	516.3	36.2	404.2	388.8
10.0	14.0	9.0	821.0	105.0	24.0	3.0	739.5	43.8	569.4	548.0
10.0	14.0	10.0	867.0	114.0	25.0	3.0	896.2	49.5	673.6	648.0
10.0	14.0	11.0	885.0	119.0	26.0	2.0	982.1	56.3	712.4	685.0
10.0	14.0	12.0	881.0	120.0	26.0	2.0	985.3	56.7	713.1	685.8
10.0	14.0	13.0	841.0	127.0	27.0	2.0	910.3	55.7	662.2	637.0
10.0	14.0	14.0	789.0	121.0	27.0	2.0	758.2	51.2	562.7	541.6
10.0	14.0	15.0	696.0	107.0	27.0	1.0	546.3	48.2	405.4	390.0
10.0	14.0	16.0	516.0	82.0	27.0	1.0	293.6	38.7	216.3	206.4
10.0	14.0	17.0	136.0	27.0	26.0	1.0	55.1	27.7	39.0	33.2
10.0	14.0	18.0	-	-	26.0	1.0	-	26.0	-	-
10.0	14.0	19.0	-	-	26.0	1.0	-	26.0	-	-
10.0	14.0	20.0	-	-	25.0	1.0	-	25.0	-	-
10.0	14.0	21.0	-	-	25.0	2.0	-	25.0	-	-
10.0	14.0	22.0	-	-	25.0	2.0	-	25.0	-	-
10.0	14.0	23.0	-	-	25.0	2.0	-	25.0	-	-
10.0	15.0	-	-	-	25.0	2.0	-	25.0	-	-
10.0	15.0	1.0	-	-	24.0	2.0	-	24.0	-	-
10.0	15.0	2.0	-	-	24.0	2.0	-	24.0	-	-
10.0	15.0	3.0	-	-	24.0	2.0	-	24.0	-	-
10.0	15.0	4.0	-	-	24.0	2.0	-	24.0	-	-
10.0	15.0	5.0	-	-	24.0	2.0	-	24.0	-	-
10.0	15.0	6.0	-	5.0	24.0	2.0	4.7	22.4	4.1	-
10.0	15.0	7.0	57.0	94.0	24.0	2.0	113.8	25.6	94.2	87.2
10.0	15.0	8.0	43.0	179.0	24.0	3.0	204.8	28.3	170.8	162.1
10.0	15.0	9.0	349.0	259.0	25.0	4.0	540.4	37.5	431.0	414.7
10.0	15.0	10.0	8.0	218.0	26.0	5.0	218.8	30.9	181.0	172.1
10.0	15.0	11.0	801.0	146.0	27.0	6.0	937.2	45.2	721.4	693.6
10.0	15.0	12.0	139.0	402.0	28.0	6.0	560.1	40.0	443.0	426.3
10.0	15.0	13.0	22.0	282.0	28.0	5.0	296.4	34.7	240.7	230.2
10.0	15.0	14.0	706.0	146.0	28.0	5.0	721.8	43.5	557.8	536.9
10.0	15.0	15.0	652.0	114.0	27.0	5.0	526.1	39.2	409.1	393.6
10.0	15.0	16.0	526.0	76.0	26.0	5.0	290.3	32.4	220.0	210.0
10.0	15.0	17.0	168.0	25.0	25.0	5.0	58.3	25.6	40.4	34.6
10.0	15.0	18.0	-	-	23.0	5.0	-	23.0	-	-
10.0	15.0	19.0	-	-	22.0	5.0	-	22.0	-	-
10.0	15.0	20.0	-	-	22.0	5.0	-	22.0	-	-
10.0	15.0	21.0	-	-	21.0	5.0	-	21.0	-	-
10.0	15.0	22.0	-	-	20.0	5.0	-	20.0	-	-
10.0	15.0	23.0	-	-	19.0	5.0	-	19.0	-	-
10.0	16.0	-	-	-	19.0	4.0	-	19.0	-	-
10.0	16.0	1.0	-	-	18.0	4.0	-	18.0	-	-
10.0	16.0	2.0	-	-	18.0	4.0	-	18.0	-	-
10.0	16.0	3.0	-	-	18.0	4.0	-	18.0	-	-
10.0	16.0	4.0	-	-	18.0	4.0	-	18.0	-	-
10.0	16.0	5.0	-	-	18.0	3.0	-	18.0	-	-
10.0	16.0	6.0	-	14.0	18.0	3.0	13.3	16.6	11.7	6.4
10.0	16.0	7.0	643.0	53.0	20.0	4.0	279.4	25.4	210.4	200.7
10.0	16.0	8.0	818.0	72.0	21.0	4.0	545.7	33.8	431.3	415.0
10.0	16.0	9.0	900.0	84.0	22.0	3.0	770.1	42.8	595.9	573.5
10.0	16.0	10.0	525.0	258.0	23.0	3.0	753.3	44.0	582.9	561.0
10.0	16.0	11.0	962.0	94.0	24.0	3.0	1,025.8	51.8	762.4	732.8
10.0	16.0	12.0	550.0	290.0	24.0	3.0	855.7	48.4	647.8	623.3
10.0	16.0	13.0	513.0	271.0	24.0	3.0	766.7	45.6	588.6	566.5
10.0	16.0	14.0	669.0	164.0	24.0	2.0	711.0	46.5	541.3	521.0
10.0	16.0	15.0	830.0	77.0	24.0	2.0	590.1	42.8	449.0	432.1
10.0	16.0	16.0	676.0	59.0	23.0	2.0	327.6	33.7	243.7	233.1
10.0	16.0	17.0	259.0	23.0	22.0	2.0	72.6	23.7	48.1	42.1
10.0	16.0	18.0	-	-	22.0	2.0	-	22.0	-	-
10.0	16.0	19.0	-	-	21.0	2.0	-	21.0	-	-
10.0	16.0	20.0	-	-	21.0	2.0	-	21.0	-	-
10.0	16.0	21.0	-	-	21.0	2.0	-	21.0	-	-
10.0	16.0	22.0	-	-	21.0	2.0	-	21.0	-	-
10.0	16.0	23.0	-	-	21.0	2.0	-	21.0	-	-
10.0	17.0	-	-	-	21.0	2.0	-	21.0	-	-
10.0	17.0	1.0	-	-	21.0	2.0	-	21.0	-	-
10.0	17.0	2.0	-	-	21.0	2.0	-	21.0	-	-

10.0	17.0	3.0	-	-	21.0	2.0	-	21.0	-	-
10.0	17.0	4.0	-	-	21.0	2.0	-	21.0	-	-
10.0	17.0	5.0	-	-	21.0	2.0	-	21.0	-	-
10.0	17.0	6.0	92.0	11.0	22.0	2.0	27.7	21.1	19.0	13.6
10.0	17.0	7.0	611.0	55.0	23.0	2.0	271.5	29.5	201.1	191.6
10.0	17.0	8.0	787.0	76.0	24.0	3.0	532.3	37.6	413.0	397.3
10.0	17.0	9.0	867.0	89.0	25.0	3.0	750.2	45.1	573.5	551.9
10.0	17.0	10.0	910.0	96.0	26.0	3.0	911.4	50.9	680.0	654.1
10.0	17.0	11.0	929.0	100.0	26.0	4.0	999.5	51.2	745.3	716.5
10.0	17.0	12.0	930.0	101.0	26.0	4.0	1,007.2	51.6	749.4	720.4
10.0	17.0	13.0	915.0	96.0	26.0	4.0	932.1	49.9	699.3	672.5
10.0	17.0	14.0	877.0	89.0	26.0	4.0	782.5	46.2	595.9	573.5
10.0	17.0	15.0	801.0	78.0	25.0	4.0	572.3	39.8	442.1	425.5
10.0	17.0	16.0	644.0	60.0	25.0	4.0	316.2	33.0	236.1	225.7
10.0	17.0	17.0	216.0	22.0	24.0	3.0	64.7	25.2	43.4	37.4
10.0	17.0	18.0	-	-	23.0	3.0	-	23.0	-	-
10.0	17.0	19.0	-	-	23.0	4.0	-	23.0	-	-
10.0	17.0	20.0	-	-	23.0	4.0	-	23.0	-	-
10.0	17.0	21.0	-	-	23.0	3.0	-	23.0	-	-
10.0	17.0	22.0	-	-	23.0	3.0	-	23.0	-	-
10.0	17.0	23.0	-	-	23.0	3.0	-	23.0	-	-
10.0	18.0	-	-	-	23.0	3.0	-	23.0	-	-
10.0	18.0	1.0	-	-	23.0	3.0	-	23.0	-	-
10.0	18.0	2.0	-	-	23.0	2.0	-	23.0	-	-
10.0	18.0	3.0	-	-	23.0	2.0	-	23.0	-	-
10.0	18.0	4.0	-	-	23.0	2.0	-	23.0	-	-
10.0	18.0	5.0	-	-	23.0	2.0	-	23.0	-	-
10.0	18.0	6.0	-	-	23.0	3.0	-	23.0	-	-
10.0	18.0	7.0	511.0	64.0	25.0	3.0	247.4	30.1	184.6	175.6
10.0	18.0	8.0	702.0	90.0	26.0	4.0	500.6	37.6	389.1	374.1
10.0	18.0	9.0	794.0	106.0	26.0	4.0	717.8	43.5	553.5	532.7
10.0	18.0	10.0	860.0	105.0	27.0	4.0	876.2	48.8	660.9	635.8
10.0	18.0	11.0	879.0	109.0	27.0	3.0	960.5	53.5	707.6	680.4
10.0	18.0	12.0	875.0	111.0	28.0	3.0	963.9	54.8	705.2	678.2
10.0	18.0	13.0	118.0	350.0	28.0	3.0	476.2	42.4	371.9	357.5
10.0	18.0	14.0	807.0	102.0	28.0	3.0	745.5	47.8	563.1	542.0
10.0	18.0	15.0	372.0	177.0	27.0	3.0	412.5	39.0	322.7	309.8
10.0	18.0	16.0	422.0	82.0	26.0	3.0	252.6	32.7	192.1	182.9
10.0	18.0	17.0	81.0	21.0	26.0	3.0	37.3	26.3	27.2	21.6
10.0	18.0	18.0	-	-	26.0	3.0	-	26.0	-	-
10.0	18.0	19.0	-	-	25.0	3.0	-	25.0	-	-
10.0	18.0	20.0	-	-	25.0	3.0	-	25.0	-	-
10.0	18.0	21.0	-	-	25.0	3.0	-	25.0	-	-
10.0	18.0	22.0	-	-	25.0	3.0	-	25.0	-	-
10.0	18.0	23.0	-	-	25.0	3.0	-	25.0	-	-
10.0	19.0	-	-	-	25.0	3.0	-	25.0	-	-
10.0	19.0	1.0	-	-	25.0	3.0	-	25.0	-	-
10.0	19.0	2.0	-	-	25.0	2.0	-	25.0	-	-
10.0	19.0	3.0	-	-	25.0	2.0	-	25.0	-	-
10.0	19.0	4.0	-	-	25.0	2.0	-	25.0	-	-
10.0	19.0	5.0	-	-	25.0	2.0	-	25.0	-	-
10.0	19.0	6.0	-	-	25.0	2.0	-	25.0	-	-
10.0	19.0	7.0	26.0	87.0	25.0	2.0	96.4	26.0	80.6	73.9
10.0	19.0	8.0	-	104.0	26.0	3.0	99.7	27.4	83.8	77.1
10.0	19.0	9.0	150.0	279.0	27.0	3.0	405.5	36.7	325.2	312.3
10.0	19.0	10.0	367.0	315.0	27.0	2.0	664.8	46.6	507.6	488.5
10.0	19.0	11.0	304.0	370.0	27.0	2.0	692.6	48.4	524.2	504.6
10.0	19.0	12.0	384.0	351.0	27.0	2.0	750.2	50.2	562.6	541.5
10.0	19.0	13.0	489.0	276.0	27.0	2.0	748.2	50.3	560.3	539.2
10.0	19.0	14.0	421.0	246.0	27.0	2.0	599.6	46.2	457.6	440.4
10.0	19.0	15.0	87.0	200.0	27.0	2.0	255.1	35.6	205.0	195.4
10.0	19.0	16.0	-	10.0	26.0	2.0	9.5	25.6	8.0	2.8
10.0	19.0	17.0	-	1.0	26.0	2.0	0.9	24.1	0.8	-
10.0	19.0	18.0	-	-	26.0	2.0	-	26.0	-	-
10.0	19.0	19.0	-	-	26.0	2.0	-	26.0	-	-
10.0	19.0	20.0	-	-	26.0	3.0	-	26.0	-	-
10.0	19.0	21.0	-	-	25.0	3.0	-	25.0	-	-
10.0	19.0	22.0	-	-	25.0	3.0	-	25.0	-	-
10.0	19.0	23.0	-	-	25.0	3.0	-	25.0	-	-
10.0	20.0	-	-	-	25.0	3.0	-	25.0	-	-
10.0	20.0	1.0	-	-	25.0	3.0	-	25.0	-	-
10.0	20.0	2.0	-	-	25.0	3.0	-	25.0	-	-
10.0	20.0	3.0	-	-	25.0	3.0	-	25.0	-	-
10.0	20.0	4.0	-	-	25.0	3.0	-	25.0	-	-
10.0	20.0	5.0	-	-	25.0	2.0	-	25.0	-	-
10.0	20.0	6.0	-	-	25.0	2.0	-	25.0	-	-
10.0	20.0	7.0	-	70.0	25.0	2.0	67.6	25.1	57.5	51.3
10.0	20.0	8.0	46.0	175.0	26.0	2.0	203.1	30.7	167.4	158.8
10.0	20.0	9.0	193.0	276.0	26.0	2.0	434.4	38.2	345.6	332.1
10.0	20.0	10.0	262.0	338.0	26.0	1.0	597.7	47.1	455.3	438.2
10.0	20.0	11.0	340.0	359.0	27.0	1.0	714.6	52.6	528.9	509.1

10.0	20.0	12.0	9.0	227.0	27.0	-	229.4	42.1	179.5	170.5
10.0	20.0	13.0	-	18.0	28.0	-	17.1	29.4	14.3	8.9
10.0	20.0	14.0	338.0	266.0	28.0	-	548.5	49.1	412.4	396.7
10.0	20.0	15.0	-	35.0	27.0	-	33.2	33.0	27.2	21.6
10.0	20.0	16.0	-	9.0	27.0	1.0	8.5	25.2	7.2	2.0
10.0	20.0	17.0	-	-	26.0	1.0	-	26.0	-	-
10.0	20.0	18.0	-	-	25.0	1.0	-	25.0	-	-
10.0	20.0	19.0	-	-	25.0	2.0	-	25.0	-	-
10.0	20.0	20.0	-	-	25.0	2.0	-	25.0	-	-
10.0	20.0	21.0	-	-	25.0	2.0	-	25.0	-	-
10.0	20.0	22.0	-	-	25.0	2.0	-	25.0	-	-
10.0	20.0	23.0	-	-	24.0	1.0	-	24.0	-	-
10.0	21.0	-	-	-	24.0	1.0	-	24.0	-	-
10.0	21.0	1.0	-	-	24.0	1.0	-	24.0	-	-
10.0	21.0	2.0	-	-	24.0	1.0	-	24.0	-	-
10.0	21.0	3.0	-	-	24.0	1.0	-	24.0	-	-
10.0	21.0	4.0	-	-	23.0	1.0	-	23.0	-	-
10.0	21.0	5.0	-	-	23.0	2.0	-	23.0	-	-
10.0	21.0	6.0	-	-	23.0	2.0	-	23.0	-	-
10.0	21.0	7.0	438.0	70.0	24.0	2.0	227.2	29.0	171.6	162.9
10.0	21.0	8.0	654.0	99.0	25.0	2.0	482.5	38.7	373.2	358.8
10.0	21.0	9.0	763.0	113.0	25.0	2.0	700.1	46.0	532.9	512.9
10.0	21.0	10.0	820.0	121.0	26.0	2.0	861.4	52.3	637.7	613.6
10.0	21.0	11.0	845.0	124.0	27.0	2.0	947.6	56.2	687.7	661.4
10.0	21.0	12.0	847.0	123.0	27.0	2.0	945.8	56.5	685.4	659.2
10.0	21.0	13.0	750.0	160.0	27.0	3.0	858.3	51.1	639.8	615.6
10.0	21.0	14.0	701.0	146.0	27.0	3.0	710.3	47.1	538.6	518.4
10.0	21.0	15.0	612.0	121.0	27.0	4.0	503.0	39.9	389.3	374.3
10.0	21.0	16.0	444.0	82.0	26.0	3.0	259.1	33.2	195.9	186.6
10.0	21.0	17.0	67.0	18.0	25.0	3.0	31.6	25.1	23.3	17.7
10.0	21.0	18.0	-	-	25.0	3.0	-	25.0	-	-
10.0	21.0	19.0	-	-	25.0	3.0	-	25.0	-	-
10.0	21.0	20.0	-	-	24.0	3.0	-	24.0	-	-
10.0	21.0	21.0	-	-	24.0	3.0	-	24.0	-	-
10.0	21.0	22.0	-	-	24.0	3.0	-	24.0	-	-
10.0	21.0	23.0	-	-	24.0	3.0	-	24.0	-	-
10.0	22.0	-	-	-	24.0	2.0	-	24.0	-	-
10.0	22.0	1.0	-	-	24.0	2.0	-	24.0	-	-
10.0	22.0	2.0	-	-	24.0	2.0	-	24.0	-	-
10.0	22.0	3.0	-	-	24.0	2.0	-	24.0	-	-
10.0	22.0	4.0	-	-	23.0	2.0	-	23.0	-	-
10.0	22.0	5.0	-	-	23.0	3.0	-	23.0	-	-
10.0	22.0	6.0	-	-	23.0	3.0	-	23.0	-	-
10.0	22.0	7.0	521.0	58.0	24.0	3.0	244.1	29.0	182.3	173.3
10.0	22.0	8.0	719.0	82.0	25.0	4.0	498.4	36.5	388.8	373.9
10.0	22.0	9.0	-	120.0	25.0	5.0	114.9	27.4	96.7	89.6
10.0	22.0	10.0	297.0	328.0	26.0	5.0	617.2	38.8	490.7	472.3
10.0	22.0	11.0	890.0	105.0	26.0	5.0	960.8	47.5	730.7	702.5
10.0	22.0	12.0	893.0	105.0	26.0	5.0	968.2	48.4	732.8	704.6
10.0	22.0	13.0	841.0	118.0	26.0	5.0	888.1	46.7	677.7	651.8
10.0	22.0	14.0	799.0	108.0	26.0	5.0	740.0	43.2	572.1	550.6
10.0	22.0	15.0	712.0	93.0	25.0	5.0	530.5	37.3	415.0	399.3
10.0	22.0	16.0	534.0	68.0	24.0	5.0	279.0	30.1	211.9	202.2
10.0	22.0	17.0	92.0	18.0	24.0	4.0	38.4	24.2	27.8	22.2
10.0	22.0	18.0	-	-	24.0	4.0	-	24.0	-	-
10.0	22.0	19.0	-	-	23.0	4.0	-	23.0	-	-
10.0	22.0	20.0	-	-	23.0	4.0	-	23.0	-	-
10.0	22.0	21.0	-	-	23.0	4.0	-	23.0	-	-
10.0	22.0	22.0	-	-	23.0	4.0	-	23.0	-	-
10.0	22.0	23.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	-	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	1.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	2.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	3.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	4.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	5.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	6.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	7.0	-	5.0	24.0	4.0	4.7	22.5	4.1	-
10.0	23.0	8.0	22.0	160.0	24.0	4.0	169.1	26.7	142.3	134.3
10.0	23.0	9.0	793.0	101.0	25.0	5.0	707.6	39.9	555.5	534.7
10.0	23.0	10.0	43.0	302.0	25.0	5.0	347.1	33.1	284.0	272.3
10.0	23.0	11.0	853.0	119.0	26.0	5.0	939.9	46.4	718.7	691.1
10.0	23.0	12.0	8.0	216.0	26.0	5.0	217.6	31.7	179.2	170.3
10.0	23.0	13.0	555.0	244.0	26.0	5.0	769.4	42.4	600.4	577.8
10.0	23.0	14.0	-	109.0	25.0	5.0	104.1	27.8	87.4	80.6
10.0	23.0	15.0	-	85.0	25.0	5.0	80.9	25.7	68.6	62.2
10.0	23.0	16.0	464.0	77.0	24.0	4.0	261.8	29.2	201.0	191.5
10.0	23.0	17.0	50.0	17.0	23.0	4.0	27.7	22.9	21.1	15.6
10.0	23.0	18.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	19.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	20.0	-	-	23.0	3.0	-	23.0	-	-

10.0	23.0	21.0	-	-	23.0	3.0	-	23.0	-	-
10.0	23.0	22.0	-	-	22.0	3.0	-	22.0	-	-
10.0	23.0	23.0	-	-	22.0	3.0	-	22.0	-	-
10.0	24.0	-	-	-	22.0	2.0	-	22.0	-	-
10.0	24.0	1.0	-	-	22.0	2.0	-	22.0	-	-
10.0	24.0	2.0	-	-	22.0	2.0	-	22.0	-	-
10.0	24.0	3.0	-	-	22.0	2.0	-	22.0	-	-
10.0	24.0	4.0	-	-	22.0	1.0	-	22.0	-	-
10.0	24.0	5.0	-	-	22.0	1.0	-	22.0	-	-
10.0	24.0	6.0	-	-	22.0	1.0	-	22.0	-	-
10.0	24.0	7.0	568.0	53.0	23.0	2.0	253.9	28.8	188.6	179.4
10.0	24.0	8.0	761.0	75.0	24.0	3.0	512.9	37.1	398.6	383.4
10.0	24.0	9.0	853.0	87.0	25.0	3.0	731.1	44.6	560.2	539.2
10.0	24.0	10.0	899.0	95.0	25.0	3.0	892.0	49.4	670.7	645.1
10.0	24.0	11.0	918.0	100.0	26.0	4.0	978.6	50.7	731.7	703.5
10.0	24.0	12.0	915.0	102.0	26.0	4.0	982.4	51.0	733.3	705.1
10.0	24.0	13.0	883.0	104.0	26.0	4.0	900.5	49.1	678.3	652.4
10.0	24.0	14.0	829.0	99.0	26.0	4.0	749.9	45.4	573.3	551.7
10.0	24.0	15.0	730.0	88.0	25.0	4.0	533.1	38.8	413.5	397.7
10.0	24.0	16.0	536.0	66.0	24.0	3.0	276.1	31.7	207.7	198.0
10.0	24.0	17.0	93.0	15.0	23.0	3.0	34.9	23.2	24.9	19.3
10.0	24.0	18.0	-	-	23.0	2.0	-	23.0	-	-
10.0	24.0	19.0	-	-	23.0	2.0	-	23.0	-	-
10.0	24.0	20.0	-	-	23.0	2.0	-	23.0	-	-
10.0	24.0	21.0	-	-	23.0	2.0	-	23.0	-	-
10.0	24.0	22.0	-	-	23.0	2.0	-	23.0	-	-
10.0	24.0	23.0	-	-	23.0	2.0	-	23.0	-	-
10.0	25.0	-	-	-	22.0	2.0	-	22.0	-	-
10.0	25.0	1.0	-	-	22.0	2.0	-	22.0	-	-
10.0	25.0	2.0	-	-	22.0	2.0	-	22.0	-	-
10.0	25.0	3.0	-	-	22.0	2.0	-	22.0	-	-
10.0	25.0	4.0	-	-	22.0	2.0	-	22.0	-	-
10.0	25.0	5.0	-	-	22.0	3.0	-	22.0	-	-
10.0	25.0	6.0	-	-	22.0	2.0	-	22.0	-	-
10.0	25.0	7.0	119.0	84.0	23.0	2.0	128.5	25.0	104.3	97.1
10.0	25.0	8.0	369.0	153.0	24.0	3.0	377.4	33.0	302.5	290.3
10.0	25.0	9.0	805.0	106.0	25.0	3.0	720.0	43.9	553.8	533.1
10.0	25.0	10.0	856.0	115.0	26.0	3.0	881.3	50.0	660.3	635.3
10.0	25.0	11.0	878.0	119.0	26.0	3.0	960.4	52.5	711.1	683.8
10.0	25.0	12.0	878.0	120.0	27.0	3.0	965.6	53.8	709.9	682.6
10.0	25.0	13.0	523.0	252.0	27.0	3.0	748.0	48.4	565.8	544.6
10.0	25.0	14.0	791.0	116.0	27.0	3.0	738.2	47.5	558.2	537.2
10.0	25.0	15.0	698.0	99.0	26.0	3.0	525.4	41.0	403.3	387.9
10.0	25.0	16.0	482.0	75.0	25.0	3.0	265.0	32.4	199.7	190.3
10.0	25.0	17.0	55.0	14.0	24.0	3.0	25.1	23.9	18.5	13.1
10.0	25.0	18.0	-	-	24.0	3.0	-	24.0	-	-
10.0	25.0	19.0	-	-	24.0	3.0	-	24.0	-	-
10.0	25.0	20.0	-	-	23.0	3.0	-	23.0	-	-
10.0	25.0	21.0	-	-	23.0	3.0	-	23.0	-	-
10.0	25.0	22.0	-	-	23.0	3.0	-	23.0	-	-
10.0	25.0	23.0	-	-	23.0	3.0	-	23.0	-	-
10.0	26.0	-	-	-	23.0	3.0	-	23.0	-	-
10.0	26.0	1.0	-	-	23.0	3.0	-	23.0	-	-
10.0	26.0	2.0	-	-	23.0	3.0	-	23.0	-	-
10.0	26.0	3.0	-	-	22.0	3.0	-	22.0	-	-
10.0	26.0	4.0	-	-	22.0	3.0	-	22.0	-	-
10.0	26.0	5.0	-	-	22.0	3.0	-	22.0	-	-
10.0	26.0	6.0	-	-	22.0	3.0	-	22.0	-	-
10.0	26.0	7.0	569.0	51.0	24.0	3.0	251.5	29.2	186.2	177.1
10.0	26.0	8.0	755.0	74.0	25.0	3.0	507.1	37.9	392.3	377.3
10.0	26.0	9.0	385.0	232.0	25.0	3.0	536.2	39.5	422.9	406.9
10.0	26.0	10.0	323.0	314.0	26.0	3.0	623.9	42.9	485.7	467.4
10.0	26.0	11.0	348.0	345.0	27.0	3.0	705.1	46.2	539.8	519.6
10.0	26.0	12.0	848.0	135.0	27.0	3.0	959.5	52.9	708.9	681.7
10.0	26.0	13.0	511.0	255.0	27.0	4.0	739.9	46.3	565.9	544.7
10.0	26.0	14.0	445.0	226.0	26.0	4.0	592.4	41.2	463.5	446.1
10.0	26.0	15.0	622.0	122.0	26.0	3.0	504.8	40.0	390.1	375.1
10.0	26.0	16.0	186.0	93.0	25.0	3.0	170.1	29.8	134.5	126.6
10.0	26.0	17.0	-	10.0	24.0	3.0	9.5	23.1	8.1	2.9
10.0	26.0	18.0	-	-	24.0	3.0	-	24.0	-	-
10.0	26.0	19.0	-	-	24.0	4.0	-	24.0	-	-
10.0	26.0	20.0	-	-	24.0	4.0	-	24.0	-	-
10.0	26.0	21.0	-	-	23.0	4.0	-	23.0	-	-
10.0	26.0	22.0	-	-	23.0	4.0	-	23.0	-	-
10.0	26.0	23.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	-	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	1.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	2.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	3.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	4.0	-	-	22.0	4.0	-	22.0	-	-
10.0	27.0	5.0	-	-	22.0	4.0	-	22.0	-	-

10.0	27.0	6.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	7.0	507.0	60.0	24.0	4.0	240.4	28.5	180.0	171.0
10.0	27.0	8.0	284.0	164.0	25.0	4.0	335.6	32.5	270.4	259.1
10.0	27.0	9.0	125.0	264.0	25.0	4.0	371.9	33.7	302.7	290.4
10.0	27.0	10.0	847.0	120.0	25.0	4.0	876.4	46.0	670.9	645.3
10.0	27.0	11.0	871.0	123.0	26.0	4.0	962.3	50.3	721.0	693.3
10.0	27.0	12.0	879.0	119.0	26.0	4.0	962.2	50.5	720.2	692.5
10.0	27.0	13.0	834.0	128.0	26.0	4.0	885.2	48.7	668.1	642.7
10.0	27.0	14.0	332.0	253.0	26.0	4.0	527.2	40.0	415.3	399.5
10.0	27.0	15.0	698.0	98.0	25.0	4.0	522.2	37.9	406.8	391.3
10.0	27.0	16.0	512.0	69.0	24.0	4.0	268.4	30.7	202.9	193.4
10.0	27.0	17.0	59.0	12.0	24.0	4.0	25.6	23.9	18.7	13.3
10.0	27.0	18.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	19.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	20.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	21.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	22.0	-	-	23.0	4.0	-	23.0	-	-
10.0	27.0	23.0	-	-	23.0	3.0	-	23.0	-	-
10.0	28.0	-	-	-	23.0	3.0	-	23.0	-	-
10.0	28.0	1.0	-	-	22.0	3.0	-	22.0	-	-
10.0	28.0	2.0	-	-	22.0	3.0	-	22.0	-	-
10.0	28.0	3.0	-	-	22.0	3.0	-	22.0	-	-
10.0	28.0	4.0	-	-	22.0	3.0	-	22.0	-	-
10.0	28.0	5.0	-	-	22.0	3.0	-	22.0	-	-
10.0	28.0	6.0	-	-	22.0	3.0	-	22.0	-	-
10.0	28.0	7.0	-	24.0	23.0	3.0	22.7	21.8	19.6	14.2
10.0	28.0	8.0	-	114.0	24.0	4.0	110.1	25.3	93.6	86.6
10.0	28.0	9.0	6.0	186.0	25.0	4.0	185.8	28.4	155.5	147.1
10.0	28.0	10.0	-	158.0	25.0	4.0	152.4	27.8	127.9	120.2
10.0	28.0	11.0	221.0	368.0	26.0	4.0	600.0	39.8	474.9	457.1
10.0	28.0	12.0	804.0	148.0	26.0	4.0	929.3	48.8	701.9	675.0
10.0	28.0	13.0	729.0	169.0	26.0	4.0	840.5	47.6	638.3	614.1
10.0	28.0	14.0	59.0	256.0	26.0	4.0	307.3	34.6	249.4	238.7
10.0	28.0	15.0	577.0	126.0	25.0	4.0	481.1	36.3	378.7	364.2
10.0	28.0	16.0	391.0	83.0	24.0	3.0	237.4	30.5	182.0	173.0
10.0	28.0	17.0	-	10.0	24.0	3.0	9.5	23.4	8.1	2.9
10.0	28.0	18.0	-	-	23.0	3.0	-	23.0	-	-
10.0	28.0	19.0	-	-	23.0	3.0	-	23.0	-	-
10.0	28.0	20.0	-	-	23.0	3.0	-	23.0	-	-
10.0	28.0	21.0	-	-	23.0	3.0	-	23.0	-	-
10.0	28.0	22.0	-	-	23.0	3.0	-	23.0	-	-
10.0	28.0	23.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	-	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	1.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	2.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	3.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	4.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	5.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	6.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	7.0	487.0	56.0	24.0	3.0	229.0	28.6	171.1	162.4
10.0	29.0	8.0	699.0	81.0	25.0	3.0	482.9	37.2	375.1	360.6
10.0	29.0	9.0	8.0	191.0	25.0	3.0	192.5	30.3	159.6	151.2
10.0	29.0	10.0	804.0	126.0	26.0	3.0	843.3	47.4	640.5	616.3
10.0	29.0	11.0	836.0	127.0	26.0	3.0	931.1	51.7	692.4	666.0
10.0	29.0	12.0	839.0	126.0	26.0	3.0	936.4	52.1	695.0	668.4
10.0	29.0	13.0	801.0	131.0	26.0	3.0	856.5	50.1	641.8	617.5
10.0	29.0	14.0	761.0	116.0	26.0	3.0	710.1	46.1	540.5	520.3
10.0	29.0	15.0	686.0	92.0	25.0	3.0	506.6	39.4	391.4	376.4
10.0	29.0	16.0	516.0	62.0	25.0	2.0	261.3	33.4	194.2	184.9
10.0	29.0	17.0	61.0	10.0	24.0	2.0	23.5	24.0	16.8	11.4
10.0	29.0	18.0	-	-	24.0	2.0	-	24.0	-	-
10.0	29.0	19.0	-	-	23.0	2.0	-	23.0	-	-
10.0	29.0	20.0	-	-	23.0	2.0	-	23.0	-	-
10.0	29.0	21.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	22.0	-	-	23.0	3.0	-	23.0	-	-
10.0	29.0	23.0	-	-	23.0	3.0	-	23.0	-	-
10.0	30.0	-	-	-	23.0	2.0	-	23.0	-	-
10.0	30.0	1.0	-	-	22.0	2.0	-	22.0	-	-
10.0	30.0	2.0	-	-	22.0	2.0	-	22.0	-	-
10.0	30.0	3.0	-	-	22.0	2.0	-	22.0	-	-
10.0	30.0	4.0	-	-	22.0	2.0	-	22.0	-	-
10.0	30.0	5.0	-	-	22.0	2.0	-	22.0	-	-
10.0	30.0	6.0	-	-	22.0	2.0	-	22.0	-	-
10.0	30.0	7.0	520.0	52.0	24.0	2.0	235.1	29.3	174.2	165.4
10.0	30.0	8.0	728.0	74.0	25.0	3.0	489.0	37.4	379.0	364.4
10.0	30.0	9.0	827.0	85.0	25.0	3.0	707.2	43.9	543.4	523.1
10.0	30.0	10.0	878.0	91.0	25.0	3.0	860.7	48.5	649.9	625.3
10.0	30.0	11.0	903.0	93.0	26.0	3.0	947.0	52.1	702.5	675.6
10.0	30.0	12.0	908.0	92.0	26.0	3.0	954.4	52.6	706.4	679.3
10.0	30.0	13.0	870.0	100.0	26.0	3.0	874.8	50.6	653.6	628.8
10.0	30.0	14.0	829.0	91.0	26.0	3.0	732.2	46.7	555.2	534.4

10.0	30.0	15.0	747.0	77.0	25.0	3.0	522.5	39.9	402.0	386.6
10.0	30.0	16.0	572.0	55.0	24.0	2.0	273.2	32.8	202.3	192.8
10.0	30.0	17.0	-	-	24.0	2.0	-	24.0	-	-
10.0	30.0	18.0	-	-	23.0	2.0	-	23.0	-	-
10.0	30.0	19.0	-	-	23.0	2.0	-	23.0	-	-
10.0	30.0	20.0	-	-	23.0	2.0	-	23.0	-	-
10.0	30.0	21.0	-	-	23.0	2.0	-	23.0	-	-
10.0	30.0	22.0	-	-	23.0	3.0	-	23.0	-	-
10.0	30.0	23.0	-	-	23.0	3.0	-	23.0	-	-
10.0	31.0	-	-	-	23.0	3.0	-	23.0	-	-
10.0	31.0	1.0	-	-	22.0	3.0	-	22.0	-	-
10.0	31.0	2.0	-	-	22.0	2.0	-	22.0	-	-
10.0	31.0	3.0	-	-	22.0	2.0	-	22.0	-	-
10.0	31.0	4.0	-	-	22.0	2.0	-	22.0	-	-
10.0	31.0	5.0	-	-	22.0	2.0	-	22.0	-	-
10.0	31.0	6.0	-	-	23.0	2.0	-	23.0	-	-
10.0	31.0	7.0	567.0	45.0	24.0	2.0	242.4	29.5	178.0	169.1
10.0	31.0	8.0	759.0	65.0	25.0	3.0	495.0	37.6	382.9	368.1
10.0	31.0	9.0	846.0	77.0	26.0	3.0	706.5	44.9	540.0	519.8
10.0	31.0	10.0	876.0	91.0	26.0	3.0	857.5	49.4	644.4	620.0
10.0	31.0	11.0	897.0	94.0	27.0	3.0	940.9	52.9	695.0	668.4
10.0	31.0	12.0	895.0	95.0	27.0	4.0	943.9	51.0	704.6	677.6
10.0	31.0	13.0	859.0	100.0	27.0	4.0	863.7	49.1	650.3	625.6
10.0	31.0	14.0	823.0	89.0	26.0	4.0	724.0	44.6	555.0	534.2
10.0	31.0	15.0	748.0	73.0	26.0	4.0	517.6	39.3	399.1	383.8
10.0	31.0	16.0	575.0	51.0	25.0	3.0	269.2	32.5	199.1	189.7
10.0	31.0	17.0	-	-	24.0	3.0	-	24.0	-	-
10.0	31.0	18.0	-	-	24.0	3.0	-	24.0	-	-
10.0	31.0	19.0	-	-	25.0	4.0	-	25.0	-	-
10.0	31.0	20.0	-	-	25.0	4.0	-	25.0	-	-
10.0	31.0	21.0	-	-	25.0	4.0	-	25.0	-	-
10.0	31.0	22.0	-	-	25.0	4.0	-	25.0	-	-
10.0	31.0	23.0	-	-	25.0	4.0	-	25.0	-	-
11.0	1.0	-	-	-	25.0	3.0	-	25.0	-	-
11.0	1.0	1.0	-	-	25.0	3.0	-	25.0	-	-
11.0	1.0	2.0	-	-	25.0	3.0	-	25.0	-	-
11.0	1.0	3.0	-	-	25.0	3.0	-	25.0	-	-
11.0	1.0	4.0	-	-	25.0	3.0	-	25.0	-	-
11.0	1.0	5.0	-	-	25.0	3.0	-	25.0	-	-
11.0	1.0	6.0	-	-	25.0	3.0	-	25.0	-	-
11.0	1.0	7.0	378.0	61.0	25.0	3.0	196.0	28.7	147.9	139.7
11.0	1.0	8.0	26.0	153.0	26.0	3.0	165.0	29.6	136.9	129.0
11.0	1.0	9.0	12.0	198.0	27.0	3.0	202.9	31.5	167.2	158.6
11.0	1.0	10.0	132.0	324.0	27.0	3.0	459.7	38.5	366.1	351.9
11.0	1.0	11.0	72.0	343.0	27.0	3.0	422.7	38.4	337.0	323.7
11.0	1.0	12.0	-	54.0	27.0	3.0	51.4	28.3	43.0	37.1
11.0	1.0	13.0	730.0	154.0	27.0	3.0	819.7	47.4	623.0	599.5
11.0	1.0	14.0	-	95.0	26.0	4.0	90.5	29.2	75.5	68.9
11.0	1.0	15.0	-	67.0	26.0	4.0	63.6	26.4	53.8	47.7
11.0	1.0	16.0	353.0	81.0	25.0	4.0	220.5	29.2	170.2	161.5
11.0	1.0	17.0	-	-	24.0	4.0	-	24.0	-	-
11.0	1.0	18.0	-	-	24.0	4.0	-	24.0	-	-
11.0	1.0	19.0	-	-	24.0	3.0	-	24.0	-	-
11.0	1.0	20.0	-	-	24.0	3.0	-	24.0	-	-
11.0	1.0	21.0	-	-	24.0	3.0	-	24.0	-	-
11.0	1.0	22.0	-	-	24.0	3.0	-	24.0	-	-
11.0	1.0	23.0	-	-	24.0	3.0	-	24.0	-	-
11.0	2.0	-	-	-	24.0	3.0	-	24.0	-	-
11.0	2.0	1.0	-	-	24.0	3.0	-	24.0	-	-
11.0	2.0	2.0	-	-	24.0	3.0	-	24.0	-	-
11.0	2.0	3.0	-	-	24.0	4.0	-	24.0	-	-
11.0	2.0	4.0	-	-	23.0	4.0	-	23.0	-	-
11.0	2.0	5.0	-	-	23.0	4.0	-	23.0	-	-
11.0	2.0	6.0	-	-	23.0	4.0	-	23.0	-	-
11.0	2.0	7.0	488.0	54.0	24.0	4.0	225.6	28.1	168.4	159.8
11.0	2.0	8.0	708.0	78.0	25.0	4.0	481.2	36.1	375.2	360.8
11.0	2.0	9.0	807.0	92.0	25.0	4.0	696.8	42.0	540.6	520.3
11.0	2.0	10.0	832.0	112.0	26.0	4.0	846.2	47.1	643.7	619.3
11.0	2.0	11.0	864.0	112.0	26.0	4.0	927.1	49.4	697.9	671.2
11.0	2.0	12.0	185.0	364.0	27.0	4.0	562.7	42.0	440.4	423.8
11.0	2.0	13.0	856.0	104.0	27.0	3.0	862.4	50.0	646.1	621.6
11.0	2.0	14.0	815.0	94.0	26.0	3.0	721.1	46.4	547.5	527.0
11.0	2.0	15.0	591.0	109.0	26.0	3.0	467.3	39.4	361.4	347.3
11.0	2.0	16.0	533.0	57.0	25.0	3.0	259.8	32.0	193.3	184.0
11.0	2.0	17.0	-	-	24.0	3.0	-	24.0	-	-
11.0	2.0	18.0	-	-	24.0	3.0	-	24.0	-	-
11.0	2.0	19.0	-	-	23.0	3.0	-	23.0	-	-
11.0	2.0	20.0	-	-	23.0	2.0	-	23.0	-	-
11.0	2.0	21.0	-	-	23.0	2.0	-	23.0	-	-
11.0	2.0	22.0	-	-	23.0	2.0	-	23.0	-	-
11.0	2.0	23.0	-	-	23.0	2.0	-	23.0	-	-

11.0	3.0	-	-	-	22.0	2.0	-	22.0	-	-
11.0	3.0	1.0	-	-	22.0	2.0	-	22.0	-	-
11.0	3.0	2.0	-	-	22.0	2.0	-	22.0	-	-
11.0	3.0	3.0	-	-	22.0	2.0	-	22.0	-	-
11.0	3.0	4.0	-	-	22.0	3.0	-	22.0	-	-
11.0	3.0	5.0	-	-	22.0	2.0	-	22.0	-	-
11.0	3.0	6.0	-	-	22.0	2.0	-	22.0	-	-
11.0	3.0	7.0	489.0	52.0	23.0	2.0	223.4	27.9	166.6	158.0
11.0	3.0	8.0	702.0	77.0	24.0	2.0	475.9	37.5	368.4	354.2
11.0	3.0	9.0	305.0	237.0	25.0	2.0	481.2	39.7	379.2	364.6
11.0	3.0	10.0	666.0	182.0	26.0	2.0	783.9	49.3	589.5	567.3
11.0	3.0	11.0	527.0	262.0	26.0	2.0	786.7	50.6	588.5	566.4
11.0	3.0	12.0	878.0	104.0	26.0	2.0	933.2	54.6	683.0	657.0
11.0	3.0	13.0	839.0	110.0	26.0	2.0	858.9	53.1	632.9	609.0
11.0	3.0	14.0	793.0	101.0	26.0	2.0	711.3	48.8	533.5	513.5
11.0	3.0	15.0	704.0	85.0	26.0	2.0	504.4	42.3	383.2	368.5
11.0	3.0	16.0	511.0	59.0	25.0	2.0	253.7	33.1	188.1	178.9
11.0	3.0	17.0	-	-	24.0	2.0	-	24.0	-	-
11.0	3.0	18.0	-	-	24.0	2.0	-	24.0	-	-
11.0	3.0	19.0	-	-	24.0	2.0	-	24.0	-	-
11.0	3.0	20.0	-	-	24.0	2.0	-	24.0	-	-
11.0	3.0	21.0	-	-	23.0	2.0	-	23.0	-	-
11.0	3.0	22.0	-	-	23.0	2.0	-	23.0	-	-
11.0	3.0	23.0	-	-	23.0	1.0	-	23.0	-	-
11.0	4.0	-	-	-	24.0	1.0	-	24.0	-	-
11.0	4.0	1.0	-	-	24.0	1.0	-	24.0	-	-
11.0	4.0	2.0	-	-	24.0	-	-	24.0	-	-
11.0	4.0	3.0	-	-	24.0	-	-	24.0	-	-
11.0	4.0	4.0	-	-	24.0	-	-	24.0	-	-
11.0	4.0	5.0	-	-	23.0	1.0	-	23.0	-	-
11.0	4.0	6.0	-	-	23.0	1.0	-	23.0	-	-
11.0	4.0	7.0	511.0	49.0	24.0	1.0	226.8	29.9	166.8	158.2
11.0	4.0	8.0	724.0	72.0	25.0	1.0	480.0	41.1	364.5	350.4
11.0	4.0	9.0	824.0	83.0	26.0	1.0	696.2	50.5	516.5	497.2
11.0	4.0	10.0	551.0	222.0	27.0	1.0	724.3	53.4	532.9	512.9
11.0	4.0	11.0	885.0	99.0	27.0	1.0	928.7	59.8	660.4	635.3
11.0	4.0	12.0	885.0	100.0	27.0	1.0	933.5	60.9	659.8	634.7
11.0	4.0	13.0	868.0	95.0	28.0	2.0	859.7	55.0	626.8	603.1
11.0	4.0	14.0	821.0	88.0	28.0	2.0	716.2	50.8	531.1	511.2
11.0	4.0	15.0	728.0	77.0	27.0	1.0	506.7	46.7	376.0	361.5
11.0	4.0	16.0	535.0	54.0	26.0	1.0	256.4	36.2	186.4	177.3
11.0	4.0	17.0	-	-	25.0	1.0	-	25.0	-	-
11.0	4.0	18.0	-	-	25.0	2.0	-	25.0	-	-
11.0	4.0	19.0	-	-	24.0	2.0	-	24.0	-	-
11.0	4.0	20.0	-	-	24.0	2.0	-	24.0	-	-
11.0	4.0	21.0	-	-	24.0	2.0	-	24.0	-	-
11.0	4.0	22.0	-	-	24.0	3.0	-	24.0	-	-
11.0	4.0	23.0	-	-	23.0	3.0	-	23.0	-	-
11.0	5.0	-	-	-	23.0	2.0	-	23.0	-	-
11.0	5.0	1.0	-	-	23.0	2.0	-	23.0	-	-
11.0	5.0	2.0	-	-	23.0	2.0	-	23.0	-	-
11.0	5.0	3.0	-	-	23.0	2.0	-	23.0	-	-
11.0	5.0	4.0	-	-	23.0	2.0	-	23.0	-	-
11.0	5.0	5.0	-	-	23.0	2.0	-	23.0	-	-
11.0	5.0	6.0	-	-	23.0	2.0	-	23.0	-	-
11.0	5.0	7.0	535.0	46.0	25.0	2.0	230.7	30.2	168.7	160.1
11.0	5.0	8.0	744.0	68.0	26.0	3.0	485.2	38.3	373.5	359.1
11.0	5.0	9.0	835.0	80.0	26.0	4.0	699.3	43.0	539.3	519.0
11.0	5.0	10.0	877.0	89.0	27.0	4.0	848.2	48.1	641.5	617.2
11.0	5.0	11.0	890.0	95.0	28.0	5.0	927.1	49.3	698.1	671.4
11.0	5.0	12.0	882.0	99.0	28.0	5.0	928.0	49.5	698.2	671.5
11.0	5.0	13.0	840.0	104.0	28.0	5.0	850.1	47.8	644.5	620.1
11.0	5.0	14.0	778.0	101.0	28.0	4.0	697.8	46.0	531.0	511.1
11.0	5.0	15.0	670.0	89.0	27.0	4.0	488.0	39.5	376.0	361.5
11.0	5.0	16.0	458.0	62.0	27.0	4.0	237.5	32.9	176.9	168.0
11.0	5.0	17.0	-	-	26.0	4.0	-	26.0	-	-
11.0	5.0	18.0	-	-	26.0	4.0	-	26.0	-	-
11.0	5.0	19.0	-	-	26.0	4.0	-	26.0	-	-
11.0	5.0	20.0	-	-	25.0	4.0	-	25.0	-	-
11.0	5.0	21.0	-	-	25.0	4.0	-	25.0	-	-
11.0	5.0	22.0	-	-	25.0	4.0	-	25.0	-	-
11.0	5.0	23.0	-	-	25.0	4.0	-	25.0	-	-
11.0	6.0	-	-	-	25.0	4.0	-	25.0	-	-
11.0	6.0	1.0	-	-	24.0	4.0	-	24.0	-	-
11.0	6.0	2.0	-	-	24.0	4.0	-	24.0	-	-
11.0	6.0	3.0	-	-	24.0	4.0	-	24.0	-	-
11.0	6.0	4.0	-	-	24.0	4.0	-	24.0	-	-
11.0	6.0	5.0	-	-	24.0	4.0	-	24.0	-	-
11.0	6.0	6.0	-	-	24.0	5.0	-	24.0	-	-
11.0	6.0	7.0	463.0	51.0	25.0	5.0	212.5	28.4	158.0	149.6
11.0	6.0	8.0	471.0	120.0	26.0	6.0	392.9	33.2	312.5	299.9

11.0	6.0	9.0	135.0	248.0	27.0	6.0	362.3	33.9	294.4	282.4
11.0	6.0	10.0	819.0	110.0	28.0	6.0	826.9	44.3	638.2	614.0
11.0	6.0	11.0	437.0	296.0	29.0	6.0	738.3	44.4	570.7	549.2
11.0	6.0	12.0	842.0	116.0	29.0	6.0	915.5	47.7	695.1	668.5
11.0	6.0	13.0	794.0	125.0	29.0	6.0	832.7	46.4	635.8	611.8
11.0	6.0	14.0	723.0	121.0	29.0	5.0	680.9	44.9	521.3	501.8
11.0	6.0	15.0	622.0	101.0	28.0	5.0	473.4	38.9	366.4	352.2
11.0	6.0	16.0	-	5.0	27.0	5.0	4.7	26.9	4.0	-
11.0	6.0	17.0	-	-	26.0	5.0	-	26.0	-	-
11.0	6.0	18.0	-	-	24.0	6.0	-	24.0	-	-
11.0	6.0	19.0	-	-	22.0	6.0	-	22.0	-	-
11.0	6.0	20.0	-	-	22.0	6.0	-	22.0	-	-
11.0	6.0	21.0	-	-	21.0	6.0	-	21.0	-	-
11.0	6.0	22.0	-	-	21.0	6.0	-	21.0	-	-
11.0	6.0	23.0	-	-	20.0	6.0	-	20.0	-	-
11.0	7.0	-	-	-	20.0	6.0	-	20.0	-	-
11.0	7.0	1.0	-	-	19.0	6.0	-	19.0	-	-
11.0	7.0	2.0	-	-	19.0	6.0	-	19.0	-	-
11.0	7.0	3.0	-	-	19.0	5.0	-	19.0	-	-
11.0	7.0	4.0	-	-	19.0	5.0	-	19.0	-	-
11.0	7.0	5.0	-	-	19.0	5.0	-	19.0	-	-
11.0	7.0	6.0	-	-	19.0	5.0	-	19.0	-	-
11.0	7.0	7.0	421.0	63.0	19.0	5.0	210.2	22.3	162.4	153.9
11.0	7.0	8.0	674.0	95.0	20.0	5.0	476.9	29.8	383.6	368.9
11.0	7.0	9.0	795.0	110.0	21.0	4.0	701.2	38.1	554.5	533.7
11.0	7.0	10.0	885.0	105.0	22.0	4.0	875.4	43.9	676.9	651.1
11.0	7.0	11.0	909.0	108.0	22.0	4.0	955.5	46.2	731.1	702.9
11.0	7.0	12.0	909.0	109.0	23.0	4.0	960.6	47.5	730.1	702.0
11.0	7.0	13.0	854.0	120.0	23.0	4.0	877.2	45.6	672.6	647.0
11.0	7.0	14.0	797.0	113.0	23.0	4.0	722.6	41.7	562.0	541.0
11.0	7.0	15.0	688.0	97.0	22.0	4.0	505.5	35.1	398.3	383.1
11.0	7.0	16.0	463.0	68.0	21.0	4.0	244.6	27.0	187.6	178.5
11.0	7.0	17.0	-	-	21.0	4.0	-	21.0	-	-
11.0	7.0	18.0	-	-	21.0	4.0	-	21.0	-	-
11.0	7.0	19.0	-	-	21.0	3.0	-	21.0	-	-
11.0	7.0	20.0	-	-	21.0	3.0	-	21.0	-	-
11.0	7.0	21.0	-	-	21.0	3.0	-	21.0	-	-
11.0	7.0	22.0	-	-	21.0	3.0	-	21.0	-	-
11.0	7.0	23.0	-	-	21.0	3.0	-	21.0	-	-
11.0	8.0	-	-	-	21.0	3.0	-	21.0	-	-
11.0	8.0	1.0	-	-	21.0	3.0	-	21.0	-	-
11.0	8.0	2.0	-	-	21.0	3.0	-	21.0	-	-
11.0	8.0	3.0	-	-	21.0	3.0	-	21.0	-	-
11.0	8.0	4.0	-	-	21.0	3.0	-	21.0	-	-
11.0	8.0	5.0	-	-	21.0	3.0	-	21.0	-	-
11.0	8.0	6.0	-	-	21.0	3.0	-	21.0	-	-
11.0	8.0	7.0	465.0	54.0	23.0	3.0	215.2	27.2	161.0	152.5
11.0	8.0	8.0	713.0	79.0	24.0	4.0	479.1	35.0	374.8	360.4
11.0	8.0	9.0	819.0	93.0	24.0	4.0	698.3	41.0	543.9	523.5
11.0	8.0	10.0	36.0	269.0	25.0	4.0	307.9	33.2	251.8	241.0
11.0	8.0	11.0	904.0	101.0	25.0	4.0	941.4	47.3	716.2	688.7
11.0	8.0	12.0	909.0	99.0	26.0	3.0	947.7	52.4	702.0	675.1
11.0	8.0	13.0	867.0	105.0	26.0	3.0	870.1	50.4	650.2	625.5
11.0	8.0	14.0	823.0	95.0	25.0	3.0	720.8	45.5	549.7	529.1
11.0	8.0	15.0	734.0	79.0	25.0	3.0	508.9	39.5	391.4	376.4
11.0	8.0	16.0	534.0	55.0	24.0	3.0	255.6	31.1	190.3	181.1
11.0	8.0	17.0	-	-	23.0	3.0	-	23.0	-	-
11.0	8.0	18.0	-	-	23.0	3.0	-	23.0	-	-
11.0	8.0	19.0	-	-	23.0	3.0	-	23.0	-	-
11.0	8.0	20.0	-	-	22.0	3.0	-	22.0	-	-
11.0	8.0	21.0	-	-	22.0	3.0	-	22.0	-	-
11.0	8.0	22.0	-	-	22.0	3.0	-	22.0	-	-
11.0	8.0	23.0	-	-	22.0	3.0	-	22.0	-	-
11.0	9.0	-	-	-	22.0	2.0	-	22.0	-	-
11.0	9.0	1.0	-	-	22.0	2.0	-	22.0	-	-
11.0	9.0	2.0	-	-	22.0	2.0	-	22.0	-	-
11.0	9.0	3.0	-	-	23.0	2.0	-	23.0	-	-
11.0	9.0	4.0	-	-	23.0	1.0	-	23.0	-	-
11.0	9.0	5.0	-	-	23.0	1.0	-	23.0	-	-
11.0	9.0	6.0	-	-	23.0	1.0	-	23.0	-	-
11.0	9.0	7.0	546.0	44.0	24.0	1.0	229.5	30.0	167.1	158.5
11.0	9.0	8.0	765.0	64.0	25.0	1.0	487.4	41.3	368.5	354.3
11.0	9.0	9.0	860.0	76.0	26.0	2.0	702.4	47.1	530.1	510.2
11.0	9.0	10.0	890.0	91.0	27.0	2.0	854.7	53.1	629.4	605.6
11.0	9.0	11.0	912.0	94.0	27.0	2.0	939.0	55.9	682.0	656.0
11.0	9.0	12.0	909.0	95.0	27.0	2.0	941.6	56.3	682.5	656.4
11.0	9.0	13.0	866.0	102.0	27.0	2.0	864.4	54.2	632.8	608.9
11.0	9.0	14.0	814.0	96.0	27.0	2.0	714.2	49.8	532.2	512.3
11.0	9.0	15.0	714.0	82.0	27.0	2.0	502.0	43.3	378.9	364.3
11.0	9.0	16.0	501.0	57.0	26.0	2.0	246.0	33.9	181.1	172.2
11.0	9.0	17.0	-	-	24.0	2.0	-	24.0	-	-

11.0	9.0	18.0	-	-	24.0	2.0	-	24.0	-	-
11.0	9.0	19.0	-	-	24.0	2.0	-	24.0	-	-
11.0	9.0	20.0	-	-	24.0	3.0	-	24.0	-	-
11.0	9.0	21.0	-	-	24.0	3.0	-	24.0	-	-
11.0	9.0	22.0	-	-	23.0	3.0	-	23.0	-	-
11.0	9.0	23.0	-	-	23.0	3.0	-	23.0	-	-
11.0	10.0	-	-	-	23.0	3.0	-	23.0	-	-
11.0	10.0	1.0	-	-	23.0	3.0	-	23.0	-	-
11.0	10.0	2.0	-	-	23.0	2.0	-	23.0	-	-
11.0	10.0	3.0	-	-	23.0	2.0	-	23.0	-	-
11.0	10.0	4.0	-	-	23.0	2.0	-	23.0	-	-
11.0	10.0	5.0	-	-	23.0	2.0	-	23.0	-	-
11.0	10.0	6.0	-	-	23.0	2.0	-	23.0	-	-
11.0	10.0	7.0	425.0	51.0	24.0	2.0	198.4	28.2	147.7	139.6
11.0	10.0	8.0	661.0	80.0	25.0	2.0	450.4	37.6	347.8	334.2
11.0	10.0	9.0	771.0	95.0	26.0	2.0	663.6	45.8	504.2	485.3
11.0	10.0	10.0	829.0	102.0	27.0	2.0	820.1	52.0	607.5	584.6
11.0	10.0	11.0	856.0	105.0	27.0	2.0	899.0	54.7	657.2	632.3
11.0	10.0	12.0	859.0	105.0	28.0	2.0	905.7	56.2	657.1	632.1
11.0	10.0	13.0	831.0	105.0	28.0	2.0	836.7	54.3	612.3	589.2
11.0	10.0	14.0	783.0	97.0	28.0	2.0	691.6	50.1	514.8	495.5
11.0	10.0	15.0	687.0	82.0	27.0	2.0	486.3	42.7	368.1	353.9
11.0	10.0	16.0	483.0	55.0	26.0	2.0	237.4	33.6	175.1	166.2
11.0	10.0	17.0	-	-	25.0	2.0	-	25.0	-	-
11.0	10.0	18.0	-	-	25.0	2.0	-	25.0	-	-
11.0	10.0	19.0	-	-	25.0	2.0	-	25.0	-	-
11.0	10.0	20.0	-	-	24.0	2.0	-	24.0	-	-
11.0	10.0	21.0	-	-	24.0	2.0	-	24.0	-	-
11.0	10.0	22.0	-	-	24.0	3.0	-	24.0	-	-
11.0	10.0	23.0	-	-	24.0	3.0	-	24.0	-	-
11.0	11.0	-	-	-	24.0	3.0	-	24.0	-	-
11.0	11.0	1.0	-	-	24.0	3.0	-	24.0	-	-
11.0	11.0	2.0	-	-	24.0	3.0	-	24.0	-	-
11.0	11.0	3.0	-	-	24.0	3.0	-	24.0	-	-
11.0	11.0	4.0	-	-	24.0	3.0	-	24.0	-	-
11.0	11.0	5.0	-	-	24.0	3.0	-	24.0	-	-
11.0	11.0	6.0	-	-	24.0	2.0	-	24.0	-	-
11.0	11.0	7.0	433.0	51.0	25.0	2.0	200.3	29.2	148.1	140.0
11.0	11.0	8.0	674.0	78.0	26.0	2.0	454.0	38.7	348.4	334.7
11.0	11.0	9.0	788.0	91.0	27.0	2.0	669.7	47.0	505.6	486.7
11.0	11.0	10.0	860.0	92.0	27.0	1.0	827.3	56.4	598.0	575.5
11.0	11.0	11.0	883.0	95.0	28.0	-	910.5	67.0	621.2	597.7
11.0	11.0	12.0	883.0	95.0	28.0	-	914.7	67.6	621.8	598.3
11.0	11.0	13.0	851.0	97.0	28.0	-	837.4	65.2	576.4	554.7
11.0	11.0	14.0	799.0	91.0	28.0	1.0	695.5	54.2	506.2	487.2
11.0	11.0	15.0	696.0	79.0	28.0	1.0	487.3	46.9	360.8	346.7
11.0	11.0	16.0	482.0	55.0	27.0	2.0	236.9	34.6	173.8	165.0
11.0	11.0	17.0	-	-	26.0	2.0	-	26.0	-	-
11.0	11.0	18.0	-	-	26.0	2.0	-	26.0	-	-
11.0	11.0	19.0	-	-	25.0	2.0	-	25.0	-	-
11.0	11.0	20.0	-	-	25.0	3.0	-	25.0	-	-
11.0	11.0	21.0	-	-	25.0	2.0	-	25.0	-	-
11.0	11.0	22.0	-	-	25.0	2.0	-	25.0	-	-
11.0	11.0	23.0	-	-	25.0	2.0	-	25.0	-	-
11.0	12.0	-	-	-	25.0	2.0	-	25.0	-	-
11.0	12.0	1.0	-	-	24.0	2.0	-	24.0	-	-
11.0	12.0	2.0	-	-	24.0	2.0	-	24.0	-	-
11.0	12.0	3.0	-	-	24.0	2.0	-	24.0	-	-
11.0	12.0	4.0	-	-	24.0	2.0	-	24.0	-	-
11.0	12.0	5.0	-	-	24.0	2.0	-	24.0	-	-
11.0	12.0	6.0	-	-	24.0	3.0	-	24.0	-	-
11.0	12.0	7.0	499.0	42.0	25.0	3.0	210.6	29.1	153.9	145.6
11.0	12.0	8.0	725.0	64.0	26.0	3.0	462.5	37.6	356.1	342.2
11.0	12.0	9.0	822.0	77.0	27.0	3.0	676.2	45.0	515.6	496.3
11.0	12.0	10.0	866.0	87.0	27.0	3.0	825.0	49.4	619.3	595.9
11.0	12.0	11.0	227.0	337.0	28.0	4.0	569.0	42.8	443.3	426.6
11.0	12.0	12.0	-	125.0	28.0	3.0	119.8	31.7	98.7	91.7
11.0	12.0	13.0	855.0	95.0	28.0	3.0	837.2	49.0	630.3	606.5
11.0	12.0	14.0	803.0	89.0	28.0	3.0	695.2	47.6	524.0	504.3
11.0	12.0	15.0	709.0	75.0	28.0	2.0	487.9	43.8	366.9	352.7
11.0	12.0	16.0	183.0	74.0	27.0	2.0	148.0	31.9	114.7	107.3
11.0	12.0	17.0	-	-	26.0	2.0	-	26.0	-	-
11.0	12.0	18.0	-	-	26.0	2.0	-	26.0	-	-
11.0	12.0	19.0	-	-	25.0	2.0	-	25.0	-	-
11.0	12.0	20.0	-	-	25.0	2.0	-	25.0	-	-
11.0	12.0	21.0	-	-	24.0	2.0	-	24.0	-	-
11.0	12.0	22.0	-	-	24.0	2.0	-	24.0	-	-
11.0	12.0	23.0	-	-	24.0	2.0	-	24.0	-	-
11.0	13.0	-	-	-	23.0	2.0	-	23.0	-	-
11.0	13.0	1.0	-	-	23.0	2.0	-	23.0	-	-
11.0	13.0	2.0	-	-	23.0	3.0	-	23.0	-	-

11.0	13.0	3.0	-	-	23.0	3.0	-	23.0	-	-
11.0	13.0	4.0	-	-	23.0	3.0	-	23.0	-	-
11.0	13.0	5.0	-	-	22.0	5.0	-	22.0	-	-
11.0	13.0	6.0	-	-	21.0	7.0	-	21.0	-	-
11.0	13.0	7.0	256.0	65.0	19.0	8.0	158.9	20.6	126.2	118.6
11.0	13.0	8.0	68.0	148.0	19.0	8.0	188.9	21.3	162.1	153.6
11.0	13.0	9.0	-	44.0	19.0	7.0	41.8	18.8	36.6	30.8
11.0	13.0	10.0	7.0	204.0	19.0	6.0	205.6	21.9	177.4	168.6
11.0	13.0	11.0	403.0	296.0	20.0	6.0	692.7	33.2	566.3	545.1
11.0	13.0	12.0	896.0	100.0	21.0	6.0	929.0	39.8	734.4	706.1
11.0	13.0	13.0	897.0	94.0	22.0	6.0	870.3	40.1	686.1	659.9
11.0	13.0	14.0	864.0	86.0	22.0	6.0	735.2	37.3	584.1	562.1
11.0	13.0	15.0	776.0	74.0	22.0	6.0	523.4	32.8	415.6	399.8
11.0	13.0	16.0	562.0	52.0	21.0	6.0	260.9	26.0	198.1	188.7
11.0	13.0	17.0	-	-	21.0	6.0	-	21.0	-	-
11.0	13.0	18.0	-	-	21.0	6.0	-	21.0	-	-
11.0	13.0	19.0	-	-	21.0	6.0	-	21.0	-	-
11.0	13.0	20.0	-	-	21.0	6.0	-	21.0	-	-
11.0	13.0	21.0	-	-	21.0	6.0	-	21.0	-	-
11.0	13.0	22.0	-	-	20.0	5.0	-	20.0	-	-
11.0	13.0	23.0	-	-	20.0	5.0	-	20.0	-	-
11.0	14.0	-	-	-	20.0	4.0	-	20.0	-	-
11.0	14.0	1.0	-	-	20.0	4.0	-	20.0	-	-
11.0	14.0	2.0	-	-	20.0	4.0	-	20.0	-	-
11.0	14.0	3.0	-	-	20.0	4.0	-	20.0	-	-
11.0	14.0	4.0	-	-	20.0	3.0	-	20.0	-	-
11.0	14.0	5.0	-	-	20.0	3.0	-	20.0	-	-
11.0	14.0	6.0	-	-	20.0	3.0	-	20.0	-	-
11.0	14.0	7.0	398.0	56.0	21.0	3.0	192.5	24.5	146.2	138.0
11.0	14.0	8.0	660.0	89.0	22.0	3.0	455.4	33.3	359.0	345.0
11.0	14.0	9.0	136.0	234.0	22.0	4.0	347.4	30.4	287.0	275.2
11.0	14.0	10.0	827.0	122.0	23.0	4.0	834.3	42.9	648.0	623.4
11.0	14.0	11.0	853.0	127.0	23.0	4.0	921.2	46.3	704.5	677.5
11.0	14.0	12.0	859.0	126.0	23.0	4.0	930.1	46.7	709.7	682.5
11.0	14.0	13.0	836.0	122.0	24.0	4.0	854.9	46.0	654.0	629.2
11.0	14.0	14.0	802.0	105.0	24.0	4.0	710.5	42.3	550.4	529.8
11.0	14.0	15.0	3.0	134.0	23.0	4.0	133.5	26.9	112.5	105.1
11.0	14.0	16.0	495.0	57.0	22.0	3.0	243.0	27.4	184.4	175.4
11.0	14.0	17.0	-	-	22.0	3.0	-	22.0	-	-
11.0	14.0	18.0	-	-	22.0	3.0	-	22.0	-	-
11.0	14.0	19.0	-	-	22.0	3.0	-	22.0	-	-
11.0	14.0	20.0	-	-	22.0	3.0	-	22.0	-	-
11.0	14.0	21.0	-	-	22.0	3.0	-	22.0	-	-
11.0	14.0	22.0	-	-	22.0	3.0	-	22.0	-	-
11.0	14.0	23.0	-	-	22.0	3.0	-	22.0	-	-
11.0	15.0	-	-	-	21.0	2.0	-	21.0	-	-
11.0	15.0	1.0	-	-	21.0	2.0	-	21.0	-	-
11.0	15.0	2.0	-	-	22.0	2.0	-	22.0	-	-
11.0	15.0	3.0	-	-	22.0	2.0	-	22.0	-	-
11.0	15.0	4.0	-	-	22.0	2.0	-	22.0	-	-
11.0	15.0	5.0	-	-	22.0	2.0	-	22.0	-	-
11.0	15.0	6.0	-	-	22.0	2.0	-	22.0	-	-
11.0	15.0	7.0	65.0	60.0	22.0	2.0	86.2	22.6	71.2	64.7
11.0	15.0	8.0	144.0	148.0	23.0	2.0	234.8	28.6	193.3	184.0
11.0	15.0	9.0	343.0	209.0	24.0	2.0	472.5	37.4	375.9	361.5
11.0	15.0	10.0	211.0	296.0	24.0	3.0	494.3	37.3	395.7	380.5
11.0	15.0	11.0	172.0	336.0	25.0	3.0	518.2	39.0	411.7	396.0
11.0	15.0	12.0	71.0	320.0	25.0	3.0	398.4	35.9	321.5	308.7
11.0	15.0	13.0	194.0	306.0	25.0	2.0	494.4	39.8	391.0	376.1
11.0	15.0	14.0	259.0	236.0	25.0	2.0	450.6	38.9	356.8	342.9
11.0	15.0	15.0	332.0	144.0	24.0	2.0	344.9	34.6	274.4	263.0
11.0	15.0	16.0	147.0	73.0	24.0	2.0	134.9	27.8	107.3	100.1
11.0	15.0	17.0	-	-	23.0	2.0	-	23.0	-	-
11.0	15.0	18.0	-	-	23.0	2.0	-	23.0	-	-
11.0	15.0	19.0	-	-	23.0	2.0	-	23.0	-	-
11.0	15.0	20.0	-	-	23.0	2.0	-	23.0	-	-
11.0	15.0	21.0	-	-	23.0	2.0	-	23.0	-	-
11.0	15.0	22.0	-	-	23.0	2.0	-	23.0	-	-
11.0	15.0	23.0	-	-	23.0	2.0	-	23.0	-	-
11.0	16.0	-	-	-	23.0	2.0	-	23.0	-	-
11.0	16.0	1.0	-	-	23.0	3.0	-	23.0	-	-
11.0	16.0	2.0	-	-	23.0	3.0	-	23.0	-	-
11.0	16.0	3.0	-	-	23.0	3.0	-	23.0	-	-
11.0	16.0	4.0	-	-	23.0	3.0	-	23.0	-	-
11.0	16.0	5.0	-	-	23.0	3.0	-	23.0	-	-
11.0	16.0	6.0	-	-	23.0	3.0	-	23.0	-	-
11.0	16.0	7.0	-	20.0	24.0	4.0	18.9	22.9	16.3	10.9
11.0	16.0	8.0	3.0	123.0	24.0	5.0	122.7	25.4	104.1	97.0
11.0	16.0	9.0	81.0	225.0	25.0	5.0	290.6	30.5	240.2	229.7
11.0	16.0	10.0	11.0	214.0	25.0	5.0	219.5	29.3	183.0	173.9
11.0	16.0	11.0	129.0	333.0	26.0	6.0	476.3	34.9	386.2	371.4

11.0	16.0	12.0	63.0	314.0	25.0	6.0	384.6	32.5	315.6	303.0
11.0	16.0	13.0	44.0	272.0	25.0	6.0	319.4	31.0	264.0	252.8
11.0	16.0	14.0	5.0	177.0	25.0	5.0	177.2	28.4	148.3	140.1
11.0	16.0	15.0	-	80.0	24.0	4.0	76.3	24.9	65.0	58.6
11.0	16.0	16.0	-	54.0	24.0	4.0	52.3	24.0	44.7	38.7
11.0	16.0	17.0	-	-	24.0	4.0	-	24.0	-	-
11.0	16.0	18.0	-	-	24.0	4.0	-	24.0	-	-
11.0	16.0	19.0	-	-	24.0	5.0	-	24.0	-	-
11.0	16.0	20.0	-	-	24.0	5.0	-	24.0	-	-
11.0	16.0	21.0	-	-	24.0	5.0	-	24.0	-	-
11.0	16.0	22.0	-	-	24.0	6.0	-	24.0	-	-
11.0	16.0	23.0	-	-	24.0	6.0	-	24.0	-	-
11.0	17.0	-	-	-	24.0	7.0	-	24.0	-	-
11.0	17.0	1.0	-	-	23.0	6.0	-	23.0	-	-
11.0	17.0	2.0	-	-	22.0	6.0	-	22.0	-	-
11.0	17.0	3.0	-	-	21.0	6.0	-	21.0	-	-
11.0	17.0	4.0	-	-	19.0	6.0	-	19.0	-	-
11.0	17.0	5.0	-	-	18.0	6.0	-	18.0	-	-
11.0	17.0	6.0	-	-	18.0	6.0	-	18.0	-	-
11.0	17.0	7.0	367.0	49.0	18.0	6.0	174.4	20.2	134.6	126.7
11.0	17.0	8.0	-	63.0	18.0	6.0	59.8	18.2	52.5	46.4
11.0	17.0	9.0	9.0	177.0	19.0	6.0	180.4	21.5	156.0	147.6
11.0	17.0	10.0	30.0	249.0	19.0	7.0	282.1	23.3	241.8	231.3
11.0	17.0	11.0	51.0	301.0	19.0	7.0	359.2	24.9	305.7	293.3
11.0	17.0	12.0	62.0	312.0	19.0	8.0	381.6	24.9	324.7	311.8
11.0	17.0	13.0	13.0	224.0	19.0	8.0	231.6	22.4	199.4	190.0
11.0	17.0	14.0	-	122.0	19.0	8.0	117.4	20.2	102.1	95.0
11.0	17.0	15.0	223.0	155.0	19.0	7.0	297.1	23.5	250.4	239.7
11.0	17.0	16.0	486.0	60.0	18.0	6.0	242.7	22.2	189.1	179.9
11.0	17.0	17.0	-	-	17.0	6.0	-	17.0	-	-
11.0	17.0	18.0	-	-	17.0	6.0	-	17.0	-	-
11.0	17.0	19.0	-	-	16.0	6.0	-	16.0	-	-
11.0	17.0	20.0	-	-	16.0	6.0	-	16.0	-	-
11.0	17.0	21.0	-	-	15.0	6.0	-	15.0	-	-
11.0	17.0	22.0	-	-	15.0	6.0	-	15.0	-	-
11.0	17.0	23.0	-	-	14.0	6.0	-	14.0	-	-
11.0	18.0	-	-	-	14.0	7.0	-	14.0	-	-
11.0	18.0	1.0	-	-	14.0	7.0	-	14.0	-	-
11.0	18.0	2.0	-	-	13.0	7.0	-	13.0	-	-
11.0	18.0	3.0	-	-	13.0	7.0	-	13.0	-	-
11.0	18.0	4.0	-	-	13.0	6.0	-	13.0	-	-
11.0	18.0	5.0	-	-	13.0	6.0	-	13.0	-	-
11.0	18.0	6.0	-	-	14.0	6.0	-	14.0	-	-
11.0	18.0	7.0	553.0	41.0	15.0	6.0	221.2	18.1	168.2	159.5
11.0	18.0	8.0	787.0	65.0	16.0	6.0	487.6	25.0	397.7	382.5
11.0	18.0	9.0	881.0	80.0	17.0	6.0	710.9	31.0	580.7	558.8
11.0	18.0	10.0	916.0	94.0	18.0	5.0	863.7	37.5	689.1	662.8
11.0	18.0	11.0	930.0	101.0	19.0	5.0	947.4	40.7	745.5	716.6
11.0	18.0	12.0	924.0	104.0	20.0	5.0	951.1	42.0	743.6	714.9
11.0	18.0	13.0	888.0	106.0	20.0	5.0	876.1	40.3	689.6	663.3
11.0	18.0	14.0	835.0	97.0	21.0	5.0	722.3	37.8	572.3	550.8
11.0	18.0	15.0	730.0	83.0	20.0	4.0	507.6	33.1	402.5	387.1
11.0	18.0	16.0	500.0	56.0	19.0	4.0	243.5	25.0	186.7	177.6
11.0	18.0	17.0	-	-	18.0	4.0	-	18.0	-	-
11.0	18.0	18.0	-	-	18.0	4.0	-	18.0	-	-
11.0	18.0	19.0	-	-	18.0	4.0	-	18.0	-	-
11.0	18.0	20.0	-	-	18.0	4.0	-	18.0	-	-
11.0	18.0	21.0	-	-	18.0	3.0	-	18.0	-	-
11.0	18.0	22.0	-	-	18.0	3.0	-	18.0	-	-
11.0	18.0	23.0	-	-	19.0	3.0	-	19.0	-	-
11.0	19.0	-	-	-	19.0	3.0	-	19.0	-	-
11.0	19.0	1.0	-	-	19.0	3.0	-	19.0	-	-
11.0	19.0	2.0	-	-	19.0	3.0	-	19.0	-	-
11.0	19.0	3.0	-	-	19.0	3.0	-	19.0	-	-
11.0	19.0	4.0	-	-	19.0	3.0	-	19.0	-	-
11.0	19.0	5.0	-	-	19.0	3.0	-	19.0	-	-
11.0	19.0	6.0	-	-	19.0	3.0	-	19.0	-	-
11.0	19.0	7.0	422.0	48.0	20.0	3.0	188.5	23.4	142.0	134.0
11.0	19.0	8.0	60.0	138.0	21.0	3.0	174.1	24.7	147.0	138.9
11.0	19.0	9.0	821.0	90.0	22.0	4.0	679.1	37.7	536.7	516.6
11.0	19.0	10.0	884.0	96.0	22.0	4.0	843.6	43.1	654.4	629.6
11.0	19.0	11.0	168.0	329.0	23.0	4.0	506.5	36.4	407.6	392.0
11.0	19.0	12.0	919.0	97.0	23.0	4.0	937.2	45.8	718.5	690.9
11.0	19.0	13.0	873.0	105.0	23.0	4.0	861.3	45.1	661.5	636.3
11.0	19.0	14.0	313.0	222.0	23.0	4.0	473.5	35.7	380.6	366.0
11.0	19.0	15.0	727.0	79.0	23.0	4.0	501.1	35.3	393.1	378.0
11.0	19.0	16.0	509.0	53.0	22.0	4.0	243.5	28.0	183.7	174.7
11.0	19.0	17.0	-	-	21.0	4.0	-	21.0	-	-
11.0	19.0	18.0	-	-	21.0	4.0	-	21.0	-	-
11.0	19.0	19.0	-	-	21.0	4.0	-	21.0	-	-
11.0	19.0	20.0	-	-	21.0	4.0	-	21.0	-	-

11.0	19.0	21.0	-	-	21.0	4.0	-	21.0	-	-
11.0	19.0	22.0	-	-	21.0	4.0	-	21.0	-	-
11.0	19.0	23.0	-	-	21.0	4.0	-	21.0	-	-
11.0	20.0	-	-	-	21.0	4.0	-	21.0	-	-
11.0	20.0	1.0	-	-	21.0	4.0	-	21.0	-	-
11.0	20.0	2.0	-	-	21.0	3.0	-	21.0	-	-
11.0	20.0	3.0	-	-	21.0	3.0	-	21.0	-	-
11.0	20.0	4.0	-	-	21.0	4.0	-	21.0	-	-
11.0	20.0	5.0	-	-	22.0	4.0	-	22.0	-	-
11.0	20.0	6.0	-	-	22.0	4.0	-	22.0	-	-
11.0	20.0	7.0	-	25.0	22.0	4.0	23.7	21.0	20.5	15.1
11.0	20.0	8.0	218.0	136.0	23.0	4.0	264.9	28.1	217.3	207.4
11.0	20.0	9.0	84.0	219.0	24.0	4.0	286.2	30.4	236.6	226.2
11.0	20.0	10.0	739.0	132.0	24.0	5.0	767.5	40.5	603.4	580.7
11.0	20.0	11.0	771.0	138.0	25.0	5.0	851.2	44.4	657.2	632.3
11.0	20.0	12.0	775.0	137.0	25.0	5.0	858.9	44.8	662.0	636.9
11.0	20.0	13.0	736.0	138.0	25.0	5.0	786.4	43.2	610.2	587.2
11.0	20.0	14.0	51.0	221.0	25.0	4.0	266.2	32.4	218.3	208.4
11.0	20.0	15.0	537.0	110.0	24.0	4.0	427.1	33.9	338.8	325.4
11.0	20.0	16.0	290.0	70.0	24.0	4.0	185.9	28.4	143.9	135.9
11.0	20.0	17.0	-	-	24.0	4.0	-	24.0	-	-
11.0	20.0	18.0	-	-	24.0	5.0	-	24.0	-	-
11.0	20.0	19.0	-	-	24.0	4.0	-	24.0	-	-
11.0	20.0	20.0	-	-	24.0	4.0	-	24.0	-	-
11.0	20.0	21.0	-	-	24.0	3.0	-	24.0	-	-
11.0	20.0	22.0	-	-	23.0	3.0	-	23.0	-	-
11.0	20.0	23.0	-	-	23.0	2.0	-	23.0	-	-
11.0	21.0	-	-	-	23.0	2.0	-	23.0	-	-
11.0	21.0	1.0	-	-	23.0	2.0	-	23.0	-	-
11.0	21.0	2.0	-	-	23.0	2.0	-	23.0	-	-
11.0	21.0	3.0	-	-	22.0	2.0	-	22.0	-	-
11.0	21.0	4.0	-	-	22.0	2.0	-	22.0	-	-
11.0	21.0	5.0	-	-	22.0	2.0	-	22.0	-	-
11.0	21.0	6.0	-	-	22.0	2.0	-	22.0	-	-
11.0	21.0	7.0	225.0	50.0	23.0	2.0	130.7	25.0	100.8	93.7
11.0	21.0	8.0	456.0	105.0	24.0	2.0	357.7	33.6	282.2	270.6
11.0	21.0	9.0	768.0	84.0	24.0	2.0	632.7	42.6	487.7	469.4
11.0	21.0	10.0	414.0	246.0	24.0	2.0	612.4	43.1	475.5	457.6
11.0	21.0	11.0	228.0	322.0	25.0	2.0	551.4	42.3	430.7	414.4
11.0	21.0	12.0	26.0	267.0	25.0	2.0	288.4	34.4	234.5	224.2
11.0	21.0	13.0	130.0	298.0	25.0	2.0	431.9	37.5	345.6	332.1
11.0	21.0	14.0	261.0	229.0	25.0	2.0	444.0	38.4	352.2	338.5
11.0	21.0	15.0	251.0	150.0	25.0	2.0	307.1	34.4	245.3	234.6
11.0	21.0	16.0	113.0	70.0	24.0	2.0	116.1	27.0	93.3	86.3
11.0	21.0	17.0	-	-	23.0	2.0	-	23.0	-	-
11.0	21.0	18.0	-	-	23.0	2.0	-	23.0	-	-
11.0	21.0	19.0	-	-	23.0	1.0	-	23.0	-	-
11.0	21.0	20.0	-	-	23.0	1.0	-	23.0	-	-
11.0	21.0	21.0	-	-	22.0	1.0	-	22.0	-	-
11.0	21.0	22.0	-	-	22.0	2.0	-	22.0	-	-
11.0	21.0	23.0	-	-	22.0	2.0	-	22.0	-	-
11.0	22.0	-	-	-	22.0	2.0	-	22.0	-	-
11.0	22.0	1.0	-	-	22.0	2.0	-	22.0	-	-
11.0	22.0	2.0	-	-	21.0	3.0	-	21.0	-	-
11.0	22.0	3.0	-	-	21.0	3.0	-	21.0	-	-
11.0	22.0	4.0	-	-	21.0	3.0	-	21.0	-	-
11.0	22.0	5.0	-	-	21.0	3.0	-	21.0	-	-
11.0	22.0	6.0	-	-	21.0	3.0	-	21.0	-	-
11.0	22.0	7.0	-	9.0	21.0	3.0	8.5	19.4	7.4	2.2
11.0	22.0	8.0	204.0	135.0	21.0	4.0	256.2	25.8	212.5	202.7
11.0	22.0	9.0	352.0	197.0	22.0	4.0	461.5	32.7	375.5	361.1
11.0	22.0	10.0	145.0	287.0	22.0	5.0	429.3	31.3	354.0	340.2
11.0	22.0	11.0	840.0	111.0	23.0	5.0	879.3	42.3	686.4	660.2
11.0	22.0	12.0	840.0	114.0	23.0	4.0	888.8	45.6	681.9	655.9
11.0	22.0	13.0	167.0	297.0	23.0	4.0	461.7	35.5	373.1	358.7
11.0	22.0	14.0	779.0	98.0	23.0	4.0	680.7	39.6	534.4	514.4
11.0	22.0	15.0	95.0	155.0	22.0	4.0	213.9	27.8	177.8	169.0
11.0	22.0	16.0	491.0	51.0	21.0	4.0	235.5	25.9	179.5	170.6
11.0	22.0	17.0	-	-	20.0	4.0	-	20.0	-	-
11.0	22.0	18.0	-	-	20.0	4.0	-	20.0	-	-
11.0	22.0	19.0	-	-	19.0	5.0	-	19.0	-	-
11.0	22.0	20.0	-	-	19.0	5.0	-	19.0	-	-
11.0	22.0	21.0	-	-	18.0	5.0	-	18.0	-	-
11.0	22.0	22.0	-	-	18.0	6.0	-	18.0	-	-
11.0	22.0	23.0	-	-	17.0	6.0	-	17.0	-	-
11.0	23.0	-	-	-	17.0	6.0	-	17.0	-	-
11.0	23.0	1.0	-	-	16.0	6.0	-	16.0	-	-
11.0	23.0	2.0	-	-	16.0	5.0	-	16.0	-	-
11.0	23.0	3.0	-	-	15.0	5.0	-	15.0	-	-
11.0	23.0	4.0	-	-	15.0	5.0	-	15.0	-	-
11.0	23.0	5.0	-	-	15.0	4.0	-	15.0	-	-

11.0	23.0	6.0	-	-	15.0	4.0	-	15.0	-	-
11.0	23.0	7.0	503.0	40.0	16.0	5.0	200.8	19.0	151.5	143.3
11.0	23.0	8.0	755.0	67.0	17.0	5.0	465.9	26.5	376.6	362.1
11.0	23.0	9.0	859.0	83.0	18.0	5.0	690.5	33.1	557.7	536.8
11.0	23.0	10.0	911.0	93.0	19.0	5.0	849.6	38.2	675.4	649.6
11.0	23.0	11.0	934.0	97.0	19.0	4.0	938.1	42.9	730.0	701.9
11.0	23.0	12.0	934.0	98.0	20.0	4.0	946.2	44.2	731.1	702.9
11.0	23.0	13.0	904.0	98.0	20.0	4.0	869.2	42.4	676.8	651.0
11.0	23.0	14.0	853.0	91.0	20.0	3.0	725.3	40.7	566.0	544.8
11.0	23.0	15.0	757.0	75.0	20.0	3.0	510.5	34.6	401.3	386.0
11.0	23.0	16.0	541.0	50.0	19.0	3.0	251.8	25.9	191.2	182.0
11.0	23.0	17.0	-	-	18.0	3.0	-	18.0	-	-
11.0	23.0	18.0	-	-	18.0	3.0	-	18.0	-	-
11.0	23.0	19.0	-	-	18.0	3.0	-	18.0	-	-
11.0	23.0	20.0	-	-	18.0	2.0	-	18.0	-	-
11.0	23.0	21.0	-	-	18.0	2.0	-	18.0	-	-
11.0	23.0	22.0	-	-	18.0	2.0	-	18.0	-	-
11.0	23.0	23.0	-	-	18.0	2.0	-	18.0	-	-
11.0	24.0	-	-	-	18.0	2.0	-	18.0	-	-
11.0	24.0	1.0	-	-	18.0	2.0	-	18.0	-	-
11.0	24.0	2.0	-	-	18.0	2.0	-	18.0	-	-
11.0	24.0	3.0	-	-	18.0	2.0	-	18.0	-	-
11.0	24.0	4.0	-	-	19.0	2.0	-	19.0	-	-
11.0	24.0	5.0	-	-	19.0	2.0	-	19.0	-	-
11.0	24.0	6.0	-	-	19.0	2.0	-	19.0	-	-
11.0	24.0	7.0	442.0	41.0	20.0	2.0	183.3	23.6	136.1	128.2
11.0	24.0	8.0	112.0	135.0	21.0	2.0	203.3	26.1	169.5	160.8
11.0	24.0	9.0	251.0	210.0	22.0	2.0	406.5	33.3	330.1	317.1
11.0	24.0	10.0	895.0	90.0	22.0	2.0	831.5	46.5	633.4	609.4
11.0	24.0	11.0	919.0	94.0	23.0	2.0	920.0	51.5	683.9	657.8
11.0	24.0	12.0	921.0	94.0	23.0	2.0	928.8	52.1	688.4	662.1
11.0	24.0	13.0	895.0	93.0	23.0	2.0	855.2	50.1	639.6	615.4
11.0	24.0	14.0	843.0	87.0	23.0	2.0	713.2	45.9	541.8	521.5
11.0	24.0	15.0	741.0	74.0	23.0	2.0	500.5	39.3	384.5	369.7
11.0	24.0	16.0	522.0	50.0	22.0	2.0	245.5	29.8	183.2	174.2
11.0	24.0	17.0	-	-	21.0	2.0	-	21.0	-	-
11.0	24.0	18.0	-	-	21.0	2.0	-	21.0	-	-
11.0	24.0	19.0	-	-	21.0	2.0	-	21.0	-	-
11.0	24.0	20.0	-	-	21.0	2.0	-	21.0	-	-
11.0	24.0	21.0	-	-	21.0	2.0	-	21.0	-	-
11.0	24.0	22.0	-	-	21.0	2.0	-	21.0	-	-
11.0	24.0	23.0	-	-	21.0	2.0	-	21.0	-	-
11.0	25.0	-	-	-	21.0	2.0	-	21.0	-	-
11.0	25.0	1.0	-	-	21.0	2.0	-	21.0	-	-
11.0	25.0	2.0	-	-	21.0	1.0	-	21.0	-	-
11.0	25.0	3.0	-	-	21.0	1.0	-	21.0	-	-
11.0	25.0	4.0	-	-	21.0	1.0	-	21.0	-	-
11.0	25.0	5.0	-	-	21.0	1.0	-	21.0	-	-
11.0	25.0	6.0	-	-	21.0	1.0	-	21.0	-	-
11.0	25.0	7.0	288.0	43.0	22.0	1.0	139.5	24.6	105.3	98.1
11.0	25.0	8.0	252.0	126.0	23.0	1.0	269.1	31.3	216.5	206.7
11.0	25.0	9.0	476.0	166.0	24.0	1.0	518.2	41.6	402.4	387.1
11.0	25.0	10.0	867.0	90.0	24.0	1.0	807.2	52.2	596.4	573.9
11.0	25.0	11.0	890.0	95.0	25.0	1.0	894.1	57.3	644.3	619.9
11.0	25.0	12.0	887.0	98.0	25.0	1.0	902.1	57.9	647.7	623.2
11.0	25.0	13.0	261.0	284.0	25.0	1.0	535.7	46.7	408.7	393.1
11.0	25.0	14.0	790.0	95.0	25.0	1.0	683.9	49.4	510.1	491.0
11.0	25.0	15.0	679.0	81.0	25.0	1.0	476.3	43.6	358.4	344.4
11.0	25.0	16.0	452.0	53.0	24.0	1.0	224.8	32.9	166.4	157.8
11.0	25.0	17.0	-	-	23.0	1.0	-	23.0	-	-
11.0	25.0	18.0	-	-	23.0	1.0	-	23.0	-	-
11.0	25.0	19.0	-	-	23.0	1.0	-	23.0	-	-
11.0	25.0	20.0	-	-	23.0	1.0	-	23.0	-	-
11.0	25.0	21.0	-	-	23.0	1.0	-	23.0	-	-
11.0	25.0	22.0	-	-	22.0	1.0	-	22.0	-	-
11.0	25.0	23.0	-	-	22.0	1.0	-	22.0	-	-
11.0	26.0	-	-	-	22.0	1.0	-	22.0	-	-
11.0	26.0	1.0	-	-	22.0	1.0	-	22.0	-	-
11.0	26.0	2.0	-	-	21.0	2.0	-	21.0	-	-
11.0	26.0	3.0	-	-	21.0	2.0	-	21.0	-	-
11.0	26.0	4.0	-	-	21.0	2.0	-	21.0	-	-
11.0	26.0	5.0	-	-	21.0	3.0	-	21.0	-	-
11.0	26.0	6.0	-	-	21.0	3.0	-	21.0	-	-
11.0	26.0	7.0	-	2.0	21.0	3.0	1.9	19.2	1.7	-
11.0	26.0	8.0	-	50.0	22.0	3.0	47.4	21.5	41.0	35.2
11.0	26.0	9.0	575.0	139.0	23.0	3.0	557.8	36.6	443.8	427.1
11.0	26.0	10.0	2.0	180.0	23.0	4.0	177.6	27.5	149.3	141.1
11.0	26.0	11.0	132.0	316.0	24.0	4.0	459.8	34.4	373.7	359.2
11.0	26.0	12.0	71.0	305.0	24.0	3.0	382.8	34.3	311.3	298.8
11.0	26.0	13.0	106.0	288.0	24.0	3.0	390.5	34.2	317.5	304.8
11.0	26.0	14.0	119.0	232.0	24.0	3.0	337.0	32.8	275.3	263.9

11.0	26.0	15.0	166.0	153.0	23.0	3.0	257.6	29.5	211.5	201.8
11.0	26.0	16.0	65.0	70.0	23.0	3.0	100.4	24.9	82.8	76.1
11.0	26.0	17.0	-	-	22.0	3.0	-	22.0	-	-
11.0	26.0	18.0	-	-	22.0	3.0	-	22.0	-	-
11.0	26.0	19.0	-	-	22.0	3.0	-	22.0	-	-
11.0	26.0	20.0	-	-	21.0	3.0	-	21.0	-	-
11.0	26.0	21.0	-	-	21.0	3.0	-	21.0	-	-
11.0	26.0	22.0	-	-	21.0	3.0	-	21.0	-	-
11.0	26.0	23.0	-	-	20.0	3.0	-	20.0	-	-
11.0	27.0	-	-	-	20.0	3.0	-	20.0	-	-
11.0	27.0	1.0	-	-	19.0	3.0	-	19.0	-	-
11.0	27.0	2.0	-	-	19.0	3.0	-	19.0	-	-
11.0	27.0	3.0	-	-	19.0	3.0	-	19.0	-	-
11.0	27.0	4.0	-	-	19.0	3.0	-	19.0	-	-
11.0	27.0	5.0	-	-	19.0	3.0	-	19.0	-	-
11.0	27.0	6.0	-	-	19.0	3.0	-	19.0	-	-
11.0	27.0	7.0	441.0	36.0	20.0	3.0	175.4	23.0	129.4	121.7
11.0	27.0	8.0	706.0	64.0	21.0	3.0	432.2	31.6	340.0	326.7
11.0	27.0	9.0	816.0	79.0	22.0	4.0	650.0	37.8	512.7	493.5
11.0	27.0	10.0	600.0	175.0	23.0	4.0	693.2	40.4	545.2	524.8
11.0	27.0	11.0	873.0	101.0	24.0	4.0	883.3	46.0	676.1	650.3
11.0	27.0	12.0	312.0	302.0	24.0	4.0	615.2	40.1	485.7	467.5
11.0	27.0	13.0	502.0	221.0	24.0	4.0	675.0	40.8	530.3	510.4
11.0	27.0	14.0	476.0	180.0	23.0	4.0	551.9	37.0	439.8	423.2
11.0	27.0	15.0	672.0	82.0	23.0	3.0	473.8	36.0	370.3	356.0
11.0	27.0	16.0	450.0	53.0	22.0	3.0	224.7	28.1	170.3	161.6
11.0	27.0	17.0	-	-	21.0	3.0	-	21.0	-	-
11.0	27.0	18.0	-	-	21.0	3.0	-	21.0	-	-
11.0	27.0	19.0	-	-	21.0	3.0	-	21.0	-	-
11.0	27.0	20.0	-	-	21.0	3.0	-	21.0	-	-
11.0	27.0	21.0	-	-	20.0	3.0	-	20.0	-	-
11.0	27.0	22.0	-	-	20.0	3.0	-	20.0	-	-
11.0	27.0	23.0	-	-	20.0	3.0	-	20.0	-	-
11.0	28.0	-	-	-	20.0	3.0	-	20.0	-	-
11.0	28.0	1.0	-	-	20.0	3.0	-	20.0	-	-
11.0	28.0	2.0	-	-	20.0	3.0	-	20.0	-	-
11.0	28.0	3.0	-	-	19.0	3.0	-	19.0	-	-
11.0	28.0	4.0	-	-	19.0	3.0	-	19.0	-	-
11.0	28.0	5.0	-	-	19.0	3.0	-	19.0	-	-
11.0	28.0	6.0	-	-	19.0	3.0	-	19.0	-	-
11.0	28.0	7.0	296.0	44.0	20.0	3.0	141.8	22.1	108.0	100.7
11.0	28.0	8.0	591.0	82.0	21.0	3.0	395.9	30.5	314.3	301.7
11.0	28.0	9.0	507.0	155.0	22.0	3.0	524.1	35.8	418.6	402.7
11.0	28.0	10.0	424.0	232.0	22.0	3.0	610.1	38.5	484.6	466.5
11.0	28.0	11.0	541.0	223.0	23.0	3.0	734.5	43.0	571.2	549.7
11.0	28.0	12.0	368.0	287.0	23.0	3.0	647.3	41.2	508.3	489.3
11.0	28.0	13.0	331.0	268.0	23.0	4.0	575.2	37.5	459.7	442.4
11.0	28.0	14.0	305.0	216.0	23.0	4.0	460.8	34.6	372.4	358.0
11.0	28.0	15.0	264.0	144.0	22.0	3.0	308.2	30.3	250.9	240.1
11.0	28.0	16.0	66.0	69.0	21.0	3.0	99.8	23.1	83.0	76.3
11.0	28.0	17.0	-	-	20.0	3.0	-	20.0	-	-
11.0	28.0	18.0	-	-	20.0	4.0	-	20.0	-	-
11.0	28.0	19.0	-	-	19.0	4.0	-	19.0	-	-
11.0	28.0	20.0	-	-	19.0	5.0	-	19.0	-	-
11.0	28.0	21.0	-	-	18.0	6.0	-	18.0	-	-
11.0	28.0	22.0	-	-	17.0	6.0	-	17.0	-	-
11.0	28.0	23.0	-	-	16.0	6.0	-	16.0	-	-
11.0	29.0	-	-	-	16.0	6.0	-	16.0	-	-
11.0	29.0	1.0	-	-	15.0	6.0	-	15.0	-	-
11.0	29.0	2.0	-	-	15.0	5.0	-	15.0	-	-
11.0	29.0	3.0	-	-	15.0	5.0	-	15.0	-	-
11.0	29.0	4.0	-	-	15.0	5.0	-	15.0	-	-
11.0	29.0	5.0	-	-	15.0	5.0	-	15.0	-	-
11.0	29.0	6.0	-	-	15.0	5.0	-	15.0	-	-
11.0	29.0	7.0	465.0	37.0	15.0	5.0	181.4	17.5	136.6	128.7
11.0	29.0	8.0	753.0	64.0	16.0	5.0	452.3	25.1	366.6	352.4
11.0	29.0	9.0	864.0	79.0	17.0	5.0	678.8	31.8	551.0	530.4
11.0	29.0	10.0	915.0	88.0	18.0	4.0	836.8	39.0	662.1	636.9
11.0	29.0	11.0	935.0	94.0	19.0	4.0	926.5	42.5	721.9	694.1
11.0	29.0	12.0	931.0	96.0	20.0	3.0	934.1	46.2	714.2	686.8
11.0	29.0	13.0	904.0	96.0	20.0	3.0	862.2	44.4	664.4	639.1
11.0	29.0	14.0	857.0	87.0	20.0	2.0	721.5	43.3	555.5	534.7
11.0	29.0	15.0	758.0	74.0	19.0	2.0	510.2	35.7	398.9	383.7
11.0	29.0	16.0	529.0	50.0	18.0	1.0	249.4	28.0	188.0	178.9
11.0	29.0	17.0	-	-	17.0	1.0	-	17.0	-	-
11.0	29.0	18.0	-	-	17.0	1.0	-	17.0	-	-
11.0	29.0	19.0	-	-	17.0	1.0	-	17.0	-	-
11.0	29.0	20.0	-	-	17.0	1.0	-	17.0	-	-
11.0	29.0	21.0	-	-	16.0	1.0	-	16.0	-	-
11.0	29.0	22.0	-	-	16.0	1.0	-	16.0	-	-
11.0	29.0	23.0	-	-	16.0	1.0	-	16.0	-	-

11.0	30.0	-	-	-	15.0	1.0	-	15.0	-	-
11.0	30.0	1.0	-	-	15.0	2.0	-	15.0	-	-
11.0	30.0	2.0	-	-	14.0	3.0	-	14.0	-	-
11.0	30.0	3.0	-	-	14.0	2.0	-	14.0	-	-
11.0	30.0	4.0	-	-	14.0	2.0	-	14.0	-	-
11.0	30.0	5.0	-	-	14.0	2.0	-	14.0	-	-
11.0	30.0	6.0	-	-	14.0	2.0	-	14.0	-	-
11.0	30.0	7.0	417.0	37.0	15.0	2.0	167.2	18.0	126.2	118.5
11.0	30.0	8.0	707.0	67.0	16.0	3.0	433.5	26.7	348.9	335.3
11.0	30.0	9.0	826.0	83.0	17.0	4.0	656.3	33.0	529.8	509.9
11.0	30.0	10.0	877.0	93.0	18.0	4.0	816.2	38.5	647.5	623.0
11.0	30.0	11.0	895.0	98.0	19.0	4.0	894.9	41.7	700.1	673.3
11.0	30.0	12.0	886.0	100.0	19.0	4.0	898.1	42.0	701.8	674.9
11.0	30.0	13.0	850.0	100.0	20.0	4.0	827.5	41.3	647.9	623.3
11.0	30.0	14.0	781.0	97.0	19.0	3.0	678.4	38.4	535.7	515.6
11.0	30.0	15.0	664.0	83.0	19.0	3.0	471.0	32.4	374.9	360.4
11.0	30.0	16.0	447.0	53.0	18.0	3.0	224.6	24.1	173.8	165.0
11.0	30.0	17.0	-	-	17.0	3.0	-	17.0	-	-
11.0	30.0	18.0	-	-	17.0	3.0	-	17.0	-	-
11.0	30.0	19.0	-	-	20.0	2.0	-	20.0	-	-
11.0	30.0	20.0	-	-	20.0	2.0	-	20.0	-	-
11.0	30.0	21.0	-	-	19.0	2.0	-	19.0	-	-
11.0	30.0	22.0	-	-	19.0	2.0	-	19.0	-	-
11.0	30.0	23.0	-	-	18.0	3.0	-	18.0	-	-
12.0	1.0	-	-	-	18.0	3.0	-	18.0	-	-
12.0	1.0	1.0	-	-	17.0	3.0	-	17.0	-	-
12.0	1.0	2.0	-	-	17.0	3.0	-	17.0	-	-
12.0	1.0	3.0	-	-	16.0	3.0	-	16.0	-	-
12.0	1.0	4.0	-	-	16.0	3.0	-	16.0	-	-
12.0	1.0	5.0	-	-	15.0	3.0	-	15.0	-	-
12.0	1.0	6.0	-	-	15.0	3.0	-	15.0	-	-
12.0	1.0	7.0	400.0	37.0	16.0	4.0	161.6	18.3	121.9	114.3
12.0	1.0	8.0	714.0	65.0	16.0	5.0	431.3	24.6	350.1	336.5
12.0	1.0	9.0	854.0	77.0	17.0	5.0	666.5	31.5	541.6	521.3
12.0	1.0	10.0	929.0	81.0	18.0	5.0	836.6	36.8	669.0	643.5
12.0	1.0	11.0	961.0	83.0	19.0	5.0	933.5	40.3	735.5	707.1
12.0	1.0	12.0	968.0	83.0	19.0	5.0	949.5	40.9	746.1	717.2
12.0	1.0	13.0	949.0	81.0	19.0	4.0	880.9	41.8	688.0	661.7
12.0	1.0	14.0	903.0	75.0	19.0	4.0	735.6	38.1	581.2	559.4
12.0	1.0	15.0	810.0	64.0	19.0	3.0	528.1	34.1	415.6	399.9
12.0	1.0	16.0	600.0	44.0	18.0	3.0	266.2	25.4	201.8	192.3
12.0	1.0	17.0	-	-	16.0	3.0	-	16.0	-	-
12.0	1.0	18.0	-	-	16.0	3.0	-	16.0	-	-
12.0	1.0	19.0	-	-	16.0	3.0	-	16.0	-	-
12.0	1.0	20.0	-	-	16.0	3.0	-	16.0	-	-
12.0	1.0	21.0	-	-	15.0	3.0	-	15.0	-	-
12.0	1.0	22.0	-	-	15.0	3.0	-	15.0	-	-
12.0	1.0	23.0	-	-	15.0	3.0	-	15.0	-	-
12.0	2.0	-	-	-	15.0	3.0	-	15.0	-	-
12.0	2.0	1.0	-	-	14.0	3.0	-	14.0	-	-
12.0	2.0	2.0	-	-	14.0	3.0	-	14.0	-	-
12.0	2.0	3.0	-	-	14.0	4.0	-	14.0	-	-
12.0	2.0	4.0	-	-	14.0	4.0	-	14.0	-	-
12.0	2.0	5.0	-	-	14.0	4.0	-	14.0	-	-
12.0	2.0	6.0	-	-	15.0	4.0	-	15.0	-	-
12.0	2.0	7.0	426.0	35.0	16.0	4.0	165.9	18.4	124.2	116.5
12.0	2.0	8.0	716.0	65.0	18.0	4.0	430.8	27.6	344.5	331.0
12.0	2.0	9.0	838.0	80.0	19.0	5.0	657.6	33.3	529.6	509.8
12.0	2.0	10.0	882.0	95.0	20.0	5.0	819.4	38.4	650.0	625.4
12.0	2.0	11.0	912.0	99.0	20.0	5.0	908.2	40.8	714.0	686.6
12.0	2.0	12.0	918.0	99.0	20.0	5.0	923.1	41.3	724.0	696.2
12.0	2.0	13.0	894.0	99.0	20.0	5.0	861.6	40.0	679.2	653.3
12.0	2.0	14.0	854.0	88.0	20.0	4.0	720.2	38.7	567.7	546.4
12.0	2.0	15.0	766.0	73.0	19.0	4.0	514.3	32.3	408.9	393.3
12.0	2.0	16.0	561.0	48.0	18.0	3.0	259.7	25.2	198.2	188.8
12.0	2.0	17.0	-	-	17.0	3.0	-	17.0	-	-
12.0	2.0	18.0	-	-	16.0	3.0	-	16.0	-	-
12.0	2.0	19.0	-	-	16.0	3.0	-	16.0	-	-
12.0	2.0	20.0	-	-	16.0	2.0	-	16.0	-	-
12.0	2.0	21.0	-	-	16.0	2.0	-	16.0	-	-
12.0	2.0	22.0	-	-	16.0	2.0	-	16.0	-	-
12.0	2.0	23.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	-	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	1.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	2.0	-	-	16.0	3.0	-	16.0	-	-
12.0	3.0	3.0	-	-	16.0	3.0	-	16.0	-	-
12.0	3.0	4.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	5.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	6.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	7.0	390.0	35.0	18.0	2.0	155.3	20.7	115.4	108.0
12.0	3.0	8.0	689.0	66.0	19.0	2.0	419.4	30.5	330.8	317.7

12.0	3.0	9.0	810.0	83.0	20.0	2.0	640.9	39.2	501.3	482.5
12.0	3.0	10.0	878.0	90.0	21.0	2.0	808.9	45.8	617.8	594.5
12.0	3.0	11.0	903.0	95.0	22.0	2.0	894.6	49.8	670.9	645.4
12.0	3.0	12.0	906.0	96.0	22.0	2.0	908.3	50.5	678.9	653.0
12.0	3.0	13.0	873.0	98.0	22.0	2.0	842.8	48.8	634.8	610.7
12.0	3.0	14.0	824.0	89.0	22.0	2.0	700.0	44.5	535.5	515.4
12.0	3.0	15.0	724.0	75.0	21.0	2.0	495.8	37.1	385.2	370.4
12.0	3.0	16.0	507.0	49.0	20.0	2.0	242.6	27.7	183.6	174.5
12.0	3.0	17.0	-	-	20.0	2.0	-	20.0	-	-
12.0	3.0	18.0	-	-	20.0	2.0	-	20.0	-	-
12.0	3.0	19.0	-	-	19.0	2.0	-	19.0	-	-
12.0	3.0	20.0	-	-	19.0	2.0	-	19.0	-	-
12.0	3.0	21.0	-	-	19.0	2.0	-	19.0	-	-
12.0	3.0	22.0	-	-	19.0	2.0	-	19.0	-	-
12.0	3.0	23.0	-	-	19.0	2.0	-	19.0	-	-
12.0	4.0	-	-	-	19.0	2.0	-	19.0	-	-
12.0	4.0	1.0	-	-	19.0	2.0	-	19.0	-	-
12.0	4.0	2.0	-	-	19.0	2.0	-	19.0	-	-
12.0	4.0	3.0	-	-	19.0	2.0	-	19.0	-	-
12.0	4.0	4.0	-	-	19.0	2.0	-	19.0	-	-
12.0	4.0	5.0	-	-	19.0	2.0	-	19.0	-	-
12.0	4.0	6.0	-	-	19.0	2.0	-	19.0	-	-
12.0	4.0	7.0	415.0	32.0	20.0	2.0	158.1	22.8	115.4	108.0
12.0	4.0	8.0	716.0	60.0	21.0	2.0	422.4	32.6	329.1	316.1
12.0	4.0	9.0	836.0	75.0	22.0	2.0	647.3	41.3	500.6	481.8
12.0	4.0	10.0	894.0	83.0	23.0	2.0	806.5	47.7	609.9	586.9
12.0	4.0	11.0	915.0	89.0	23.0	2.0	896.8	50.8	669.0	643.5
12.0	4.0	12.0	912.0	91.0	23.0	1.0	907.0	56.2	657.2	632.3
12.0	4.0	13.0	875.0	95.0	24.0	1.0	840.6	55.2	611.5	588.5
12.0	4.0	14.0	814.0	91.0	23.0	1.0	695.1	49.5	518.2	498.8
12.0	4.0	15.0	706.0	78.0	23.0	1.0	489.7	42.1	371.1	356.8
12.0	4.0	16.0	474.0	52.0	22.0	2.0	234.7	29.5	176.9	168.0
12.0	4.0	17.0	-	-	21.0	2.0	-	21.0	-	-
12.0	4.0	18.0	-	-	21.0	2.0	-	21.0	-	-
12.0	4.0	19.0	-	-	21.0	2.0	-	21.0	-	-
12.0	4.0	20.0	-	-	20.0	2.0	-	20.0	-	-
12.0	4.0	21.0	-	-	20.0	2.0	-	20.0	-	-
12.0	4.0	22.0	-	-	20.0	3.0	-	20.0	-	-
12.0	4.0	23.0	-	-	20.0	3.0	-	20.0	-	-
12.0	5.0	-	-	-	20.0	3.0	-	20.0	-	-
12.0	5.0	1.0	-	-	20.0	3.0	-	20.0	-	-
12.0	5.0	2.0	-	-	19.0	3.0	-	19.0	-	-
12.0	5.0	3.0	-	-	19.0	3.0	-	19.0	-	-
12.0	5.0	4.0	-	-	19.0	3.0	-	19.0	-	-
12.0	5.0	5.0	-	-	19.0	3.0	-	19.0	-	-
12.0	5.0	6.0	-	-	19.0	3.0	-	19.0	-	-
12.0	5.0	7.0	365.0	33.0	21.0	3.0	145.0	23.2	106.3	99.1
12.0	5.0	8.0	657.0	65.0	22.0	3.0	400.1	31.7	313.6	301.0
12.0	5.0	9.0	772.0	85.0	23.0	4.0	615.1	37.8	484.3	466.1
12.0	5.0	10.0	819.0	99.0	24.0	4.0	769.9	43.1	596.3	573.9
12.0	5.0	11.0	830.0	112.0	24.0	5.0	855.2	43.5	663.0	637.8
12.0	5.0	12.0	817.0	119.0	25.0	5.0	861.8	44.8	663.7	638.5
12.0	5.0	13.0	568.0	192.0	25.0	5.0	695.3	41.2	545.1	524.7
12.0	5.0	14.0	-	112.0	25.0	4.0	107.7	28.2	90.2	83.3
12.0	5.0	15.0	-	37.0	24.0	4.0	35.1	23.6	30.0	24.4
12.0	5.0	16.0	-	47.0	23.0	3.0	45.2	22.6	38.9	33.1
12.0	5.0	17.0	-	-	23.0	3.0	-	23.0	-	-
12.0	5.0	18.0	-	-	22.0	3.0	-	22.0	-	-
12.0	5.0	19.0	-	-	22.0	3.0	-	22.0	-	-
12.0	5.0	20.0	-	-	22.0	3.0	-	22.0	-	-
12.0	5.0	21.0	-	-	21.0	3.0	-	21.0	-	-
12.0	5.0	22.0	-	-	21.0	3.0	-	21.0	-	-
12.0	5.0	23.0	-	-	21.0	3.0	-	21.0	-	-
12.0	6.0	-	-	-	21.0	3.0	-	21.0	-	-
12.0	6.0	1.0	-	-	20.0	3.0	-	20.0	-	-
12.0	6.0	2.0	-	-	20.0	3.0	-	20.0	-	-
12.0	6.0	3.0	-	-	20.0	3.0	-	20.0	-	-
12.0	6.0	4.0	-	-	20.0	3.0	-	20.0	-	-
12.0	6.0	5.0	-	-	20.0	2.0	-	20.0	-	-
12.0	6.0	6.0	-	-	20.0	2.0	-	20.0	-	-
12.0	6.0	7.0	292.0	34.0	21.0	2.0	126.3	22.8	94.0	87.1
12.0	6.0	8.0	608.0	67.0	22.0	3.0	377.7	31.0	297.2	285.1
12.0	6.0	9.0	745.0	83.0	22.0	3.0	593.7	37.6	467.8	450.2
12.0	6.0	10.0	46.0	241.0	23.0	3.0	287.9	31.2	237.6	227.2
12.0	6.0	11.0	23.0	247.0	23.0	3.0	265.4	29.6	221.0	211.0
12.0	6.0	12.0	5.0	200.0	23.0	3.0	200.5	27.7	168.4	159.7
12.0	6.0	13.0	44.0	255.0	23.0	4.0	302.7	29.6	251.8	241.0
12.0	6.0	14.0	-	145.0	22.0	5.0	141.3	24.5	120.5	113.0
12.0	6.0	15.0	-	11.0	22.0	6.0	10.4	21.2	9.0	3.8
12.0	6.0	16.0	-	42.0	21.0	6.0	39.9	20.5	34.7	29.0
12.0	6.0	17.0	-	-	21.0	6.0	-	21.0	-	-

12.0	6.0	18.0	-	-	21.0	6.0	-	21.0	-	-
12.0	6.0	19.0	-	-	21.0	6.0	-	21.0	-	-
12.0	6.0	20.0	-	-	21.0	6.0	-	21.0	-	-
12.0	6.0	21.0	-	-	21.0	6.0	-	21.0	-	-
12.0	6.0	22.0	-	-	21.0	6.0	-	21.0	-	-
12.0	6.0	23.0	-	-	21.0	5.0	-	21.0	-	-
12.0	7.0	-	-	-	21.0	5.0	-	21.0	-	-
12.0	7.0	1.0	-	-	21.0	5.0	-	21.0	-	-
12.0	7.0	2.0	-	-	21.0	5.0	-	21.0	-	-
12.0	7.0	3.0	-	-	21.0	5.0	-	21.0	-	-
12.0	7.0	4.0	-	-	21.0	5.0	-	21.0	-	-
12.0	7.0	5.0	-	-	21.0	5.0	-	21.0	-	-
12.0	7.0	6.0	-	-	21.0	6.0	-	21.0	-	-
12.0	7.0	7.0	122.0	42.0	21.0	6.0	86.1	21.4	68.4	61.9
12.0	7.0	8.0	-	65.0	22.0	6.0	62.0	22.1	53.5	47.4
12.0	7.0	9.0	97.0	197.0	23.0	7.0	270.3	27.0	226.8	216.6
12.0	7.0	10.0	240.0	258.0	23.0	7.0	469.5	31.0	387.2	372.4
12.0	7.0	11.0	717.0	154.0	23.0	7.0	807.5	37.6	645.1	620.6
12.0	7.0	12.0	77.0	297.0	23.0	7.0	379.8	30.2	315.1	302.5
12.0	7.0	13.0	-	133.0	23.0	7.0	128.2	24.8	109.1	101.9
12.0	7.0	14.0	-	125.0	23.0	7.0	120.8	24.3	103.1	96.0
12.0	7.0	15.0	-	52.0	22.0	7.0	49.3	21.9	42.6	36.7
12.0	7.0	16.0	16.0	66.0	22.0	7.0	72.0	22.2	61.4	55.1
12.0	7.0	17.0	-	-	22.0	7.0	-	22.0	-	-
12.0	7.0	18.0	-	-	22.0	7.0	-	22.0	-	-
12.0	7.0	19.0	-	-	22.0	7.0	-	22.0	-	-
12.0	7.0	20.0	-	-	22.0	7.0	-	22.0	-	-
12.0	7.0	21.0	-	-	22.0	8.0	-	22.0	-	-
12.0	7.0	22.0	-	-	22.0	8.0	-	22.0	-	-
12.0	7.0	23.0	-	-	22.0	8.0	-	22.0	-	-
12.0	8.0	-	-	-	22.0	8.0	-	22.0	-	-
12.0	8.0	1.0	-	-	22.0	7.0	-	22.0	-	-
12.0	8.0	2.0	-	-	22.0	7.0	-	22.0	-	-
12.0	8.0	3.0	-	-	22.0	7.0	-	22.0	-	-
12.0	8.0	4.0	-	-	22.0	6.0	-	22.0	-	-
12.0	8.0	5.0	-	-	22.0	6.0	-	22.0	-	-
12.0	8.0	6.0	-	-	22.0	6.0	-	22.0	-	-
12.0	8.0	7.0	151.0	40.0	22.0	6.0	91.1	22.6	70.9	64.4
12.0	8.0	8.0	500.0	87.0	23.0	6.0	345.8	29.0	275.9	264.5
12.0	8.0	9.0	15.0	167.0	23.0	6.0	175.6	26.0	148.5	140.3
12.0	8.0	10.0	-	153.0	24.0	6.0	148.8	26.1	125.9	118.2
12.0	8.0	11.0	223.0	299.0	24.0	6.0	518.0	33.6	422.5	406.5
12.0	8.0	12.0	334.0	286.0	24.0	6.0	614.2	36.2	494.5	475.9
12.0	8.0	13.0	368.0	253.0	24.0	5.0	588.1	37.2	470.6	452.9
12.0	8.0	14.0	464.0	178.0	24.0	4.0	541.8	37.6	430.7	414.4
12.0	8.0	15.0	-	115.0	24.0	4.0	112.9	26.9	95.2	88.2
12.0	8.0	16.0	358.0	61.0	23.0	3.0	204.5	27.3	158.1	149.7
12.0	8.0	17.0	-	-	23.0	3.0	-	23.0	-	-
12.0	8.0	18.0	-	-	23.0	3.0	-	23.0	-	-
12.0	8.0	19.0	-	-	23.0	4.0	-	23.0	-	-
12.0	8.0	20.0	-	-	23.0	4.0	-	23.0	-	-
12.0	8.0	21.0	-	-	23.0	4.0	-	23.0	-	-
12.0	8.0	22.0	-	-	23.0	4.0	-	23.0	-	-
12.0	8.0	23.0	-	-	22.0	4.0	-	22.0	-	-
12.0	9.0	-	-	-	22.0	4.0	-	22.0	-	-
12.0	9.0	1.0	-	-	22.0	3.0	-	22.0	-	-
12.0	9.0	2.0	-	-	22.0	3.0	-	22.0	-	-
12.0	9.0	3.0	-	-	22.0	3.0	-	22.0	-	-
12.0	9.0	4.0	-	-	22.0	3.0	-	22.0	-	-
12.0	9.0	5.0	-	-	22.0	3.0	-	22.0	-	-
12.0	9.0	6.0	-	-	22.0	3.0	-	22.0	-	-
12.0	9.0	7.0	79.0	34.0	22.0	3.0	64.2	22.0	51.4	45.4
12.0	9.0	8.0	589.0	71.0	23.0	4.0	369.6	30.9	290.8	278.9
12.0	9.0	9.0	730.0	89.0	24.0	4.0	588.8	38.1	462.7	445.3
12.0	9.0	10.0	798.0	100.0	25.0	4.0	749.5	43.5	579.1	557.3
12.0	9.0	11.0	828.0	106.0	26.0	3.0	842.8	49.2	634.2	610.2
12.0	9.0	12.0	476.0	246.0	26.0	3.0	703.5	45.9	539.1	518.9
12.0	9.0	13.0	772.0	119.0	26.0	2.0	782.0	50.1	584.8	562.9
12.0	9.0	14.0	22.0	193.0	26.0	2.0	207.6	34.0	169.0	160.4
12.0	9.0	15.0	-	11.0	25.0	1.0	10.4	24.4	8.9	3.6
12.0	9.0	16.0	-	4.0	24.0	1.0	3.8	21.7	3.3	-
12.0	9.0	17.0	-	-	24.0	1.0	-	24.0	-	-
12.0	9.0	18.0	-	-	23.0	1.0	-	23.0	-	-
12.0	9.0	19.0	-	-	23.0	1.0	-	23.0	-	-
12.0	9.0	20.0	-	-	22.0	1.0	-	22.0	-	-
12.0	9.0	21.0	-	-	22.0	1.0	-	22.0	-	-
12.0	9.0	22.0	-	-	22.0	2.0	-	22.0	-	-
12.0	9.0	23.0	-	-	22.0	2.0	-	22.0	-	-
12.0	10.0	-	-	-	22.0	2.0	-	22.0	-	-
12.0	10.0	1.0	-	-	22.0	3.0	-	22.0	-	-
12.0	10.0	2.0	-	-	22.0	3.0	-	22.0	-	-

12.0	10.0	3.0	-	-	21.0	3.0	-	21.0	-	-
12.0	10.0	4.0	-	-	21.0	3.0	-	21.0	-	-
12.0	10.0	5.0	-	-	21.0	2.0	-	21.0	-	-
12.0	10.0	6.0	-	-	21.0	2.0	-	21.0	-	-
12.0	10.0	7.0	172.0	36.0	22.0	2.0	96.1	22.9	73.9	67.4
12.0	10.0	8.0	489.0	87.0	23.0	2.0	336.4	31.8	264.6	253.4
12.0	10.0	9.0	477.0	148.0	23.0	1.0	485.8	39.9	379.4	364.8
12.0	10.0	10.0	537.0	186.0	24.0	1.0	639.7	46.8	486.5	468.2
12.0	10.0	11.0	774.0	128.0	25.0	1.0	824.3	54.3	603.4	580.6
12.0	10.0	12.0	775.0	132.0	25.0	1.0	841.0	55.7	611.1	588.0
12.0	10.0	13.0	718.0	142.0	25.0	1.0	767.4	53.6	563.4	542.3
12.0	10.0	14.0	639.0	136.0	25.0	1.0	624.8	48.8	468.1	450.5
12.0	10.0	15.0	499.0	118.0	25.0	1.0	419.4	41.4	321.0	308.2
12.0	10.0	16.0	257.0	72.0	24.0	1.0	177.3	30.9	136.8	128.9
12.0	10.0	17.0	-	-	23.0	1.0	-	23.0	-	-
12.0	10.0	18.0	-	-	23.0	1.0	-	23.0	-	-
12.0	10.0	19.0	-	-	23.0	1.0	-	23.0	-	-
12.0	10.0	20.0	-	-	22.0	1.0	-	22.0	-	-
12.0	10.0	21.0	-	-	22.0	1.0	-	22.0	-	-
12.0	10.0	22.0	-	-	22.0	1.0	-	22.0	-	-
12.0	10.0	23.0	-	-	22.0	-	-	22.0	-	-
12.0	11.0	-	-	-	22.0	-	-	22.0	-	-
12.0	11.0	1.0	-	-	21.0	-	-	21.0	-	-
12.0	11.0	2.0	-	-	21.0	-	-	21.0	-	-
12.0	11.0	3.0	-	-	20.0	1.0	-	20.0	-	-
12.0	11.0	4.0	-	-	20.0	1.0	-	20.0	-	-
12.0	11.0	5.0	-	-	20.0	2.0	-	20.0	-	-
12.0	11.0	6.0	-	-	20.0	2.0	-	20.0	-	-
12.0	11.0	7.0	151.0	36.0	20.0	3.0	90.6	20.6	71.0	64.5
12.0	11.0	8.0	467.0	91.0	20.0	4.0	329.8	26.9	265.7	254.5
12.0	11.0	9.0	624.0	120.0	20.0	4.0	552.5	33.1	445.5	428.7
12.0	11.0	10.0	38.0	231.0	20.0	4.0	270.6	26.8	228.1	217.9
12.0	11.0	11.0	698.0	165.0	21.0	4.0	800.4	39.9	631.8	607.9
12.0	11.0	12.0	724.0	158.0	21.0	4.0	825.9	42.0	645.4	621.0
12.0	11.0	13.0	495.0	217.0	21.0	4.0	662.8	38.2	527.7	507.9
12.0	11.0	14.0	343.0	205.0	21.0	4.0	477.0	33.2	387.8	373.0
12.0	11.0	15.0	-	119.0	20.0	3.0	117.1	23.1	100.5	93.4
12.0	11.0	16.0	-	44.0	20.0	2.0	42.0	19.7	36.6	30.8
12.0	11.0	17.0	-	-	19.0	2.0	-	19.0	-	-
12.0	11.0	18.0	-	-	19.0	2.0	-	19.0	-	-
12.0	11.0	19.0	-	-	19.0	2.0	-	19.0	-	-
12.0	11.0	20.0	-	-	19.0	3.0	-	19.0	-	-
12.0	11.0	21.0	-	-	18.0	4.0	-	18.0	-	-
12.0	11.0	22.0	-	-	18.0	4.0	-	18.0	-	-
12.0	11.0	23.0	-	-	17.0	5.0	-	17.0	-	-
12.0	12.0	-	-	-	17.0	5.0	-	17.0	-	-
12.0	12.0	1.0	-	-	16.0	5.0	-	16.0	-	-
12.0	12.0	2.0	-	-	15.0	5.0	-	15.0	-	-
12.0	12.0	3.0	-	-	15.0	5.0	-	15.0	-	-
12.0	12.0	4.0	-	-	14.0	5.0	-	14.0	-	-
12.0	12.0	5.0	-	-	14.0	4.0	-	14.0	-	-
12.0	12.0	6.0	-	-	14.0	4.0	-	14.0	-	-
12.0	12.0	7.0	450.0	27.0	14.0	4.0	156.4	16.2	115.3	107.9
12.0	12.0	8.0	777.0	52.0	15.0	4.0	430.2	24.6	345.8	332.2
12.0	12.0	9.0	899.0	65.0	16.0	5.0	660.0	30.3	537.7	517.5
12.0	12.0	10.0	951.0	75.0	17.0	5.0	830.7	35.7	667.4	642.0
12.0	12.0	11.0	972.0	81.0	17.0	4.0	927.9	40.6	729.7	701.6
12.0	12.0	12.0	972.0	83.0	18.0	4.0	944.9	42.3	737.3	708.8
12.0	12.0	13.0	956.0	80.0	18.0	3.0	882.7	43.1	684.7	658.6
12.0	12.0	14.0	909.0	74.0	18.0	3.0	741.0	39.2	582.3	560.4
12.0	12.0	15.0	389.0	126.0	17.0	3.0	368.2	27.9	302.1	289.8
12.0	12.0	16.0	611.0	44.0	16.0	3.0	277.8	23.1	214.3	204.5
12.0	12.0	17.0	-	-	15.0	2.0	-	15.0	-	-
12.0	12.0	18.0	-	-	15.0	2.0	-	15.0	-	-
12.0	12.0	19.0	-	-	15.0	2.0	-	15.0	-	-
12.0	12.0	20.0	-	-	15.0	2.0	-	15.0	-	-
12.0	12.0	21.0	-	-	14.0	3.0	-	14.0	-	-
12.0	12.0	22.0	-	-	14.0	3.0	-	14.0	-	-
12.0	12.0	23.0	-	-	14.0	4.0	-	14.0	-	-
12.0	13.0	-	-	-	14.0	4.0	-	14.0	-	-
12.0	13.0	1.0	-	-	14.0	4.0	-	14.0	-	-
12.0	13.0	2.0	-	-	14.0	4.0	-	14.0	-	-
12.0	13.0	3.0	-	-	14.0	4.0	-	14.0	-	-
12.0	13.0	4.0	-	-	14.0	5.0	-	14.0	-	-
12.0	13.0	5.0	-	-	14.0	5.0	-	14.0	-	-
12.0	13.0	6.0	-	-	14.0	5.0	-	14.0	-	-
12.0	13.0	7.0	372.0	27.0	16.0	5.0	138.3	17.6	102.6	95.5
12.0	13.0	8.0	708.0	56.0	17.0	5.0	401.3	24.9	322.4	309.6
12.0	13.0	9.0	842.0	70.0	18.0	5.0	631.8	31.7	511.5	492.3
12.0	13.0	10.0	907.0	77.0	19.0	5.0	797.6	36.9	637.0	612.9
12.0	13.0	11.0	936.0	82.0	20.0	4.0	897.6	42.7	698.3	671.6

12.0	13.0	12.0	940.0	83.0	20.0	4.0	916.8	43.4	711.0	683.7
12.0	13.0	13.0	919.0	83.0	20.0	4.0	855.9	42.1	667.5	642.1
12.0	13.0	14.0	873.0	77.0	20.0	4.0	719.3	38.6	567.1	545.8
12.0	13.0	15.0	780.0	66.0	19.0	4.0	520.9	32.5	414.3	398.5
12.0	13.0	16.0	575.0	46.0	18.0	4.0	270.1	24.7	207.7	198.1
12.0	13.0	17.0	-	-	16.0	4.0	-	16.0	-	-
12.0	13.0	18.0	-	-	16.0	4.0	-	16.0	-	-
12.0	13.0	19.0	-	-	16.0	4.0	-	16.0	-	-
12.0	13.0	20.0	-	-	15.0	4.0	-	15.0	-	-
12.0	13.0	21.0	-	-	15.0	3.0	-	15.0	-	-
12.0	13.0	22.0	-	-	15.0	3.0	-	15.0	-	-
12.0	13.0	23.0	-	-	15.0	3.0	-	15.0	-	-
12.0	14.0	-	-	-	15.0	3.0	-	15.0	-	-
12.0	14.0	1.0	-	-	15.0	3.0	-	15.0	-	-
12.0	14.0	2.0	-	-	16.0	3.0	-	16.0	-	-
12.0	14.0	3.0	-	-	16.0	3.0	-	16.0	-	-
12.0	14.0	4.0	-	-	16.0	3.0	-	16.0	-	-
12.0	14.0	5.0	-	-	16.0	3.0	-	16.0	-	-
12.0	14.0	6.0	-	-	16.0	3.0	-	16.0	-	-
12.0	14.0	7.0	304.0	30.0	18.0	3.0	123.6	19.5	92.3	85.4
12.0	14.0	8.0	651.0	63.0	19.0	3.0	383.4	28.1	303.9	291.6
12.0	14.0	9.0	790.0	80.0	20.0	3.0	608.6	36.1	482.3	464.2
12.0	14.0	10.0	849.0	93.0	21.0	3.0	775.5	42.1	603.2	580.5
12.0	14.0	11.0	871.0	102.0	21.0	3.0	870.9	45.1	669.3	643.8
12.0	14.0	12.0	869.0	106.0	21.0	3.0	887.9	45.8	680.1	654.2
12.0	14.0	13.0	842.0	105.0	21.0	2.0	824.1	47.2	625.8	602.1
12.0	14.0	14.0	798.0	95.0	21.0	2.0	691.5	43.3	532.8	512.8
12.0	14.0	15.0	703.0	78.0	20.0	2.0	494.4	36.1	386.9	372.1
12.0	14.0	16.0	485.0	53.0	19.0	2.0	246.1	26.8	189.0	179.8
12.0	14.0	17.0	-	-	19.0	3.0	-	19.0	-	-
12.0	14.0	18.0	-	-	19.0	3.0	-	19.0	-	-
12.0	14.0	19.0	-	-	19.0	4.0	-	19.0	-	-
12.0	14.0	20.0	-	-	20.0	4.0	-	20.0	-	-
12.0	14.0	21.0	-	-	20.0	4.0	-	20.0	-	-
12.0	14.0	22.0	-	-	20.0	4.0	-	20.0	-	-
12.0	14.0	23.0	-	-	20.0	4.0	-	20.0	-	-
12.0	15.0	-	-	-	20.0	4.0	-	20.0	-	-
12.0	15.0	1.0	-	-	20.0	4.0	-	20.0	-	-
12.0	15.0	2.0	-	-	20.0	3.0	-	20.0	-	-
12.0	15.0	3.0	-	-	20.0	3.0	-	20.0	-	-
12.0	15.0	4.0	-	-	20.0	3.0	-	20.0	-	-
12.0	15.0	5.0	-	-	20.0	3.0	-	20.0	-	-
12.0	15.0	6.0	-	-	20.0	3.0	-	20.0	-	-
12.0	15.0	7.0	-	26.0	21.0	4.0	25.0	20.0	21.8	16.3
12.0	15.0	8.0	240.0	104.0	22.0	4.0	230.5	26.3	188.4	179.3
12.0	15.0	9.0	112.0	190.0	23.0	5.0	279.4	28.4	232.6	222.3
12.0	15.0	10.0	-	126.0	23.0	6.0	121.4	24.7	103.4	96.3
12.0	15.0	11.0	6.0	201.0	23.0	6.0	202.7	26.1	171.6	162.8
12.0	15.0	12.0	255.0	299.0	24.0	6.0	559.8	34.5	454.5	437.4
12.0	15.0	13.0	27.0	237.0	23.0	6.0	258.4	28.1	216.6	206.7
12.0	15.0	14.0	-	26.0	23.0	6.0	24.7	22.7	21.2	15.7
12.0	15.0	15.0	643.0	84.0	23.0	5.0	468.5	32.2	374.1	359.7
12.0	15.0	16.0	157.0	70.0	22.0	5.0	140.3	24.8	113.4	106.0
12.0	15.0	17.0	-	-	22.0	5.0	-	22.0	-	-
12.0	15.0	18.0	-	-	22.0	4.0	-	22.0	-	-
12.0	15.0	19.0	-	-	22.0	4.0	-	22.0	-	-
12.0	15.0	20.0	-	-	21.0	4.0	-	21.0	-	-
12.0	15.0	21.0	-	-	21.0	4.0	-	21.0	-	-
12.0	15.0	22.0	-	-	21.0	4.0	-	21.0	-	-
12.0	15.0	23.0	-	-	21.0	4.0	-	21.0	-	-
12.0	16.0	-	-	-	21.0	4.0	-	21.0	-	-
12.0	16.0	1.0	-	-	21.0	4.0	-	21.0	-	-
12.0	16.0	2.0	-	-	21.0	4.0	-	21.0	-	-
12.0	16.0	3.0	-	-	21.0	3.0	-	21.0	-	-
12.0	16.0	4.0	-	-	21.0	3.0	-	21.0	-	-
12.0	16.0	5.0	-	-	20.0	3.0	-	20.0	-	-
12.0	16.0	6.0	-	-	20.0	3.0	-	20.0	-	-
12.0	16.0	7.0	-	3.0	20.0	3.0	2.8	18.2	2.5	-
12.0	16.0	8.0	-	16.0	20.0	4.0	15.1	18.7	13.3	7.9
12.0	16.0	9.0	678.0	100.0	20.0	3.0	559.7	33.5	449.6	432.7
12.0	16.0	10.0	296.0	245.0	21.0	3.0	505.8	34.9	409.0	393.4
12.0	16.0	11.0	710.0	154.0	22.0	3.0	795.5	43.3	617.3	594.0
12.0	16.0	12.0	418.0	262.0	23.0	3.0	658.9	41.7	516.0	496.7
12.0	16.0	13.0	648.0	172.0	23.0	3.0	743.5	43.4	576.1	554.5
12.0	16.0	14.0	570.0	162.0	22.0	3.0	602.6	39.1	475.1	457.3
12.0	16.0	15.0	450.0	132.0	22.0	4.0	410.9	32.4	329.8	316.8
12.0	16.0	16.0	232.0	78.0	21.0	4.0	177.6	25.1	142.2	134.1
12.0	16.0	17.0	-	-	21.0	5.0	-	21.0	-	-
12.0	16.0	18.0	-	-	20.0	5.0	-	20.0	-	-
12.0	16.0	19.0	-	-	20.0	4.0	-	20.0	-	-
12.0	16.0	20.0	-	-	21.0	4.0	-	21.0	-	-

12.0	16.0	21.0	-	-	21.0	4.0	-	21.0	-	-
12.0	16.0	22.0	-	-	21.0	4.0	-	21.0	-	-
12.0	16.0	23.0	-	-	21.0	4.0	-	21.0	-	-
12.0	17.0	-	-	-	21.0	4.0	-	21.0	-	-
12.0	17.0	1.0	-	-	21.0	3.0	-	21.0	-	-
12.0	17.0	2.0	-	-	21.0	3.0	-	21.0	-	-
12.0	17.0	3.0	-	-	21.0	3.0	-	21.0	-	-
12.0	17.0	4.0	-	-	21.0	3.0	-	21.0	-	-
12.0	17.0	5.0	-	-	21.0	3.0	-	21.0	-	-
12.0	17.0	6.0	-	-	22.0	3.0	-	22.0	-	-
12.0	17.0	7.0	180.0	29.0	22.0	3.0	88.9	22.6	67.4	61.0
12.0	17.0	8.0	525.0	74.0	23.0	3.0	334.6	30.7	262.7	251.6
12.0	17.0	9.0	240.0	183.0	24.0	3.0	360.7	33.3	292.2	280.3
12.0	17.0	10.0	136.0	255.0	25.0	3.0	383.7	35.0	310.5	298.0
12.0	17.0	11.0	566.0	202.0	25.0	3.0	721.2	43.9	558.0	537.0
12.0	17.0	12.0	284.0	293.0	25.0	3.0	578.1	41.3	453.7	436.6
12.0	17.0	13.0	361.0	253.0	25.0	3.0	583.2	41.0	458.0	440.7
12.0	17.0	14.0	384.0	198.0	25.0	3.0	500.1	38.8	395.3	380.2
12.0	17.0	15.0	136.0	154.0	24.0	3.0	245.4	30.8	200.8	191.4
12.0	17.0	16.0	373.0	59.0	23.0	2.0	212.4	28.7	163.5	155.0
12.0	17.0	17.0	-	-	23.0	2.0	-	23.0	-	-
12.0	17.0	18.0	-	-	23.0	2.0	-	23.0	-	-
12.0	17.0	19.0	-	-	22.0	2.0	-	22.0	-	-
12.0	17.0	20.0	-	-	22.0	3.0	-	22.0	-	-
12.0	17.0	21.0	-	-	22.0	3.0	-	22.0	-	-
12.0	17.0	22.0	-	-	22.0	3.0	-	22.0	-	-
12.0	17.0	23.0	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	-	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	1.0	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	2.0	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	3.0	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	4.0	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	5.0	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	6.0	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	7.0	207.0	27.0	22.0	3.0	93.1	22.8	69.5	63.1
12.0	18.0	8.0	393.0	86.0	23.0	3.0	284.7	29.4	226.4	216.3
12.0	18.0	9.0	225.0	183.0	24.0	3.0	342.7	32.6	278.5	267.0
12.0	18.0	10.0	250.0	248.0	24.0	3.0	473.3	36.3	380.1	365.5
12.0	18.0	11.0	59.0	275.0	25.0	2.0	339.0	35.5	274.0	262.6
12.0	18.0	12.0	297.0	291.0	25.0	2.0	587.1	42.2	458.7	441.4
12.0	18.0	13.0	280.0	270.0	25.0	1.0	536.1	45.0	412.6	396.9
12.0	18.0	14.0	53.0	214.0	25.0	1.0	262.2	35.6	211.6	201.9
12.0	18.0	15.0	58.0	149.0	24.0	1.0	188.8	30.3	155.7	147.3
12.0	18.0	16.0	163.0	71.0	23.0	1.0	144.3	27.2	115.4	108.0
12.0	18.0	17.0	-	-	23.0	2.0	-	23.0	-	-
12.0	18.0	18.0	-	-	22.0	3.0	-	22.0	-	-
12.0	18.0	19.0	-	-	22.0	4.0	-	22.0	-	-
12.0	18.0	20.0	-	-	21.0	4.0	-	21.0	-	-
12.0	18.0	21.0	-	-	21.0	3.0	-	21.0	-	-
12.0	18.0	22.0	-	-	21.0	3.0	-	21.0	-	-
12.0	18.0	23.0	-	-	21.0	2.0	-	21.0	-	-
12.0	19.0	-	-	-	21.0	2.0	-	21.0	-	-
12.0	19.0	1.0	-	-	21.0	2.0	-	21.0	-	-
12.0	19.0	2.0	-	-	21.0	1.0	-	21.0	-	-
12.0	19.0	3.0	-	-	21.0	1.0	-	21.0	-	-
12.0	19.0	4.0	-	-	21.0	2.0	-	21.0	-	-
12.0	19.0	5.0	-	-	21.0	2.0	-	21.0	-	-
12.0	19.0	6.0	-	-	21.0	3.0	-	21.0	-	-
12.0	19.0	7.0	-	2.0	21.0	3.0	1.9	19.2	1.7	-
12.0	19.0	8.0	-	30.0	21.0	3.0	28.4	19.9	24.8	19.2
12.0	19.0	9.0	-	51.0	21.0	4.0	48.4	20.6	42.0	36.1
12.0	19.0	10.0	-	98.0	22.0	4.0	93.5	22.9	80.3	73.7
12.0	19.0	11.0	4.0	194.0	22.0	4.0	193.8	25.5	164.4	155.9
12.0	19.0	12.0	-	129.0	22.0	4.0	124.1	24.1	106.0	98.8
12.0	19.0	13.0	-	45.0	22.0	4.0	42.7	21.8	36.9	31.1
12.0	19.0	14.0	-	142.0	21.0	4.0	138.3	23.0	118.7	111.2
12.0	19.0	15.0	24.0	141.0	21.0	4.0	154.3	23.7	131.7	123.9
12.0	19.0	16.0	-	67.0	21.0	5.0	66.9	21.4	57.9	51.7
12.0	19.0	17.0	-	-	21.0	5.0	-	21.0	-	-
12.0	19.0	18.0	-	-	21.0	5.0	-	21.0	-	-
12.0	19.0	19.0	-	-	21.0	5.0	-	21.0	-	-
12.0	19.0	20.0	-	-	21.0	5.0	-	21.0	-	-
12.0	19.0	21.0	-	-	21.0	5.0	-	21.0	-	-
12.0	19.0	22.0	-	-	21.0	5.0	-	21.0	-	-
12.0	19.0	23.0	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	-	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	1.0	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	2.0	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	3.0	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	4.0	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	5.0	-	-	20.0	4.0	-	20.0	-	-

12.0	20.0	6.0	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	7.0	-	1.0	20.0	4.0	0.9	18.3	0.8	-
12.0	20.0	8.0	-	53.0	21.0	4.0	50.3	20.6	43.7	37.8
12.0	20.0	9.0	-	86.0	21.0	5.0	82.1	21.5	71.0	64.5
12.0	20.0	10.0	6.0	184.0	22.0	5.0	185.9	25.0	158.1	149.7
12.0	20.0	11.0	-	120.0	22.0	4.0	115.1	23.8	98.5	91.4
12.0	20.0	12.0	-	152.0	22.0	4.0	147.2	24.4	125.5	117.9
12.0	20.0	13.0	-	139.0	21.0	4.0	134.3	23.2	115.2	107.8
12.0	20.0	14.0	-	150.0	21.0	4.0	146.5	23.5	125.6	117.9
12.0	20.0	15.0	97.0	155.0	21.0	4.0	218.0	25.3	183.5	174.5
12.0	20.0	16.0	-	57.0	20.0	4.0	55.7	20.4	48.4	42.4
12.0	20.0	17.0	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	18.0	-	-	20.0	4.0	-	20.0	-	-
12.0	20.0	19.0	-	-	20.0	3.0	-	20.0	-	-
12.0	20.0	20.0	-	-	20.0	3.0	-	20.0	-	-
12.0	20.0	21.0	-	-	20.0	3.0	-	20.0	-	-
12.0	20.0	22.0	-	-	20.0	2.0	-	20.0	-	-
12.0	20.0	23.0	-	-	19.0	2.0	-	19.0	-	-
12.0	21.0	-	-	-	19.0	2.0	-	19.0	-	-
12.0	21.0	1.0	-	-	19.0	2.0	-	19.0	-	-
12.0	21.0	2.0	-	-	19.0	2.0	-	19.0	-	-
12.0	21.0	3.0	-	-	18.0	3.0	-	18.0	-	-
12.0	21.0	4.0	-	-	18.0	4.0	-	18.0	-	-
12.0	21.0	5.0	-	-	17.0	5.0	-	17.0	-	-
12.0	21.0	6.0	-	-	17.0	5.0	-	17.0	-	-
12.0	21.0	7.0	-	10.0	17.0	5.0	9.5	15.7	8.4	3.1
12.0	21.0	8.0	-	49.0	17.0	5.0	46.5	16.5	41.1	35.3
12.0	21.0	9.0	-	55.0	17.0	6.0	52.2	16.8	46.1	40.2
12.0	21.0	10.0	-	165.0	17.0	6.0	161.4	19.0	141.2	133.2
12.0	21.0	11.0	324.0	275.0	18.0	6.0	585.9	28.9	488.7	470.3
12.0	21.0	12.0	657.0	178.0	18.0	6.0	788.5	33.8	642.1	617.8
12.0	21.0	13.0	694.0	149.0	18.0	6.0	758.0	33.5	617.2	593.9
12.0	21.0	14.0	514.0	169.0	18.0	6.0	572.9	29.7	473.2	455.4
12.0	21.0	15.0	67.0	152.0	17.0	5.0	197.5	21.3	169.8	161.1
12.0	21.0	16.0	373.0	59.0	16.0	5.0	214.8	19.8	173.0	164.2
12.0	21.0	17.0	-	-	15.0	5.0	-	15.0	-	-
12.0	21.0	18.0	-	-	15.0	5.0	-	15.0	-	-
12.0	21.0	19.0	-	-	15.0	5.0	-	15.0	-	-
12.0	21.0	20.0	-	-	15.0	5.0	-	15.0	-	-
12.0	21.0	21.0	-	-	15.0	5.0	-	15.0	-	-
12.0	21.0	22.0	-	-	15.0	5.0	-	15.0	-	-
12.0	21.0	23.0	-	-	15.0	5.0	-	15.0	-	-
12.0	22.0	-	-	-	15.0	5.0	-	15.0	-	-
12.0	22.0	1.0	-	-	14.0	5.0	-	14.0	-	-
12.0	22.0	2.0	-	-	14.0	5.0	-	14.0	-	-
12.0	22.0	3.0	-	-	14.0	5.0	-	14.0	-	-
12.0	22.0	4.0	-	-	14.0	5.0	-	14.0	-	-
12.0	22.0	5.0	-	-	14.0	5.0	-	14.0	-	-
12.0	22.0	6.0	-	-	14.0	5.0	-	14.0	-	-
12.0	22.0	7.0	226.0	27.0	15.0	5.0	98.7	15.6	75.8	69.2
12.0	22.0	8.0	613.0	67.0	15.0	5.0	361.6	21.8	294.3	282.3
12.0	22.0	9.0	766.0	88.0	16.0	5.0	595.5	28.7	488.6	470.2
12.0	22.0	10.0	836.0	100.0	17.0	5.0	766.3	34.1	620.3	596.9
12.0	22.0	11.0	868.0	107.0	18.0	5.0	870.0	37.8	694.0	667.4
12.0	22.0	12.0	69.0	289.0	19.0	5.0	364.2	27.8	305.7	293.3
12.0	22.0	13.0	860.0	104.0	19.0	4.0	840.9	39.2	665.5	640.2
12.0	22.0	14.0	677.0	121.0	19.0	4.0	642.4	35.8	514.7	495.4
12.0	22.0	15.0	542.0	104.0	19.0	4.0	439.3	30.2	355.7	341.8
12.0	22.0	16.0	144.0	73.0	18.0	4.0	140.5	21.2	116.2	108.8
12.0	22.0	17.0	-	-	17.0	4.0	-	17.0	-	-
12.0	22.0	18.0	-	-	17.0	4.0	-	17.0	-	-
12.0	22.0	19.0	-	-	17.0	4.0	-	17.0	-	-
12.0	22.0	20.0	-	-	17.0	4.0	-	17.0	-	-
12.0	22.0	21.0	-	-	17.0	4.0	-	17.0	-	-
12.0	22.0	22.0	-	-	17.0	4.0	-	17.0	-	-
12.0	22.0	23.0	-	-	17.0	4.0	-	17.0	-	-
12.0	23.0	-	-	-	17.0	4.0	-	17.0	-	-
12.0	23.0	1.0	-	-	17.0	4.0	-	17.0	-	-
12.0	23.0	2.0	-	-	17.0	3.0	-	17.0	-	-
12.0	23.0	3.0	-	-	17.0	3.0	-	17.0	-	-
12.0	23.0	4.0	-	-	17.0	3.0	-	17.0	-	-
12.0	23.0	5.0	-	-	17.0	3.0	-	17.0	-	-
12.0	23.0	6.0	-	-	17.0	3.0	-	17.0	-	-
12.0	23.0	7.0	217.0	27.0	17.0	3.0	96.3	17.7	73.4	66.8
12.0	23.0	8.0	614.0	66.0	19.0	3.0	360.0	27.4	285.2	273.4
12.0	23.0	9.0	773.0	85.0	20.0	4.0	593.1	34.2	473.7	456.0
12.0	23.0	10.0	848.0	95.0	21.0	4.0	769.1	40.1	604.2	581.4
12.0	23.0	11.0	887.0	99.0	21.0	3.0	876.6	45.2	673.2	647.5
12.0	23.0	12.0	895.0	100.0	22.0	3.0	896.8	47.1	682.6	656.6
12.0	23.0	13.0	655.0	162.0	22.0	3.0	741.1	43.1	575.1	553.5
12.0	23.0	14.0	807.0	99.0	21.0	3.0	709.5	40.9	553.8	533.0

12.0	23.0	15.0	272.0	148.0	21.0	2.0	324.3	32.1	262.3	251.2
12.0	23.0	16.0	195.0	72.0	20.0	2.0	158.6	24.4	128.1	120.4
12.0	23.0	17.0	-	-	19.0	3.0	-	19.0	-	-
12.0	23.0	18.0	-	-	19.0	3.0	-	19.0	-	-
12.0	23.0	19.0	-	-	19.0	3.0	-	19.0	-	-
12.0	23.0	20.0	-	-	18.0	3.0	-	18.0	-	-
12.0	23.0	21.0	-	-	18.0	3.0	-	18.0	-	-
12.0	23.0	22.0	-	-	18.0	3.0	-	18.0	-	-
12.0	23.0	23.0	-	-	18.0	2.0	-	18.0	-	-
12.0	24.0	-	-	-	18.0	2.0	-	18.0	-	-
12.0	24.0	1.0	-	-	18.0	2.0	-	18.0	-	-
12.0	24.0	2.0	-	-	18.0	2.0	-	18.0	-	-
12.0	24.0	3.0	-	-	18.0	2.0	-	18.0	-	-
12.0	24.0	4.0	-	-	18.0	2.0	-	18.0	-	-
12.0	24.0	5.0	-	-	18.0	2.0	-	18.0	-	-
12.0	24.0	6.0	-	-	18.0	2.0	-	18.0	-	-
12.0	24.0	7.0	18.0	24.0	19.0	2.0	28.8	17.7	24.4	18.9
12.0	24.0	8.0	160.0	102.0	20.0	2.0	183.8	23.7	152.6	144.3
12.0	24.0	9.0	463.0	142.0	21.0	3.0	460.3	32.4	372.4	358.0
12.0	24.0	10.0	605.0	157.0	22.0	3.0	655.1	39.5	516.6	497.3
12.0	24.0	11.0	512.0	221.0	23.0	3.0	694.9	42.2	542.5	522.2
12.0	24.0	12.0	687.0	168.0	23.0	3.0	804.1	45.1	618.5	595.1
12.0	24.0	13.0	470.0	229.0	23.0	3.0	658.4	41.7	515.0	495.7
12.0	24.0	14.0	371.0	204.0	23.0	3.0	500.3	37.1	399.2	383.9
12.0	24.0	15.0	635.0	98.0	22.0	3.0	487.9	35.2	385.1	370.3
12.0	24.0	16.0	92.0	76.0	21.0	3.0	119.8	24.3	98.9	91.8
12.0	24.0	17.0	-	-	21.0	3.0	-	21.0	-	-
12.0	24.0	18.0	-	-	20.0	3.0	-	20.0	-	-
12.0	24.0	19.0	-	-	20.0	3.0	-	20.0	-	-
12.0	24.0	20.0	-	-	19.0	3.0	-	19.0	-	-
12.0	24.0	21.0	-	-	19.0	3.0	-	19.0	-	-
12.0	24.0	22.0	-	-	18.0	4.0	-	18.0	-	-
12.0	24.0	23.0	-	-	18.0	3.0	-	18.0	-	-
12.0	25.0	-	-	-	18.0	3.0	-	18.0	-	-
12.0	25.0	1.0	-	-	18.0	3.0	-	18.0	-	-
12.0	25.0	2.0	-	-	18.0	3.0	-	18.0	-	-
12.0	25.0	3.0	-	-	18.0	3.0	-	18.0	-	-
12.0	25.0	4.0	-	-	17.0	3.0	-	17.0	-	-
12.0	25.0	5.0	-	-	17.0	3.0	-	17.0	-	-
12.0	25.0	6.0	-	-	17.0	4.0	-	17.0	-	-
12.0	25.0	7.0	256.0	23.0	19.0	4.0	101.0	19.8	74.7	68.1
12.0	25.0	8.0	629.0	59.0	20.0	5.0	356.8	26.8	282.7	271.0
12.0	25.0	9.0	466.0	142.0	22.0	5.0	461.6	31.8	374.6	360.1
12.0	25.0	10.0	810.0	99.0	23.0	6.0	743.4	37.7	591.0	568.8
12.0	25.0	11.0	691.0	159.0	24.0	7.0	782.1	38.6	621.6	598.1
12.0	25.0	12.0	812.0	125.0	24.0	7.0	860.2	40.1	678.8	652.9
12.0	25.0	13.0	775.0	129.0	24.0	7.0	804.6	39.2	637.0	612.9
12.0	25.0	14.0	719.0	121.0	24.0	7.0	675.5	36.7	538.8	518.6
12.0	25.0	15.0	622.0	100.0	23.0	7.0	483.7	31.9	388.3	373.4
12.0	25.0	16.0	426.0	65.0	22.0	6.0	244.6	26.6	191.1	181.9
12.0	25.0	17.0	-	-	21.0	6.0	-	21.0	-	-
12.0	25.0	18.0	-	-	20.0	5.0	-	20.0	-	-
12.0	25.0	19.0	-	-	19.0	5.0	-	19.0	-	-
12.0	25.0	20.0	-	-	18.0	5.0	-	18.0	-	-
12.0	25.0	21.0	-	-	18.0	5.0	-	18.0	-	-
12.0	25.0	22.0	-	-	18.0	5.0	-	18.0	-	-
12.0	25.0	23.0	-	-	17.0	6.0	-	17.0	-	-
12.0	26.0	-	-	-	17.0	6.0	-	17.0	-	-
12.0	26.0	1.0	-	-	17.0	6.0	-	17.0	-	-
12.0	26.0	2.0	-	-	16.0	6.0	-	16.0	-	-
12.0	26.0	3.0	-	-	16.0	6.0	-	16.0	-	-
12.0	26.0	4.0	-	-	15.0	5.0	-	15.0	-	-
12.0	26.0	5.0	-	-	15.0	5.0	-	15.0	-	-
12.0	26.0	6.0	-	-	15.0	5.0	-	15.0	-	-
12.0	26.0	7.0	258.0	25.0	15.0	6.0	103.3	15.7	78.1	71.5
12.0	26.0	8.0	676.0	60.0	16.0	6.0	377.7	22.5	304.9	292.6
12.0	26.0	9.0	831.0	76.0	16.0	5.0	616.6	29.2	503.9	485.0
12.0	26.0	10.0	897.0	87.0	17.0	5.0	795.5	34.8	641.5	617.2
12.0	26.0	11.0	924.0	94.0	18.0	5.0	895.5	38.4	712.0	684.6
12.0	26.0	12.0	924.0	97.0	18.0	5.0	919.5	39.2	728.8	700.7
12.0	26.0	13.0	897.0	99.0	19.0	5.0	868.6	39.1	687.8	661.6
12.0	26.0	14.0	845.0	93.0	19.0	5.0	733.7	36.0	586.8	564.8
12.0	26.0	15.0	752.0	79.0	19.0	5.0	533.8	31.2	429.0	412.8
12.0	26.0	16.0	565.0	54.0	18.0	4.0	288.2	25.2	224.5	214.5
12.0	26.0	17.0	-	-	17.0	4.0	-	17.0	-	-
12.0	26.0	18.0	-	-	16.0	4.0	-	16.0	-	-
12.0	26.0	19.0	-	-	16.0	5.0	-	16.0	-	-
12.0	26.0	20.0	-	-	15.0	5.0	-	15.0	-	-
12.0	26.0	21.0	-	-	14.0	5.0	-	14.0	-	-
12.0	26.0	22.0	-	-	13.0	5.0	-	13.0	-	-
12.0	26.0	23.0	-	-	13.0	4.0	-	13.0	-	-

12.0	27.0	-	-	-	12.0	4.0	-	12.0	-	-
12.0	27.0	1.0	-	-	12.0	3.0	-	12.0	-	-
12.0	27.0	2.0	-	-	12.0	3.0	-	12.0	-	-
12.0	27.0	3.0	-	-	12.0	3.0	-	12.0	-	-
12.0	27.0	4.0	-	-	12.0	3.0	-	12.0	-	-
12.0	27.0	5.0	-	-	12.0	3.0	-	12.0	-	-
12.0	27.0	6.0	-	-	12.0	3.0	-	12.0	-	-
12.0	27.0	7.0	354.0	21.0	13.0	3.0	120.2	14.3	88.5	81.6
12.0	27.0	8.0	735.0	50.0	14.0	4.0	389.5	22.5	313.3	300.7
12.0	27.0	9.0	875.0	63.0	16.0	3.0	624.2	32.6	501.6	482.8
12.0	27.0	10.0	938.0	71.0	17.0	3.0	802.4	39.0	633.4	609.5
12.0	27.0	11.0	965.0	77.0	17.0	3.0	910.3	42.4	709.4	682.2
12.0	27.0	12.0	969.0	79.0	18.0	3.0	938.1	44.4	724.0	696.2
12.0	27.0	13.0	947.0	81.0	18.0	3.0	884.2	43.1	686.0	659.8
12.0	27.0	14.0	904.0	76.0	18.0	2.0	753.5	42.4	583.5	561.6
12.0	27.0	15.0	819.0	67.0	18.0	2.0	560.5	36.3	439.0	422.5
12.0	27.0	16.0	637.0	48.0	17.0	1.0	308.2	29.4	234.3	223.9
12.0	27.0	17.0	-	-	16.0	1.0	-	16.0	-	-
12.0	27.0	18.0	-	-	16.0	1.0	-	16.0	-	-
12.0	27.0	19.0	-	-	17.0	-	-	17.0	-	-
12.0	27.0	20.0	-	-	16.0	-	-	16.0	-	-
12.0	27.0	21.0	-	-	16.0	-	-	16.0	-	-
12.0	27.0	22.0	-	-	16.0	-	-	16.0	-	-
12.0	27.0	23.0	-	-	16.0	-	-	16.0	-	-
12.0	28.0	-	-	-	16.0	-	-	16.0	-	-
12.0	28.0	1.0	-	-	16.0	-	-	16.0	-	-
12.0	28.0	2.0	-	-	16.0	-	-	16.0	-	-
12.0	28.0	3.0	-	-	16.0	-	-	16.0	-	-
12.0	28.0	4.0	-	-	16.0	-	-	16.0	-	-
12.0	28.0	5.0	-	-	16.0	-	-	16.0	-	-
12.0	28.0	6.0	-	-	16.0	-	-	16.0	-	-
12.0	28.0	7.0	298.0	22.0	16.0	1.0	109.0	17.3	80.3	73.7
12.0	28.0	8.0	96.0	101.0	17.0	1.0	153.9	20.8	130.6	122.8
12.0	28.0	9.0	817.0	75.0	18.0	2.0	605.0	35.0	480.6	462.6
12.0	28.0	10.0	870.0	90.0	19.0	2.0	777.4	42.9	601.9	579.3
12.0	28.0	11.0	894.0	99.0	20.0	3.0	882.0	44.4	680.1	654.1
12.0	28.0	12.0	893.0	104.0	21.0	3.0	908.0	46.4	693.6	667.0
12.0	28.0	13.0	880.0	100.0	21.0	3.0	857.5	45.2	658.2	633.2
12.0	28.0	14.0	827.0	96.0	21.0	3.0	726.3	41.7	564.8	543.6
12.0	28.0	15.0	722.0	85.0	21.0	3.0	528.2	36.1	415.1	399.3
12.0	28.0	16.0	521.0	59.0	20.0	3.0	278.9	27.7	215.8	206.0
12.0	28.0	17.0	-	-	18.0	3.0	-	18.0	-	-
12.0	28.0	18.0	-	-	17.0	3.0	-	17.0	-	-
12.0	28.0	19.0	-	-	17.0	3.0	-	17.0	-	-
12.0	28.0	20.0	-	-	16.0	4.0	-	16.0	-	-
12.0	28.0	21.0	-	-	16.0	4.0	-	16.0	-	-
12.0	28.0	22.0	-	-	15.0	4.0	-	15.0	-	-
12.0	28.0	23.0	-	-	15.0	4.0	-	15.0	-	-
12.0	29.0	-	-	-	15.0	5.0	-	15.0	-	-
12.0	29.0	1.0	-	-	15.0	5.0	-	15.0	-	-
12.0	29.0	2.0	-	-	15.0	5.0	-	15.0	-	-
12.0	29.0	3.0	-	-	16.0	5.0	-	16.0	-	-
12.0	29.0	4.0	-	-	16.0	6.0	-	16.0	-	-
12.0	29.0	5.0	-	-	17.0	6.0	-	17.0	-	-
12.0	29.0	6.0	-	-	17.0	6.0	-	17.0	-	-
12.0	29.0	7.0	224.0	22.0	18.0	6.0	90.4	18.5	67.5	61.1
12.0	29.0	8.0	624.0	57.0	19.0	6.0	348.7	24.9	278.0	266.5
12.0	29.0	9.0	95.0	181.0	21.0	7.0	249.3	25.0	210.9	201.2
12.0	29.0	10.0	856.0	80.0	22.0	7.0	749.6	35.2	603.2	580.5
12.0	29.0	11.0	38.0	260.0	23.0	7.0	303.9	28.7	254.0	243.1
12.0	29.0	12.0	-	52.0	23.0	7.0	49.4	23.2	42.4	36.5
12.0	29.0	13.0	-	58.0	24.0	6.0	55.1	24.0	47.1	41.1
12.0	29.0	14.0	801.0	94.0	23.0	6.0	706.2	36.2	564.5	543.4
12.0	29.0	15.0	710.0	81.0	23.0	5.0	518.0	34.9	409.6	394.0
12.0	29.0	16.0	532.0	56.0	22.0	4.0	281.0	29.0	216.1	206.2
12.0	29.0	17.0	-	-	20.0	4.0	-	20.0	-	-
12.0	29.0	18.0	-	-	19.0	4.0	-	19.0	-	-
12.0	29.0	19.0	-	-	18.0	4.0	-	18.0	-	-
12.0	29.0	20.0	-	-	17.0	3.0	-	17.0	-	-
12.0	29.0	21.0	-	-	17.0	3.0	-	17.0	-	-
12.0	29.0	22.0	-	-	16.0	3.0	-	16.0	-	-
12.0	29.0	23.0	-	-	16.0	3.0	-	16.0	-	-
12.0	30.0	-	-	-	15.0	3.0	-	15.0	-	-
12.0	30.0	1.0	-	-	15.0	3.0	-	15.0	-	-
12.0	30.0	2.0	-	-	14.0	3.0	-	14.0	-	-
12.0	30.0	3.0	-	-	14.0	3.0	-	14.0	-	-
12.0	30.0	4.0	-	-	14.0	3.0	-	14.0	-	-
12.0	30.0	5.0	-	-	14.0	3.0	-	14.0	-	-
12.0	30.0	6.0	-	-	14.0	2.0	-	14.0	-	-
12.0	30.0	7.0	317.0	20.0	15.0	2.0	108.8	16.1	79.5	72.9
12.0	30.0	8.0	701.0	51.0	16.0	2.0	372.8	25.9	294.8	282.8

	12.0	30.0	9.0	838.0	67.0	17.0	2.0	607.3	35.1	482.0	464.0
	12.0	30.0	10.0	900.0	77.0	18.0	2.0	779.2	42.0	606.0	583.1
	12.0	30.0	11.0	923.0	85.0	19.0	2.0	884.4	46.6	674.3	648.6
	12.0	30.0	12.0	920.0	90.0	20.0	3.0	910.0	45.5	698.3	671.6
	12.0	30.0	13.0	896.0	92.0	20.0	3.0	857.5	44.2	661.5	636.4
	12.0	30.0	14.0	843.0	89.0	21.0	3.0	732.6	41.8	569.3	547.9
	12.0	30.0	15.0	746.0	79.0	20.0	2.0	535.8	37.5	418.2	402.3
	12.0	30.0	16.0	551.0	57.0	19.0	2.0	290.6	28.4	224.2	214.1
	12.0	30.0	17.0	-	-	18.0	1.0	-	18.0	-	-
	12.0	30.0	18.0	-	-	18.0	1.0	-	18.0	-	-
	12.0	30.0	19.0	-	-	19.0	-	-	19.0	-	-
	12.0	30.0	20.0	-	-	19.0	-	-	19.0	-	-
	12.0	30.0	21.0	-	-	18.0	-	-	18.0	-	-
	12.0	30.0	22.0	-	-	18.0	1.0	-	18.0	-	-
	12.0	30.0	23.0	-	-	18.0	1.0	-	18.0	-	-
	12.0	31.0	-	-	-	17.0	2.0	-	17.0	-	-
	12.0	31.0	1.0	-	-	17.0	2.0	-	17.0	-	-
	12.0	31.0	2.0	-	-	17.0	2.0	-	17.0	-	-
	12.0	31.0	3.0	-	-	17.0	3.0	-	17.0	-	-
	12.0	31.0	4.0	-	-	17.0	2.0	-	17.0	-	-
	12.0	31.0	5.0	-	-	17.0	2.0	-	17.0	-	-
	12.0	31.0	6.0	-	-	17.0	2.0	-	17.0	-	-
	12.0	31.0	7.0	184.0	23.0	18.0	2.0	81.2	18.3	61.6	55.3
	12.0	31.0	8.0	582.0	67.0	20.0	2.0	340.0	28.8	266.8	255.6
	12.0	31.0	9.0	752.0	87.0	21.0	2.0	578.3	38.0	452.9	435.8
	12.0	31.0	10.0	826.0	100.0	22.0	2.0	754.3	45.0	577.7	556.0
	12.0	31.0	11.0	868.0	104.0	23.0	2.0	866.1	49.8	649.4	624.8
	12.0	31.0	12.0	876.0	106.0	23.0	1.0	897.2	55.8	651.7	627.0
	12.0	31.0	13.0	858.0	103.0	24.0	1.0	845.5	55.3	615.1	591.9
	12.0	31.0	14.0	804.0	99.0	24.0	1.0	716.5	51.1	530.6	510.7
	12.0	31.0	15.0	326.0	148.0	24.0	-	359.2	44.0	273.7	262.2
	12.0	31.0	16.0	501.0	61.0	23.0	-	276.5	36.8	205.5	196.0
	12.0	31.0	17.0	-	-	22.0	1.0	-	22.0	-	-
	12.0	31.0	18.0	-	-	22.0	1.0	-	22.0	-	-
	12.0	31.0	19.0	-	-	19.0	3.0	-	19.0	-	-
	12.0	31.0	20.0	-	-	19.0	3.0	-	19.0	-	-
	12.0	31.0	21.0	-	-	19.0	3.0	-	19.0	-	-
	12.0	31.0	22.0	-	-	19.0	3.0	-	19.0	-	-
	12.0	31.0	23.0	-	-	20.0	3.0	-	20.0	-	-
Totals				2,043,811.0	648,052.0	209,007.0	26,954.0	2,113,842.4	266,361.2	1,605,011.2	1,538,637.1

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PVWatts: Monthly PV Performance Data

Requested Location:	700 universe blvd, juno beach florida
Location:	Lat, Lon: 26.85, -80.06
Lat (deg N):	26.85
Long (deg W):	80.06
Elev (m):	3.458333254
DC System Size (kW):	1
Module Type:	Standard
Array Type:	Fixed (roof mount)
Array Tilt (deg):	20
Array Azimuth (deg):	**180**
System Losses:	14.925
Invert Efficiency:	96
DC to AC Size Ratio:	1.2
Average Cost of Electricity Purchased from Utility ($/kWh):	0.104
Capacity Factor (%)	17.6

Month	AC System Output(kWh)	Solar Radiation (kWh/m^2/day)	Plane of Array Irradiance (W/m^2)	DC array Output (kWh)	Value ($)
1	111	5	150	116	12
2	111	5	149	116	12
3	147	6	198	154	15
4	146	7	200	153	15
5	149	7	207	155	15
6	130	6	182	135	13
7	139	6	197	145	14
8	130	6	184	136	14
9	125	6	173	130	13
10	128	6	176	133	13
11	115	5	155	120	12
12	108	5	143	112	11
Total	**1,539**	69	2,114	1,605	160

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FPL & GULF 000011
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						Ann. Degrade																																
						0.50%									1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Date	Year	Month	Num Days	New Capacity (MWdc)	Cumulative Capacity (MWdc)	Monthly Degradation	Cumulative Capacity after Degradation (MWdc)	Energy per MWdc (MWh-ac)	Monthly Generation (MWh)	Hourly Gen. Ending 1:00	Hourly Gen. Ending 2:00	Hourly Gen. Ending 3:00	Hourly Gen. Ending 4:00	Hourly Gen. Ending 5:00	Hourly Gen. Ending 6:00	Hourly Gen. Ending 7:00	Hourly Gen. Ending 8:00	Hourly Gen. Ending 9:00	Hourly Gen. Ending 10:00	Hourly Gen. Ending 11:00	Hourly Gen. Ending 12:00	Hourly Gen. Ending 13:00	Hourly Gen. Ending 14:00	Hourly Gen. Ending 15:00	Hourly Gen. Ending 16:00	Hourly Gen. Ending 17:00	Hourly Gen. Ending 18:00	Hourly Gen. Ending 19:00	Hourly Gen. Ending 20:00	Hourly Gen. Ending 21:00	Hourly Gen. Ending 22:00	Hourly Gen. Ending 23:00	Hourly Gen. Ending 0:00	Monthly Generation (check)	check
1/31/2013	2013	1	31	-				97.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/28/2013	2013	2	28	-	-	-	-	93.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/31/2013	2013	3	31	-	-	-	-	131.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/30/2013	2013	4	30	-	-	-	-	136.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/31/2013	2013	5	31	-	-	-	-	149.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/30/2013	2013	6	30	-	-	-	-	130.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31/2013	2013	7	31	-	-	-	-	132.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/31/2013	2013	8	31	-	-	-	-	130.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9/30/2013	2013	9	30	-	-	-	-	121.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/31/2013	2013	10	31	-	-	-	-	126.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/30/2013	2013	11	30	-	-	-	-	102.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/31/2013	2013	12	31	-	-	-	-	91.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/31/2014	2014	1	31	0	0	-	0	97.8	13	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	13	-
2/28/2014	2014	2	28	0	0	(0.0)	0	93.6	24	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	24	-
3/31/2014	2014	3	31	0	0	(0.0)	0	131.2	51	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	51	-
4/30/2014	2014	4	30	0	1	(0.0)	1	136.5	71	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	71	-
5/31/2014	2014	5	31	0	1	(0.0)	1	149.5	97	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	97	-
6/30/2014	2014	6	30	0	1	(0.0)	1	130.3	101	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	101	-
7/31/2014	2014	7	31	0	1	(0.0)	1	132.1	120	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	120	-
8/31/2014	2014	8	31	0	1	(0.0)	1	130.7	135	-	-	-	-	-	-	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	-	-	-	-	-	-	-	-	-	135	-
9/30/2014	2014	9	30	0	1	(0.0)	1	121.9	142	-	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	0	0	0	0	0	-	-	-	-	-	-	-	-	-	142	-
10/31/2014	2014	10	31	0	1	(0.0)	1	126.3	163	-	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	163	-
11/30/2014	2014	11	30	0	1	(0.0)	1	102.0	145	-	-	-	-	-	-	0	0	0	0	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	145	-
12/31/2014	2014	12	31	0	2	(0.0)	2	91.8	142	-	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	142	-
1/31/2015	2015	1	31	0	2	(0.0)	2	97.8	157	-	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	157	-
2/28/2015	2015	2	28	0	2	(0.0)	2	93.6	156	-	-	-	-	-	-	0	0	0	0	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	156	-
3/31/2015	2015	3	31	0	2	(0.0)	2	131.2	225	-	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	225	-
4/30/2015	2015	4	30	0	2	(0.0)	2	136.5	242	-	-	-	-	-	-	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	242	-
5/31/2015	2015	5	31	0	2	(0.0)	2	149.5	273	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	273	-
6/30/2015	2015	6	30	0	2	(0.0)	2	130.3	245	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	245	-
7/31/2015	2015	7	31	0	2	(0.0)	2	132.1	256	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	256	-
8/31/2015	2015	8	31	0	2	(0.0)	2	130.7	260	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	260	-
9/30/2015	2015	9	30	0	2	(0.0)	2	121.9	249	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	249	-
10/31/2015	2015	10	31	0	2	(0.0)	2	126.3	265	-	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	0	-	-	-	-	-	-	-	-	-	265	-
11/30/2015	2015	11	30	0	2	(0.0)	2	102.0	220	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	-	220	-
12/31/2015	2015	12	31	0	2	(0.0)	2	91.8	203	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	-	203	-
1/31/2016	2016	1	31	0	2	(0.0)	2	97.8	219	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	1	0	-	-	-	-	-	-	-	-	-	-	219	-
2/29/2016	2016	2	29	0	2	(0.0)	2	93.6	212	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	-	212	-
3/31/2016	2016	3	31	0	2	(0.0)	2	131.2	300	-	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	-	300	-
4/30/2016	2016	4	30	0	2	(0.0)	2	136.5	316	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	-	316	-
5/31/2016	2016	5	31	0	2	(0.0)	2	149.5	350	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	350	-
6/30/2016	2016	6	30	0	2	(0.0)	2	130.3	308	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	308	-
7/31/2016	2016	7	31	0	2	(0.0)	2	132.1	316	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	316	-
8/31/2016	2016	8	31	0	2	(0.0)	2	130.7	316	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	316	-
9/30/2016	2016	9	30	0	2	(0.0)	2	121.9	298	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	298	-
10/31/2016	2016	10	31	0	2	(0.0)	2	126.3	312	-	-	-	-	-	-	-	0	1	1	1	1	2	1	1	1	1	1	0	-	-	-	-	-	-	-	-	-	312	-
11/30/2016	2016	11	30	0	3	(0.0)	2	102.0	255	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	-	255	-
12/31/2016	2016	12	31	0	3	(0.0)	3	91.8	232	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	-	232	-
1/31/2017	2017	1	31	0	3	(0.0)	3	97.8	270	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	1	0	-	-	-	-	-	-	-	-	-	-	270	-
2/28/2017	2017	2	28	0	3	(0.0)	3	93.6	281	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	-	281	-
3/31/2017	2017	3	31	0	3	(0.0)	3	131.2	425	-	-	-	-	-	-	-	0	1	1	1	2	2	2	2	2	1	1	1	0	-	-	-	-	-	-	-	-	-	-	425	-
4/30/2017	2017	4	30	0	4	(0.0)	3	136.5	475	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	2	1	1	0	-	-	-	-	-	-	-	-	-	-	475	-
5/31/2017	2017	5	31	0	4	(0.0)	4	149.5	557	-	-	-	-	-	-	0	0	1	2	2	2	2	2	2	2	1	1	0	0	-	-	-	-	-	-	-	-	-	557	-
6/30/2017	2017	6	30	0	4	(0.0)	4	130.3	516	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	2	1	1	0	0	-	-	-	-	-	-	-	-	-	516	-
7/31/2017	2017	7	31	0	4	(0.0)	4	132.1	555	-	-	-	-	-	-	0	0	1	2	2	2	2	2	2	2	1	1	0	0	-	-	-	-	-	-	-	-	-	555	-
8/31/2017	2017	8	31	0	4	(0.0)	4	130.7	580	-	-	-	-	-	-	0	0	1	2	2	2	2	2	2	2	1	1	0	0	-	-	-	-	-	-	-	-	-	580	-
9/30/2017	2017	9	30	0	5	(0.0)	5	121.9	570	-	-	-	-	-	-	-	0	1	2	2	2	2	2	2	2	1	1	0	-	-	-	-	-	-	-	-	-	-	570	-
10/31/2017	2017	10	31	0	5	(0.0)	5	126.3	621	-	-	-	-	-	-	-	0	1	2	2	3	3	3	2	2	1	0	-	-	-	-	-	-	-	-	-	-	621	-
11/30/2017	2017	11	30	0	5	(0.0)	5	102.0	526	-	-	-	-	-	-	0	1	2	2	2	3	2	2	2	1	0	-	-	-	-	-	-	-	-	-	-	-	526	-
12/31/2017	2017	12	31	0	5	(0.0)	5	91.8	496	-	-	-	-	-	-	-	0	1	2	2	2	2	2	2	1	0	-	-	-	-	-	-	-	-	-	-	-	496	-
1/31/2018	2018	1	31	0	6	(0.0)	6	97.8	550	-	-	-	-	-	-	-	0	1	2	3	3	3	3	2	2	1	0	-	-	-	-	-	-	-	-	-	-	550	-
2/28/2018	2018	2	28	0	6	(0.0)	6	93.6	547	-	-	-	-	-	-	0	1	1	2	3	3	3	3	2	1	1	0	-	-	-	-	-	-	-	-	-	-	547	-
3/31/2018	2018	3	31	0	6	(0.0)	6	131.2	795	-	-	-	-	-	-	-	0	1	2	3	3	4	4	3	3	2	1	0	-	-	-	-	-	-	-	-	-	-	795	-
4/30/2018	2018	4	30	0	6	(0.0)	6	136.5	858	-	-	-	-	-	-	0	1	2	3	3	4	4	4	3	3	2	1	0	-	-	-	-	-	-	-	-	-	-	858	-
5/31/2018	2018	5	31	0	7	(0.0)	7	149.5	973	-	-	-	-	-	-	0	1	2	3	3	4	4	4	4	3	2	1	0	0	-	-	-	-	-	-	-	-	-	973	-
6/30/2018	2018	6	30	0	7	(0.0)	7	130.3	876	-	-	-	-	-	-	0	1	2	2	3	4	4	4	3	3	2	1	0	0	-	-	-	-	-	-	-	-	-	876	-
7/31/2018	2018	7	31	0	7	(0.0)	7	132.1	918	-	-	-	-	-	-	0	1	2	2	3	3	4	4	3	3	2	1	1	0	-	-	-	-	-	-	-	-	-	918	-
8/31/2018	2018	8	31	0	7	(0.0)	7	130.7	937	-	-	-	-	-	-	0	1	2	3	3	4	4	4	4	3	2	1	0	0	-	-	-	-	-	-	-	-	-	937	-
9/30/2018	2018	9	30	0	7	(0.0)	7	121.9	901	-	-	-	-	-	-	-	1	2	3	3	4	4	4	4	3	2	1	0	-	-	-	-	-	-	-	-	-	-	901	-
10/31/2018	2018	10	31	0	8	(0.0)	8	126.3	962	-	-	-	-	-	-	-	0	2	3	4	4	5	4	4	3	2	1	-	-	-	-	-	-	-	-	-	-	-	962	-
11/30/2018	2018	11	30	0	8	(0.0)	8	102.0	799	-	-	-	-	-	-	0	1	3	3	4	4	4	3	3	1	0	-	-	-	-	-	-	-	-	-	-	-	799	-
12/31/2018	2018	12	31	0	8	(0.0)	8	91.8	739	-	-	-	-	-	-	-	1	2	3	3	4	3	3	3	2	0	-	-	-	-	-	-	-	-	-	-	-	739	-
1/31/2019	2019	1	31	1	9	(0.0)	9	97.8	867	-	-	-	-	-	-	-	1	2	3	4	4	4	4	3	2	1	-	-	-	-	-	-	-	-	-	-	-	867	-
2/28/2019	2019	2	28	1	10	(0.0)	10	93.6	906	-	-	-	-	-	-	0	1	2	4	4	5	5	4	4	2	1	0	-	-	-	-	-	-	-	-	-	-	-	906	-
3/31/2019	2019	3	31	1	11	(0.0)	10	131.2	1,375	-	-	-	-	-	-	-	0	2	4	5	6	6	6	5	5	3	2	0	-	-	-	-	-	-	-	-	-	-	1,375	-
4/30/2019	2019	4	30	1	11	(0.0)	11	136.5	1,541	-	-	-	-	-	-	0	1	3	4	6	6	7	7	6	5	4	2	1	-	-	-	-	-	-	-	-	-	-	1,541	-
5/31/2019	2019	5	31	1	12	(0.0)	12	149.5	1,808	-	-	-	-	-	-	0	2	4	5	6	7	7	7	7	6	4	2	1	0	-	-	-	-	-	-	-	-	-	1,808	-
6/30/2019	2019	6	30	1	13	(0.0)	13	130.3	1,681	-	-	-	-	-	-	0	1	3	4	6	7	7	7	6	6	4	3	1	0	-	-	-	-	-	-	-	-	-	1,681	-
7/31/2019	2019	7	31	1	14	(0.0)	14	132.1	1,811	-	-	-	-	-	-	0	1	3	5	6	7	7	7	7	6	5	3	1	0	-	-	-	-	-	-	-	-	-	1,811	-
8/31/2019	2019	8	31	1	15	(0.0)	15	130.7	1,897	-	-	-	-	-	-	0	1	3	5	7	7	8	8	8	6	5	3	1	0	-	-	-	-	-	-	-	-	-	1,897	-
9/30/2019	2019	9	30	1	15	(0.0)	15	121.9	1,867	-	-	-	-	-	-	-	1	4	6	7	8	8	8	8	6	4	2	0	-	-	-	-	-	-	-	-	-	-	1,867	-
10/31/2019	2019	10	31	1	16	(0.0)	16	126.3	2,037	-	-	-	-	-	-	-	1	3	6	7	9	10	9	8	6	4	1	-	-	-	-	-	-	-	-	-	-	-	2,037	-
11/30/2019	2019	11	30	1	17	(0.0)	17	102.0	1,727	-	-	-	-	-	-	0	3	6	7	8	9	8	7	6	3	1	-	-	-	-	-	-	-	-	-	-	-	1,727	-
12/31/2019	2019	12	31	1	18	(0.0)	18	91.8	1,628	-	-	-	-	-	-	-	2	4	6	7	8	7	7	6	3	1	-	-	-	-	-	-	-	-	-	-	-	1,628	-
1/31/2020	2020	1	31	2	20	(0.0)	20	97.8	1,951	-	-	-	-	-	-	-	1	5	7	9	10	9	8	7	5	2	-	-	-	-	-	-	-	-	-	-	-	1,951	-
2/29/2020	2020	2	29	2	22	(0.0)	22	93.6	2,075	-	-	-	-	-	-	0	2	5	8	10	10	11	10	8	5	3	0	-	-	-	-	-	-	-	-	-	-	-	2,075	-
3/31/2020	2020	3	31	2	25	(0.0)	24	131.2	3,197	-	-	-	-	-	-	-	1	4	8	11	13	14	15	13	11	8	4	1	-	-	-	-	-	-	-	-	-	-	3,197	-
4/30/2020	2020	4	30	2	27	(0.0)	27	136.5	3,629	-	-	-	-	-	-	0	2	7	11	13	15	15	15	15	12	9	5	1	-	-	-	-	-	-	-	-	-	-	3,629	-
5/31/2020	2020	5	31	2	29	(0.0)	29	149.5	4,305	-	-	-	-	-	-	1	4	9	13	15	16	18	18	16	13	10	6	2	0	-	-	-	-	-	-	-	-	-	4,305	-
6/30/2020	2020	6	30	2	31	(0.0)	31	130.3	4,038	-	-	-	-	-	-	1	4	7	11	15	16	17	17	15	13	11	6	2	0	-	-	-	-	-	-	-	-	-	4,038	-
7/31/2020	2020	7	31	2	33	(0.0)	33	132.1	4,386	-	-	-	-	-	-	1	3	8	12	14	16	18	18	17	14	11	6	3	0	-	-	-	-	-	-	-	-	-	4,386	-
8/31/2020	2020	8	31	2	36	(0.0)	35	130.7	4,628	-	-	-	-	-	-	0	3	8	13	17	18	18	20	18	15	11	6	2	0	-	-	-	-	-	-	-	-	-	4,628	-
9/30/2020	2020	9	30	2	38	(0.0)	38	121.9	4,585	-	-	-	-	-	-	-	3	9	14	17	19	20	20	19	14	11	5	1	-	-	-	-	-	-	-	-	-	-	4,585	-

10/31/2020	2020	10	31	2	40	(0.0)	40	126.3	5,031	-	-	-	-	-	-	-	2	9	15	18	22	24	23	19	15	10	4	-	-	-	-	-	-	5,031	-
11/30/2020	2020	11	30	2	42	(0.0)	42	102.0	4,288	-	-	-	-	-	-	1	7	14	18	20	21	20	18	15	8	2	-	-	-	-	-	-	-	4,288	-
12/31/2020	2020	12	31	2	45	(0.0)	44	91.8	4,061	-	-	-	-	-	-	-	4	11	16	19	19	18	19	15	9	2	-	-	-	-	-	-	-	4,061	-
1/31/2021	2021	1	31	6	50	(0.0)	50	97.8	4,866	-	-	-	-	-	-	-	3	12	18	22	24	23	21	18	12	4	-	-	-	-	-	-	-	4,866	-
2/28/2021	2021	2	28	6	56	(0.0)	55	93.6	5,176	-	-	-	-	-	-	0	5	14	21	25	27	27	25	21	13	7	0	-	-	-	-	-	-	5,176	-
3/31/2021	2021	3	31	6	61	(0.0)	61	131.2	7,973	-	-	-	-	-	-	-	2	11	21	27	32	36	36	32	27	20	11	2	-	-	-	-	-	7,973	-
4/30/2021	2021	4	30	6	67	(0.0)	66	136.5	9,050	-	-	-	-	-	-	0	6	16	26	33	38	39	38	37	30	22	13	3	-	-	-	-	-	9,050	-
5/31/2021	2021	5	31	6	72	(0.0)	72	149.5	10,737	-	-	-	-	-	-	1	9	21	32	38	41	44	44	40	33	25	14	5	0	-	-	-	-	10,737	-
6/30/2021	2021	6	30	6	78	(0.0)	77	130.3	10,072	-	-	-	-	-	-	2	9	18	26	37	41	43	42	38	33	26	15	6	1	-	-	-	-	10,072	-
7/31/2021	2021	7	31	6	83	(0.0)	83	132.1	10,939	-	-	-	-	-	-	1	8	20	30	36	41	44	45	41	36	28	16	6	1	-	-	-	-	10,939	-
8/31/2021	2021	8	31	6	89	(0.0)	88	130.7	11,541	-	-	-	-	-	-	0	7	19	32	42	45	46	49	46	37	28	16	5	0	-	-	-	-	11,541	-
9/30/2021	2021	9	30	6	94	(0.0)	94	121.9	11,434	-	-	-	-	-	-	-	7	23	35	44	48	50	50	47	36	26	13	2	-	-	-	-	-	11,434	-
10/31/2021	2021	10	31	6	100	(0.0)	99	126.3	12,547	-	-	-	-	-	-	-	6	21	37	46	56	61	57	47	38	26	9	-	-	-	-	-	-	12,547	-
11/30/2021	2021	11	30	6	105	(0.0)	105	102.0	10,694	-	-	-	-	-	-	2	17	35	45	50	53	49	44	37	20	4	-	-	-	-	-	-	-	10,694	-
12/31/2021	2021	12	31	6	111	(0.0)	110	91.8	10,128	-	-	-	-	-	-	-	10	27	39	46	48	46	46	39	22	4	-	-	-	-	-	-	-	10,128	-
1/31/2022	2022	1	31	1	112	(0.0)	112	97.8	10,922	-	-	-	-	-	-	-	7	26	40	50	55	51	47	40	27	10	-	-	-	-	-	-	-	10,922	-
2/28/2022	2022	2	28	1	114	(0.0)	113	93.6	10,585	-	-	-	-	-	-	0	10	29	42	51	55	56	52	42	27	14	0	-	-	-	-	-	-	10,585	-
3/31/2022	2022	3	31	1	115	(0.0)	114	131.2	15,005	-	-	-	-	-	-	-	4	21	39	51	61	68	68	60	50	37	21	4	-	-	-	-	-	15,005	-
4/30/2022	2022	4	30	1	117	(0.0)	116	136.5	15,801	-	-	-	-	-	-	0	10	29	46	58	66	67	67	64	53	39	22	5	-	-	-	-	-	15,801	-
5/31/2022	2022	5	31	1	118	(0.0)	117	149.5	17,512	-	-	-	-	-	-	2	15	35	52	61	67	72	71	65	54	40	23	8	0	-	-	-	-	17,512	-
6/30/2022	2022	6	30	1	119	(0.0)	118	130.3	15,434	-	-	-	-	-	-	2	13	28	40	56	62	66	64	58	51	41	23	9	1	-	-	-	-	15,434	-
7/31/2022	2022	7	31	1	121	(0.0)	120	132.1	15,828	-	-	-	-	-	-	2	12	29	43	52	59	64	65	60	52	40	23	9	1	-	-	-	-	15,828	-
8/31/2022	2022	8	31	1	122	(0.0)	121	130.7	15,836	-	-	-	-	-	-	0	10	26	43	57	62	63	68	63	50	39	22	7	0	-	-	-	-	15,836	-
9/30/2022	2022	9	30	1	124	(0.1)	123	121.9	14,934	-	-	-	-	-	-	-	10	30	46	57	63	65	65	61	47	34	17	2	-	-	-	-	-	14,934	-
10/31/2022	2022	10	31	1	125	(0.1)	124	126.3	15,652	-	-	-	-	-	-	-	7	27	47	57	69	76	71	59	48	32	11	-	-	-	-	-	-	15,652	-
11/30/2022	2022	11	30	1	126	(0.1)	125	102.0	12,780	-	-	-	-	-	-	3	20	41	54	60	64	58	52	44	24	5	-	-	-	-	-	-	-	12,780	-
12/31/2022	2022	12	31	1	128	(0.1)	127	91.8	11,625	-	-	-	-	-	-	-	12	31	45	53	55	52	53	44	25	5	-	-	-	-	-	-	-	11,625	-
1/31/2023	2023	1	31	4	132	(0.1)	131	97.8	12,779	-	-	-	-	-	-	-	8	30	47	59	64	60	55	47	31	11	-	-	-	-	-	-	-	12,779	-
2/28/2023	2023	2	28	4	136	(0.1)	135	93.6	12,615	-	-	-	-	-	-	0	12	34	51	61	66	66	62	50	32	16	0	-	-	-	-	-	-	12,615	-
3/31/2023	2023	3	31	4	140	(0.1)	139	131.2	18,200	-	-	-	-	-	-	-	5	25	47	62	74	82	83	73	61	45	25	5	-	-	-	-	-	18,200	-
4/30/2023	2023	4	30	4	144	(0.1)	143	136.5	19,493	-	-	-	-	-	-	1	13	35	57	71	81	83	83	80	65	48	27	7	-	-	-	-	-	19,493	-
5/31/2023	2023	5	31	4	148	(0.1)	147	149.5	21,957	-	-	-	-	-	-	3	19	44	65	77	84	90	89	81	68	50	29	10	0	-	-	-	-	21,957	-
6/30/2023	2023	6	30	4	152	(0.1)	151	130.3	19,655	-	-	-	-	-	-	3	17	35	51	72	79	84	81	74	64	52	29	11	1	-	-	-	-	19,655	-
7/31/2023	2023	7	31	4	157	(0.1)	155	132.1	20,462	-	-	-	-	-	-	2	15	37	55	67	77	83	84	77	67	52	30	12	1	-	-	-	-	20,462	-
8/31/2023	2023	8	31	4	161	(0.1)	159	130.7	20,771	-	-	-	-	-	-	1	13	34	57	75	81	83	89	82	66	51	29	9	0	-	-	-	-	20,771	-
9/30/2023	2023	9	30	4	165	(0.1)	163	121.9	19,863	-	-	-	-	-	-	-	13	40	61	76	84	87	87	81	62	46	23	3	-	-	-	-	-	19,863	-
10/31/2023	2023	10	31	4	169	(0.1)	167	126.3	21,099	-	-	-	-	-	-	-	10	36	63	77	93	102	96	80	65	43	15	-	-	-	-	-	-	21,099	-
11/30/2023	2023	11	30	4	173	(0.1)	171	102.0	17,452	-	-	-	-	-	-	4	27	57	74	82	87	80	71	60	32	7	-	-	-	-	-	-	-	17,452	-
12/31/2023	2023	12	31	4	177	(0.1)	175	91.8	16,075	-	-	-	-	-	-	-	16	43	62	73	76	72	74	61	34	7	-	-	-	-	-	-	-	16,075	-
1/31/2024	2024	1	31	3	180	(0.1)	178	97.8	17,437	-	-	-	-	-	-	-	11	42	64	80	87	82	75	64	43	15	-	-	-	-	-	-	-	17,437	-
2/29/2024	2024	2	29	3	184	(0.1)	182	93.6	16,997	-	-	-	-	-	-	0	16	44	66	79	85	86	80	65	42	21	1	-	-	-	-	-	-	16,997	-
3/31/2024	2024	3	31	3	187	(0.1)	185	131.2	24,227	-	-	-	-	-	-	-	7	33	63	83	98	109	110	97	81	60	33	6	-	-	-	-	-	24,227	-
4/30/2024	2024	4	30	3	190	(0.1)	188	136.5	25,650	-	-	-	-	-	-	1	17	46	75	93	107	109	109	105	85	63	36	9	-	-	-	-	-	25,650	-
5/31/2024	2024	5	31	3	193	(0.1)	191	149.5	28,576	-	-	-	-	-	-	4	24	57	84	100	109	117	116	106	88	66	38	12	0	-	-	-	-	28,576	-
6/30/2024	2024	6	30	3	197	(0.1)	194	130.3	25,313	-	-	-	-	-	-	4	22	46	66	92	102	108	105	96	83	66	38	14	2	-	-	-	-	25,313	-
7/31/2024	2024	7	31	3	200	(0.1)	198	132.1	26,088	-	-	-	-	-	-	3	19	47	71	86	98	106	108	99	85	66	38	15	2	-	-	-	-	26,088	-
8/31/2024	2024	8	31	3	203	(0.1)	201	130.7	26,227	-	-	-	-	-	-	1	17	43	72	95	102	104	112	104	83	64	37	12	0	-	-	-	-	26,227	-
9/30/2024	2024	9	30	3	207	(0.1)	204	121.9	24,849	-	-	-	-	-	-	-	16	50	76	95	105	109	108	102	78	57	29	4	-	-	-	-	-	24,849	-
10/31/2024	2024	10	31	3	210	(0.1)	207	126.3	26,163	-	-	-	-	-	-	-	12	44	78	96	116	127	119	99	80	53	19	-	-	-	-	-	-	26,163	-
11/30/2024	2024	11	30	3	213	(0.1)	210	102.0	21,456	-	-	-	-	-	-	4	33	70	91	101	107	98	88	74	40	8	-	-	-	-	-	-	-	21,456	-
12/31/2024	2024	12	31	3	216	(0.1)	214	91.8	19,601	-	-	-	-	-	-	-	20	52	75	89	93	88	90	75	42	9	-	-	-	-	-	-	-	19,601	-
1/31/2025	2025	1	31	4	220	(0.1)	217	97.8	21,224	-	-	-	-	-	-	-	14	51	78	97	106	100	91	77	52	19	-	-	-	-	-	-	-	21,224	-
2/28/2025	2025	2	28	4	224	(0.1)	221	93.6	20,652	-	-	-	-	-	-	0	20	56	83	100	107	109	101	82	53	26	1	-	-	-	-	-	-	20,652	-
3/31/2025	2025	3	31	4	227	(0.1)	224	131.2	29,388	-	-	-	-	-	-	-	8	40	76	100	119	133	133	117	99	73	41	7	-	-	-	-	-	29,388	-
4/30/2025	2025	4	30	4	231	(0.1)	228	136.5	31,063	-	-	-	-	-	-	1	21	56	91	113	129	133	132	127	103	77	43	11	-	-	-	-	-	31,063	-
5/31/2025	2025	5	31	4	235	(0.1)	231	149.5	34,552	-	-	-	-	-	-	4	29	69	102	121	132	141	141	128	106	79	46	15	0	-	-	-	-	34,552	-
6/30/2025	2025	6	30	4	238	(0.1)	235	130.3	30,560	-	-	-	-	-	-	5	27	55	80	112	124	131	126	116	100	80	46	17	2	-	-	-	-	30,560	-
7/31/2025	2025	7	31	4	242	(0.1)	238	132.1	31,449	-	-	-	-	-	-	4	23	57	85	103	118	127	130	119	103	80	46	18	2	-	-	-	-	31,449	-
8/31/2025	2025	8	31	4	245	(0.1)	242	130.7	31,572	-	-	-	-	-	-	1	20	52	86	114	123	125	135	125	100	77	44	14	0	-	-	-	-	31,572	-
9/30/2025	2025	9	30	4	249	(0.1)	245	121.9	29,871	-	-	-	-	-	-	-	19	61	91	114	126	130	130	122	94	69	34	4	-	-	-	-	-	29,871	-
10/31/2025	2025	10	31	4	253	(0.1)	249	126.3	31,408	-	-	-	-	-	-	-	14	53	94	115	139	152	143	119	96	64	23	-	-	-	-	-	-	31,408	-
11/30/2025	2025	11	30	4	256	(0.1)	252	102.0	25,724	-	-	-	-	-	-	5	40	83	109	121	128	118	105	89	48	10	-	-	-	-	-	-	-	25,724	-
12/31/2025	2025	12	31	4	260	(0.1)	256	91.8	23,471	-	-	-	-	-	-	-	24	62	90	107	111	106	107	89	50	10	-	-	-	-	-	-	-	23,471	-
1/31/2026	2026	1	31	4	264	(0.1)	260	97.8	25,392	-	-	-	-	-	-	-	16	60	93	117	127	120	109	93	62	22	-	-	-	-	-	-	-	25,392	-
2/28/2026	2026	2	28	4	268	(0.1)	264	93.6	24,688	-	-	-	-	-	-	0	24	67	99	120	128	130	120	98	63	32	1	-	-	-	-	-	-	24,688	-
3/31/2026	2026	3	31	4	272	(0.1)	268	131.2	35,105	-	-	-	-	-	-	-	10	48	91	120	142	159	159	140	118	87	48	9	-	-	-	-	-	35,105	-
4/30/2026	2026	4	30	4	276	(0.1)	272	136.5	37,079	-	-	-	-	-	-	1	25	67	108	135	154	158	157	151	123	91	52	13	-	-	-	-	-	37,079	-
5/31/2026	2026	5	31	4	280	(0.1)	276	149.5	41,213	-	-	-	-	-	-	5	35	82	122	145	157	169	168	152	127	95	55	18	0	-	-	-	-	41,213	-
6/30/2026	2026	6	30	4	284	(0.1)	280	130.3	36,425	-	-	-	-	-	-	6	32	66	95	133	147	156	151	138	119	96	54	20	2	-	-	-	-	36,425	-
7/31/2026	2026	7	31	4	289	(0.1)	284	132.1	37,460	-	-	-	-	-	-	4	27	68	102	123	141	152	155	142	122	95	55	22	2	-	-	-	-	37,460	-
8/31/2026	2026	8	31	4	293	(0.1)	288	130.7	37,581	-	-	-	-	-	-	1	24	62	103	136	147	149	161	149	119	92	53	17	0	-	-	-	-	37,581	-
9/30/2026	2026	9	30	4	297	(0.1)	292	121.9	35,534	-	-	-	-	-	-	-	23	72	109	135	150	155	155	146	112	82	41	5	-	-	-	-	-	35,534	-
10/31/2026	2026	10	31	4	301	(0.1)	296	126.3	37,338	-	-	-	-	-	-	-	17	63	111	137	165	181	170	141	114	76	27	-	-	-	-	-	-	37,338	-
11/30/2026	2026	11	30	4	305	(0.1)	300	102.0	30,562	-	-	-	-	-	-	6	48	99	130	144	153	140	125	106	57	12	-	-	-	-	-	-	-	30,562	-
12/31/2026	2026	12	31	4	309	(0.1)	304	91.8	27,869	-	-	-	-	-	-	-	28	74	107	127	132	126	128	106	59	12	-	-	-	-	-	-	-	27,869	-
1/31/2027	2027	1	31	4	313	(0.1)	308	97.8	30,076	-	-	-	-	-	-	-	19	72	111	138	150	142	129	110	73	27	-	-	-	-	-	-	-	30,076	-
2/28/2027	2027	2	28	4	317	(0.1)	312	93.6	29,171	-	-	-	-	-	-	0	28	79	117	141	152	153	142	116	74	37	1	-	-	-	-	-	-	29,171	-
3/31/2027	2027	3	31	4	321	(0.1)	316	131.2	41,382	-	-	-	-	-	-	-	12	57	108	141	167	187	188	165	139	103	57	11	-	-	-	-	-	41,382	-
4/30/2027	2027	4	30	4	326	(0.1)	320	136.5	43,609	-	-	-	-	-	-	1	29	79	127	159	181	186	185	178	145	108	61	15	-	-	-	-	-	43,609	-
5/31/2027	2027	5	31	4	330	(0.1)	323	149.5	48,364	-	-	-	-	-	-	6	41	96	143	170	185	198	197	179	149	111	65	21	0	-	-	-	-	48,364	-
6/30/2027	2027	6	30	4	334	(0.1)	327	130.3	42,653	-	-	-	-	-	-	7	37	77	111	156	172	182	176	161	140	112	64	24	3	-	-	-	-	42,653	-
7/31/2027	2027	7	31	4	338	(0.1)	331	132.1	43,773	-	-	-	-	-	-	5	32	79	119	144	164	177	181	165	143	111	64	26	3	-	-	-	-	43,773	-
8/31/2027	2027	8	31	4	342	(0.1)	335	130.7	43,824	-	-	-	-	-	-	1	28	72	120	159	171	174	187	174	139	108	62	19	0	-	-	-	-	43,824	-
9/30/2027	2027	9	30	4	346	(0.1)	339	121.9	41,354	-	-	-	-	-	-	-	27	84	127	157	175	181	181	170	130	95	48	6	-	-	-	-	-	41,354	-
10/31/2027	2027	10	31	4	350	(0.1)	343	126.3	43,370	-	-	-	-	-	-	-	20	74	129	159	192	210	198	164	133	89	32	-	-	-	-	-	-	43,370	-
11/30/2027	2027	11	30	4	354	(0.1)	347	102.0	35,432	-	-	-	-	-	-	7	55	115	151	167	177	162	145	123	66	14	-	-	-	-	-	-	-	35,432	-
12/31/2027	2027	12	31	4	358	(0.1)	351	91.8	32,250	-	-	-	-	-	-	-	32	86	124	147	153	145	148	123	68	14	-	-	-	-	-	-	-	32,250	-
1/31/2028	2028	1	31	4	363	(0.1)	356	97.8	34,769	-	-	-	-	-	-	-	22	83	128	160	174	164	149	127	85	31	-	-	-	-	-	-	-	34,769	-
2/29/2028	2028	2	29	4	367	(0.1)	360	93.6	33,691	-	-	-	-	-	-	0	31	88	130	158	169	171	159	130	83	42	1	-	-	-	-	-	-	33,691	-
3/31/2028	2028	3	31	4	372	(0.1)	364	131.2	47,750	-	-	-	-	-	-	-	14	66	124	163	193	216	217	191	160	119	66	12	-	-	-	-	-	47,750	-
4/30/2028	2028	4	30	4	376	(0.2)	368	136.5	50,274	-	-	-	-	-	-	1	33	91	147	183	209	215	213	205	167	124	70	17	-	-	-	-	-	50,274	-
5/31/2028	2028	5	31	4	380	(0.2)	373	149.5	55,706	-	-	-	-	-	-	7	47	111	165	195	213	228	227	206	172	128	75	24	0	-	-	-	-	55,706	-
6/30/2028	2028	6	30	4	385	(0.2)	377	130.3	49,086	-	-	-	-	-	-	8	43	88	128	179	198	210	203	186	161	129	73	27	3	-	-	-	-	49,086	-
7/31/2028	2028	7	31	4	389	(0.2)	381	132.1	50,331	-	-	-	-	-	-	6	37	91	136	165	189	204	208	190	164	127	74	29	3	-	-	-	-	50,331	-
8/31/2028	2028	8	31	4	394	(0.2)	385	130.7	50,349	-	-	-	-	-	-	1	33	83	137	183	196	200	215	200	160	124	71	22	0	-	-	-	-	50,349	-
9/30/2028	2028	9	30	4	398	(0.2)	390	121.9	47,473	-	-	-	-	-	-	-	31	96	145	181	201	207	207	195	149	109	55	7	-	-	-	-	-	47,473	-
10/31/2028	2028	10	31	4	403	(0.2)	394	126.3	49,748	-	-	-	-	-	-	-	22	84	149	182	220	241	227	188	152	102	36	-	-	-	-	-	-	49,748	-
11/30/2028	2028	11	30	4	407	(0.2)	398	102.0	40,611	-	-	-	-	-	-	8	63	132	173	191	203	186	166	141	75	16	-	-	-	-	-	-	-	40,611	-
12/31/2028	2028	12	31	4	411	(0.2)	402	91.8	36,936	-	-	-	-	-	-	-	37	98	142	168	175	166	169	140	78	16	-	-	-	-	-	-	-	36,936	-
1/31/2029	2029	1	31	5	416	(0.2)	407	97.8	39,798	-	-	-	-	-	-	-	25	95	146	183	199	187	171	145	97	35	-	-	-	-	-	-	-	39,798	-
2/28/2029	2029	2	28	5	421	(0.2)	412	93.6	38,542	-	-	-	-	-	-	0	37	104	154	187	201	203	188	154	98	49	1	-	-	-	-	-	-	38,542	-
3/31/2029	2029	3	31	5	426	(0.2)	416	131.2	54,594	-	-	-	-	-	-	-	16	75	142	187	221	247	248	218	183	136	75	14	-	-	-	-	-	54,594	-
4/30/2029	2029	4	30	5	431	(0.2)	421	136.5	57,448	-	-	-	-	-	-	2	38	104	167	209	239	245	243	234	191	142	80	20	-	-	-	-	-	57,448	-
5/31/2029	2029	5	31	5	435	(0.2)	426	149.5	63,621	-	-	-	-	-	-	8	54	127	188	223	243	260	259	235	196	146	85	28	0	-	-	-	-	63,621	-
6/30/2029	2029	6	30	5	440	(0.2)	430	130.3	56,031	-	-	-	-	-	-	9	49	101	146	205	227	239	232	212	184	147	84	31	3	-	-	-	-	56,031	-
7/31/2029	2029	7	31	5	445	(0.2)	435	132.1	57,423	-	-	-	-	-	-	7	42	104	156	188	216	232	237	217	188	145	84	34	3	-	-	-	-	57,423	-
8/31/2029	2029	8	31	5	450	(0.2)	439	130.7	57,414	-	-	-	-	-	-	2	37	94	157	208	224	228	245	228	182	141	81	26	0	-	-	-	-	57,414	-
9/30/2029	2029	9	30	5	455	(0.2)	444	121.9	54,108	-	-	-	-	-	-	-	35	110	166	206	229	236	236	222	170	124	62	8	-	-	-	-	-	54,108	-
10/31/2029	2029	10	31	5	459	(0.2)	449	126.3	56,673	-	-	-	-	-	-	-	26	96	169	208	251	275	259	214	174	116	41	-	-	-	-	-	-	56,673	-

11/30/2029	2029	11	30	5	464	(0.2)	453	102.0	46,243	-	-	-	-	-	-	9	72	150	197	218	231	211	189	160	86	18	-	-	-	-	-	-	-	46,243	-
12/31/2029	2029	12	31	5	469	(0.2)	458	91.8	42,039	-	-	-	-	-	-	-	42	112	162	192	199	189	192	160	89	18	-	-	-	-	-	-	-	42,039	-
1/31/2030	2030	1	31	6	475	(0.2)	463	97.8	45,314	-	-	-	-	-	-	-	29	108	167	208	226	213	195	165	111	40	-	-	-	-	-	-	-	45,314	-
2/28/2030	2030	2	28	6	480	(0.2)	469	93.6	43,901	-	-	-	-	-	-	0	42	119	176	213	228	231	214	175	112	56	2	-	-	-	-	-	-	43,901	-
3/31/2030	2030	3	31	6	486	(0.2)	474	131.2	62,207	-	-	-	-	-	-	-	18	86	162	213	252	281	282	248	209	155	86	16	-	-	-	-	-	62,207	-
4/30/2030	2030	4	30	6	492	(0.2)	480	136.5	65,483	-	-	-	-	-	-	2	43	119	191	239	272	279	278	267	218	161	91	22	-	-	-	-	-	65,483	-
5/31/2030	2030	5	31	6	497	(0.2)	485	149.5	72,546	-	-	-	-	-	-	9	61	145	214	254	277	297	295	268	224	167	97	31	0	-	-	-	-	72,546	-
6/30/2030	2030	6	30	6	503	(0.2)	491	130.3	63,913	-	-	-	-	-	-	10	55	115	166	233	258	273	264	242	210	168	95	36	4	-	-	-	-	63,913	-
7/31/2030	2030	7	31	6	509	(0.2)	496	132.1	65,524	-	-	-	-	-	-	7	48	118	178	215	246	265	270	248	214	166	96	38	4	-	-	-	-	65,524	-
8/31/2030	2030	8	31	6	514	(0.2)	502	130.7	65,535	-	-	-	-	-	-	2	42	107	179	238	256	260	280	260	208	161	92	29	0	-	-	-	-	65,535	-
9/30/2030	2030	9	30	6	520	(0.2)	507	121.9	61,781	-	-	-	-	-	-	-	40	125	189	235	261	270	270	253	194	142	71	9	-	-	-	-	-	61,781	-
10/31/2030	2030	10	31	6	526	(0.2)	512	126.3	64,731	-	-	-	-	-	-	-	29	110	193	237	286	314	295	245	198	132	47	-	-	-	-	-	-	64,731	-
11/30/2030	2030	11	30	6	531	(0.2)	518	102.0	52,835	-	-	-	-	-	-	11	82	171	225	249	264	241	216	183	98	21	-	-	-	-	-	-	-	52,835	-
12/31/2030	2030	12	31	6	537	(0.2)	523	91.8	48,045	-	-	-	-	-	-	-	48	128	185	219	228	216	220	183	102	21	-	-	-	-	-	-	-	48,045	-
1/31/2031	2031	1	31	5	541	(0.2)	528	97.8	51,605	-	-	-	-	-	-	-	33	123	190	237	258	243	222	188	126	46	-	-	-	-	-	-	-	51,605	-
2/28/2031	2031	2	28	5	546	(0.2)	532	93.6	49,822	-	-	-	-	-	-	0	48	135	200	241	259	262	243	199	127	64	2	-	-	-	-	-	-	49,822	-
3/31/2031	2031	3	31	5	551	(0.2)	536	131.2	70,356	-	-	-	-	-	-	-	20	97	183	240	285	318	319	281	236	175	97	18	-	-	-	-	-	70,356	-
4/30/2031	2031	4	30	5	555	(0.2)	541	136.5	73,814	-	-	-	-	-	-	2	49	134	215	269	307	315	313	301	246	182	103	25	-	-	-	-	-	73,814	-
5/31/2031	2031	5	31	5	560	(0.2)	545	149.5	81,506	-	-	-	-	-	-	10	69	162	241	286	311	333	332	302	251	187	109	35	0	-	-	-	-	81,506	-
6/30/2031	2031	6	30	5	564	(0.2)	550	130.3	71,577	-	-	-	-	-	-	11	62	129	186	261	289	306	296	271	235	188	107	40	4	-	-	-	-	71,577	-
7/31/2031	2031	7	31	5	569	(0.2)	554	132.1	73,149	-	-	-	-	-	-	8	53	132	198	240	275	296	302	276	239	185	107	43	4	-	-	-	-	73,149	-
8/31/2031	2031	8	31	5	574	(0.2)	558	130.7	72,935	-	-	-	-	-	-	2	47	120	199	264	285	290	312	289	231	179	102	32	0	-	-	-	-	72,935	-
9/30/2031	2031	9	30	5	578	(0.2)	563	121.9	68,549	-	-	-	-	-	-	-	44	139	210	261	290	299	299	281	215	157	79	10	-	-	-	-	-	68,549	-
10/31/2031	2031	10	31	5	583	(0.2)	567	126.3	71,608	-	-	-	-	-	-	-	32	122	214	263	317	347	327	271	219	146	52	-	-	-	-	-	-	71,608	-
11/30/2031	2031	11	30	5	587	(0.2)	571	102.0	58,277	-	-	-	-	-	-	12	91	189	248	275	291	266	239	202	108	23	-	-	-	-	-	-	-	58,277	-
12/31/2031	2031	12	31	5	592	(0.2)	576	91.8	52,842	-	-	-	-	-	-	-	53	140	203	241	251	238	242	201	112	23	-	-	-	-	-	-	-	52,842	-
1/31/2032	2032	1	31	4	596	(0.2)	579	97.8	56,644	-	-	-	-	-	-	-	36	135	208	260	283	267	243	207	138	50	-	-	-	-	-	-	-	56,644	-
2/29/2032	2032	2	29	4	600	(0.2)	583	93.6	54,577	-	-	-	-	-	-	0	51	143	211	255	274	277	257	210	134	67	2	-	-	-	-	-	-	54,577	-
3/31/2032	2032	3	31	4	604	(0.2)	586	131.2	76,921	-	-	-	-	-	-	-	22	106	200	263	311	347	349	307	258	192	106	20	-	-	-	-	-	76,921	-
4/30/2032	2032	4	30	4	607	(0.2)	590	136.5	80,547	-	-	-	-	-	-	2	53	146	235	294	335	344	341	329	268	199	112	28	-	-	-	-	-	80,547	-
5/31/2032	2032	5	31	4	611	(0.2)	594	149.5	88,773	-	-	-	-	-	-	11	75	177	262	311	339	363	361	328	273	204	119	39	0	-	-	-	-	88,773	-
6/30/2032	2032	6	30	4	615	(0.2)	597	130.3	77,813	-	-	-	-	-	-	12	68	140	202	284	315	332	322	294	255	204	116	43	5	-	-	-	-	77,813	-
7/31/2032	2032	7	31	4	619	(0.2)	601	132.1	79,375	-	-	-	-	-	-	9	58	143	215	260	298	321	328	300	259	201	116	47	5	-	-	-	-	79,375	-
8/31/2032	2032	8	31	4	623	(0.2)	605	130.7	79,000	-	-	-	-	-	-	2	51	130	216	286	308	314	337	313	251	194	111	35	0	-	-	-	-	79,000	-
9/30/2032	2032	9	30	4	627	(0.3)	608	121.9	74,116	-	-	-	-	-	-	-	48	150	227	282	313	324	324	304	233	170	86	11	-	-	-	-	-	74,116	-
10/31/2032	2032	10	31	4	631	(0.3)	612	126.3	77,287	-	-	-	-	-	-	-	35	131	231	283	342	375	353	292	237	158	56	-	-	-	-	-	-	77,287	-
11/30/2032	2032	11	30	4	634	(0.3)	615	102.0	62,789	-	-	-	-	-	-	13	98	204	267	296	313	287	257	217	117	24	-	-	-	-	-	-	-	62,789	-
12/31/2032	2032	12	31	4	638	(0.3)	619	91.8	56,836	-	-	-	-	-	-	-	57	151	219	259	269	256	260	216	121	25	-	-	-	-	-	-	-	56,836	-
1/31/2033	2033	1	31	-	638	(0.3)	619	97.8	60,517	-	-	-	-	-	-	-	39	144	222	278	302	285	260	221	148	54	-	-	-	-	-	-	-	60,517	-
2/28/2033	2033	2	28	-	638	(0.3)	619	93.6	57,922	-	-	-	-	-	-	0	56	157	232	281	301	305	282	231	147	74	2	-	-	-	-	-	-	57,922	-
3/31/2033	2033	3	31	-	638	(0.3)	618	131.2	81,097	-	-	-	-	-	-	-	23	112	211	277	328	366	368	324	272	202	112	21	-	-	-	-	-	81,097	-
4/30/2033	2033	4	30	-	638	(0.3)	618	136.5	84,362	-	-	-	-	-	-	2	56	153	246	307	351	360	358	344	281	208	117	29	-	-	-	-	-	84,362	-
5/31/2033	2033	5	31	-	638	(0.3)	618	149.5	92,371	-	-	-	-	-	-	12	78	184	273	324	353	378	376	342	285	212	124	40	0	-	-	-	-	92,371	-
6/30/2033	2033	6	30	-	638	(0.3)	618	130.3	80,441	-	-	-	-	-	-	13	70	145	209	294	325	344	333	304	264	211	120	45	5	-	-	-	-	80,441	-
7/31/2033	2033	7	31	-	638	(0.3)	617	132.1	81,528	-	-	-	-	-	-	9	59	147	221	267	306	330	336	308	266	206	120	48	5	-	-	-	-	81,528	-
8/31/2033	2033	8	31	-	638	(0.3)	617	130.7	80,623	-	-	-	-	-	-	2	52	132	220	292	315	320	344	320	256	198	113	36	0	-	-	-	-	80,623	-
9/30/2033	2033	9	30	-	638	(0.3)	617	121.9	75,157	-	-	-	-	-	-	-	49	152	230	286	318	328	328	308	236	172	87	11	-	-	-	-	-	75,157	-
10/31/2033	2033	10	31	-	638	(0.3)	617	126.3	77,877	-	-	-	-	-	-	-	35	132	233	286	345	378	355	295	239	159	57	-	-	-	-	-	-	77,877	-
11/30/2033	2033	11	30	-	638	(0.3)	616	102.0	62,870	-	-	-	-	-	-	13	98	204	267	296	314	287	257	218	117	24	-	-	-	-	-	-	-	62,870	-
12/31/2033	2033	12	31	-	638	(0.3)	616	91.8	56,553	-	-	-	-	-	-	-	57	150	218	258	268	255	259	215	120	25	-	-	-	-	-	-	-	56,553	-
1/31/2034	2034	1	31	-	638	(0.3)	616	97.8	60,216	-	-	-	-	-	-	-	38	143	221	276	301	284	259	220	147	53	-	-	-	-	-	-	-	60,216	-
2/28/2034	2034	2	28	-	638	(0.3)	616	93.6	57,634	-	-	-	-	-	-	0	55	156	231	279	300	303	281	230	147	74	2	-	-	-	-	-	-	57,634	-
3/31/2034	2034	3	31	-	638	(0.3)	615	131.2	80,693	-	-	-	-	-	-	-	23	111	210	276	326	364	366	322	271	201	111	20	-	-	-	-	-	80,693	-
4/30/2034	2034	4	30	-	638	(0.3)	615	136.5	83,942	-	-	-	-	-	-	2	56	152	245	306	349	358	356	342	280	207	117	29	-	-	-	-	-	83,942	-
5/31/2034	2034	5	31	-	638	(0.3)	615	149.5	91,911	-	-	-	-	-	-	12	77	183	271	322	351	376	374	340	283	211	123	40	0	-	-	-	-	91,911	-
6/30/2034	2034	6	30	-	638	(0.3)	614	130.3	80,041	-	-	-	-	-	-	13	69	144	208	292	324	342	331	303	262	210	119	45	5	-	-	-	-	80,041	-
7/31/2034	2034	7	31	-	638	(0.3)	614	132.1	81,122	-	-	-	-	-	-	9	59	146	220	266	305	328	335	307	265	205	119	48	5	-	-	-	-	81,122	-
8/31/2034	2034	8	31	-	638	(0.3)	614	130.7	80,222	-	-	-	-	-	-	2	52	132	219	291	313	319	343	318	255	197	113	36	0	-	-	-	-	80,222	-
9/30/2034	2034	9	30	-	638	(0.3)	614	121.9	74,783	-	-	-	-	-	-	-	49	152	229	285	316	327	326	307	235	172	86	11	-	-	-	-	-	74,783	-
10/31/2034	2034	10	31	-	638	(0.3)	613	126.3	77,489	-	-	-	-	-	-	-	35	132	231	284	343	376	353	293	237	158	56	-	-	-	-	-	-	77,489	-
11/30/2034	2034	11	30	-	638	(0.3)	613	102.0	62,557	-	-	-	-	-	-	13	98	203	266	295	312	286	256	217	116	24	-	-	-	-	-	-	-	62,557	-
12/31/2034	2034	12	31	-	638	(0.3)	613	91.8	56,272	-	-	-	-	-	-	-	57	149	216	257	267	253	258	214	120	25	-	-	-	-	-	-	-	56,272	-
1/31/2035	2035	1	31	-	638	(0.3)	613	97.8	59,916	-	-	-	-	-	-	-	38	143	220	275	299	282	257	219	146	53	-	-	-	-	-	-	-	59,916	-
2/28/2035	2035	2	28	-	638	(0.3)	612	93.6	57,347	-	-	-	-	-	-	0	55	155	230	278	298	302	280	229	146	73	2	-	-	-	-	-	-	57,347	-
3/31/2035	2035	3	31	-	638	(0.3)	612	131.2	80,291	-	-	-	-	-	-	-	23	111	209	274	325	363	364	320	270	200	111	20	-	-	-	-	-	80,291	-
4/30/2035	2035	4	30	-	638	(0.3)	612	136.5	83,524	-	-	-	-	-	-	2	55	151	243	304	348	356	354	341	278	206	116	29	-	-	-	-	-	83,524	-
5/31/2035	2035	5	31	-	638	(0.3)	612	149.5	91,454	-	-	-	-	-	-	12	77	182	270	321	349	374	372	338	282	210	122	40	0	-	-	-	-	91,454	-
6/30/2035	2035	6	30	-	638	(0.3)	611	130.3	79,643	-	-	-	-	-	-	13	69	144	207	291	322	340	329	301	261	209	119	44	5	-	-	-	-	79,643	-
7/31/2035	2035	7	31	-	638	(0.3)	611	132.1	80,718	-	-	-	-	-	-	9	59	146	219	265	303	327	333	305	264	204	118	47	5	-	-	-	-	80,718	-
8/31/2035	2035	8	31	-	638	(0.3)	611	130.7	79,822	-	-	-	-	-	-	2	52	131	218	289	311	317	341	317	253	196	112	35	0	-	-	-	-	79,822	-
9/30/2035	2035	9	30	-	638	(0.3)	611	121.9	74,411	-	-	-	-	-	-	-	48	151	228	283	314	325	325	305	234	171	86	11	-	-	-	-	-	74,411	-
10/31/2035	2035	10	31	-	638	(0.3)	610	126.3	77,103	-	-	-	-	-	-	-	35	131	230	283	341	374	352	292	236	158	56	-	-	-	-	-	-	77,103	-
11/30/2035	2035	11	30	-	638	(0.3)	610	102.0	62,246	-	-	-	-	-	-	13	97	202	265	293	311	284	255	216	116	24	-	-	-	-	-	-	-	62,246	-
12/31/2035	2035	12	31	-	638	(0.3)	610	91.8	55,992	-	-	-	-	-	-	-	56	149	215	255	265	252	256	213	119	25	-	-	-	-	-	-	-	55,992	-
1/31/2036	2036	1	31	-	638	(0.3)	610	97.8	59,618	-	-	-	-	-	-	-	38	142	219	274	298	281	256	218	146	53	-	-	-	-	-	-	-	59,618	-
2/29/2036	2036	2	29	-	638	(0.3)	609	93.6	57,062	-	-	-	-	-	-	0	53	149	221	267	287	290	269	220	140	70	2	-	-	-	-	-	-	57,062	-
3/31/2036	2036	3	31	-	638	(0.3)	609	131.2	79,892	-	-	-	-	-	-	-	23	110	208	273	323	361	363	319	268	199	110	20	-	-	-	-	-	79,892	-
4/30/2036	2036	4	30	-	638	(0.3)	609	136.5	83,108	-	-	-	-	-	-	2	55	151	242	303	346	355	352	339	277	205	116	28	-	-	-	-	-	83,108	-
5/31/2036	2036	5	31	-	638	(0.3)	609	149.5	90,998	-	-	-	-	-	-	12	77	181	269	319	348	372	370	337	280	209	122	39	0	-	-	-	-	90,998	-
6/30/2036	2036	6	30	-	638	(0.3)	608	130.3	79,246	-	-	-	-	-	-	13	69	143	206	289	320	339	328	300	260	208	118	44	5	-	-	-	-	79,246	-
7/31/2036	2036	7	31	-	638	(0.3)	608	132.1	80,317	-	-	-	-	-	-	9	59	145	218	263	302	325	331	303	262	203	118	47	5	-	-	-	-	80,317	-
8/31/2036	2036	8	31	-	638	(0.3)	608	130.7	79,425	-	-	-	-	-	-	2	51	130	217	288	310	315	339	315	252	195	111	35	0	-	-	-	-	79,425	-
9/30/2036	2036	9	30	-	638	(0.3)	608	121.9	74,041	-	-	-	-	-	-	-	48	150	226	282	313	323	323	304	233	170	85	11	-	-	-	-	-	74,041	-
10/31/2036	2036	10	31	-	638	(0.3)	607	126.3	76,720	-	-	-	-	-	-	-	35	130	229	281	339	372	350	290	235	157	56	-	-	-	-	-	-	76,720	-
11/30/2036	2036	11	30	-	638	(0.3)	607	102.0	61,936	-	-	-	-	-	-	13	97	201	263	292	309	283	254	214	115	24	-	-	-	-	-	-	-	61,936	-
12/31/2036	2036	12	31	-	638	(0.3)	607	91.8	55,713	-	-	-	-	-	-	-	56	148	214	254	264	251	255	212	118	24	-	-	-	-	-	-	-	55,713	-
1/31/2037	2037	1	31	-	638	(0.3)	607	97.8	59,321	-	-	-	-	-	-	-	38	141	218	272	296	279	255	216	145	53	-	-	-	-	-	-	-	59,321	-
2/28/2037	2037	2	28	-	638	(0.3)	606	93.6	56,778	-	-	-	-	-	-	0	54	154	228	275	295	299	277	226	144	73	2	-	-	-	-	-	-	56,778	-
3/31/2037	2037	3	31	-	638	(0.3)	606	131.2	79,494	-	-	-	-	-	-	-	23	109	207	272	321	359	361	317	267	198	110	20	-	-	-	-	-	79,494	-
4/30/2037	2037	4	30	-	638	(0.3)	606	136.5	82,695	-	-	-	-	-	-	2	55	150	241	301	344	353	350	337	275	204	115	28	-	-	-	-	-	82,695	-
5/31/2037	2037	5	31	-	638	(0.3)	606	149.5	90,545	-	-	-	-	-	-	12	76	180	267	318	346	370	368	335	279	208	121	39	0	-	-	-	-	90,545	-
6/30/2037	2037	6	30	-	638	(0.3)	605	130.3	78,852	-	-	-	-	-	-	13	68	142	205	288	319	337	326	298	259	207	118	44	5	-	-	-	-	78,852	-
7/31/2037	2037	7	31	-	638	(0.3)	605	132.1	79,917	-	-	-	-	-	-	9	58	144	217	262	300	323	330	302	261	202	117	47	5	-	-	-	-	79,917	-
8/31/2037	2037	8	31	-	638	(0.3)	605	130.7	79,030	-	-	-	-	-	-	2	51	130	216	287	308	314	338	313	251	194	111	35	0	-	-	-	-	79,030	-
9/30/2037	2037	9	30	-	638	(0.3)	605	121.9	73,672	-	-	-	-	-	-	-	48	149	225	281	311	322	322	302	232	169	85	10	-	-	-	-	-	73,672	-
10/31/2037	2037	10	31	-	638	(0.3)	604	126.3	76,338	-	-	-	-	-	-	-	34	130	228	280	338	370	348	289	234	156	56	-	-	-	-	-	-	76,338	-
11/30/2037	2037	11	30	-	638	(0.3)	604	102.0	61,628	-	-	-	-	-	-	13	96	200	262	290	308	282	252	213	114	24	-	-	-	-	-	-	-	61,628	-
12/31/2037	2037	12	31	-	638	(0.3)	604	91.8	55,436	-	-	-	-	-	-	-	56	147	213	253	263	250	254	211	118	24	-	-	-	-	-	-	-	55,436	-
1/31/2038	2038	1	31	-	638	(0.3)	604	97.8	59,026	-	-	-	-	-	-	-	38	141	217	271	295	278	253	215	144	52	-	-	-	-	-	-	-	59,026	-
2/28/2038	2038	2	28	-	638	(0.3)	603	93.6	56,495	-	-	-	-	-	-	0	54	153	226	274	294	297	276	225	144	72	2	-	-	-	-	-	-	56,495	-
3/31/2038	2038	3	31	-	638	(0.3)	603	131.2	79,099	-	-	-	-	-	-	-	23	109	206	270	320	357	359	316	266	197	109	20	-	-	-	-	-	79,099	-
4/30/2038	2038	4	30	-	638	(0.3)	603	136.5	82,283	-	-	-	-	-	-	2	54	149	240	300	342	351	349	336	274	203	115	28	-	-	-	-	-	82,283	-
5/31/2038	2038	5	31	-	638	(0.3)	603	149.5	90,095	-	-	-	-	-	-	11	76	180	266	316	344	368	367	333	278	207	121	39	0	-	-	-	-	90,095	-
6/30/2038	2038	6	30	-	638	(0.3)	602	130.3	78,459	-	-	-	-	-	-	13	68	141	204	286	317	335	325	297	257	206	117	44	5	-	-	-	-	78,459	-
7/31/2038	2038	7	31	-	638	(0.3)	602	132.1	79,519	-	-	-	-	-	-	9	58	143	216	261	299	322	328	300	260	201	117	47	5	-	-	-	-	79,519	-
8/31/2038	2038	8	31	-	638	(0.3)	602	130.7	78,637	-	-	-	-	-	-	2	51	129	215	285	307	312	336	312	250	193	110	35	0	-	-	-	-	78,637	-
9/30/2038	2038	9	30	-	638	(0.3)	602	121.9	73,305	-	-	-	-	-	-	-	48	149	224	279	310	320	320	300	230	168	85	10	-	-	-	-	-	73,305	-
10/31/2038	2038	10	31	-	638	(0.3)	601	126.3	75,958	-	-	-	-	-	-	-	34	129	227	279	336	369	346	287	233	155	55	-	-	-	-	-	-	75,958	-
11/30/2038	2038	11	30	-	638	(0.2)	601	102.0	61,321	-	-	-	-	-	-	13	96	199	261	289	306	280	251	212	114	24	-	-	-	-	-	-	-	61,321	-

12/31/2038	2038	12	31	-	638	(0.2)	601	91.8	55,160	-	-	-	-	-	-	-	55	146	212	252	262	248	252	210	117	24	-	-	-	-	-	-	-	55,160	-
1/31/2039	2039	1	31	-	638	(0.2)	601	97.8	58,732	-	-	-	-	-	-	-	37	140	216	270	293	277	252	214	144	52	-	-	-	-	-	-	-	58,732	-
2/28/2039	2039	2	28	-	638	(0.2)	600	93.6	56,214	-	-	-	-	-	-	0	54	152	225	272	293	296	274	224	143	72	2	-	-	-	-	-	-	56,214	-
3/31/2039	2039	3	31	-	638	(0.2)	600	131.2	78,705	-	-	-	-	-	-	-	23	108	205	269	318	355	357	314	264	196	109	20	-	-	-	-	-	78,705	-
4/30/2039	2039	4	30	-	638	(0.2)	600	136.5	81,874	-	-	-	-	-	-	2	54	148	239	298	341	349	347	334	273	202	114	28	-	-	-	-	-	81,874	-
5/31/2039	2039	5	31	-	638	(0.2)	600	149.5	89,646	-	-	-	-	-	-	11	76	179	265	314	342	367	365	332	276	206	120	39	0	-	-	-	-	89,646	-
6/30/2039	2039	6	30	-	638	(0.2)	599	130.3	78,069	-	-	-	-	-	-	13	68	141	203	285	316	334	323	295	256	205	116	43	5	-	-	-	-	78,069	-
7/31/2039	2039	7	31	-	638	(0.2)	599	132.1	79,123	-	-	-	-	-	-	9	58	143	215	259	297	320	326	299	259	200	116	46	5	-	-	-	-	79,123	-
8/31/2039	2039	8	31	-	638	(0.2)	599	130.7	78,245	-	-	-	-	-	-	2	51	128	214	284	305	311	334	310	248	192	110	35	0	-	-	-	-	78,245	-
9/30/2039	2039	9	30	-	638	(0.2)	599	121.9	72,940	-	-	-	-	-	-	-	47	148	223	278	308	319	318	299	229	167	84	10	-	-	-	-	-	72,940	-
10/31/2039	2039	10	31	-	638	(0.2)	598	126.3	75,580	-	-	-	-	-	-	-	34	128	226	277	334	367	345	286	232	154	55	-	-	-	-	-	-	75,580	-
11/30/2039	2039	11	30	-	638	(0.2)	598	102.0	61,016	-	-	-	-	-	-	12	95	198	259	288	305	279	250	211	113	24	-	-	-	-	-	-	-	61,016	-
12/31/2039	2039	12	31	-	638	(0.2)	598	91.8	54,885	-	-	-	-	-	-	-	55	146	211	250	260	247	251	209	117	24	-	-	-	-	-	-	-	54,885	-
1/31/2040	2040	1	31	-	638	(0.2)	598	97.8	58,440	-	-	-	-	-	-	-	37	139	215	268	292	275	251	213	143	52	-	-	-	-	-	-	-	58,440	-
2/29/2040	2040	2	29	-	638	(0.2)	597	93.6	55,934	-	-	-	-	-	-	0	52	146	216	262	281	284	263	215	137	69	2	-	-	-	-	-	-	55,934	-
3/31/2040	2040	3	31	-	638	(0.2)	597	131.2	78,313	-	-	-	-	-	-	-	22	108	204	268	317	354	356	312	263	195	108	20	-	-	-	-	-	78,313	-
4/30/2040	2040	4	30	-	638	(0.2)	597	136.5	81,466	-	-	-	-	-	-	2	54	148	237	297	339	348	345	332	271	201	113	28	-	-	-	-	-	81,466	-
5/31/2040	2040	5	31	-	638	(0.2)	597	149.5	89,200	-	-	-	-	-	-	11	75	178	263	313	341	365	363	330	275	205	119	39	0	-	-	-	-	89,200	-
6/30/2040	2040	6	30	-	638	(0.2)	596	130.3	77,680	-	-	-	-	-	-	12	67	140	202	284	314	332	321	294	255	204	116	43	5	-	-	-	-	77,680	-
7/31/2040	2040	7	31	-	638	(0.2)	596	132.1	78,729	-	-	-	-	-	-	9	57	142	213	258	296	319	325	297	257	199	115	46	5	-	-	-	-	78,729	-
8/31/2040	2040	8	31	-	638	(0.2)	596	130.7	77,856	-	-	-	-	-	-	2	50	128	213	282	304	309	333	309	247	191	109	35	0	-	-	-	-	77,856	-
9/30/2040	2040	9	30	-	638	(0.2)	596	121.9	72,577	-	-	-	-	-	-	-	47	147	222	276	307	317	317	298	228	166	84	10	-	-	-	-	-	72,577	-
10/31/2040	2040	10	31	-	638	(0.2)	595	126.3	75,204	-	-	-	-	-	-	-	34	128	225	276	333	365	343	285	230	154	55	-	-	-	-	-	-	75,204	-
11/30/2040	2040	11	30	-	638	(0.2)	595	102.0	60,712	-	-	-	-	-	-	12	95	197	258	286	303	277	249	210	113	24	-	-	-	-	-	-	-	60,712	-
12/31/2040	2040	12	31	-	638	(0.2)	595	91.8	54,612	-	-	-	-	-	-	-	55	145	210	249	259	246	250	208	116	24	-	-	-	-	-	-	-	54,612	-
1/31/2041	2041	1	31	-	638	(0.2)	595	97.8	58,149	-	-	-	-	-	-	-	37	138	214	267	290	274	250	212	142	52	-	-	-	-	-	-	-	58,149	-
2/28/2041	2041	2	28	-	638	(0.2)	594	93.6	55,656	-	-	-	-	-	-	0	53	151	223	270	290	293	271	222	142	71	2	-	-	-	-	-	-	55,656	-
3/31/2041	2041	3	31	-	638	(0.2)	594	131.2	77,923	-	-	-	-	-	-	-	22	107	203	266	315	352	354	311	262	194	108	20	-	-	-	-	-	77,923	-
4/30/2041	2041	4	30	-	638	(0.2)	594	136.5	81,061	-	-	-	-	-	-	2	54	147	236	295	337	346	344	331	270	200	113	28	-	-	-	-	-	81,061	-
5/31/2041	2041	5	31	-	638	(0.2)	594	149.5	88,756	-	-	-	-	-	-	11	75	177	262	311	339	363	361	328	273	204	119	39	0	-	-	-	-	88,756	-
6/30/2041	2041	6	30	-	638	(0.2)	593	130.3	77,294	-	-	-	-	-	-	12	67	139	201	282	313	330	320	292	253	203	115	43	5	-	-	-	-	77,294	-
7/31/2041	2041	7	31	-	638	(0.2)	593	132.1	78,338	-	-	-	-	-	-	9	57	141	212	257	294	317	323	296	256	198	115	46	5	-	-	-	-	78,338	-
8/31/2041	2041	8	31	-	638	(0.2)	593	130.7	77,468	-	-	-	-	-	-	2	50	127	211	281	302	308	331	307	246	190	109	34	0	-	-	-	-	77,468	-
9/30/2041	2041	9	30	-	638	(0.2)	593	121.9	72,216	-	-	-	-	-	-	-	47	146	221	275	305	315	315	296	227	166	83	10	-	-	-	-	-	72,216	-
10/31/2041	2041	10	31	-	638	(0.2)	592	126.3	74,829	-	-	-	-	-	-	-	34	127	223	274	331	363	341	283	229	153	55	-	-	-	-	-	-	74,829	-
11/30/2041	2041	11	30	-	638	(0.2)	592	102.0	60,410	-	-	-	-	-	-	12	94	196	257	285	302	276	247	209	112	23	-	-	-	-	-	-	-	60,410	-
12/31/2041	2041	12	31	-	638	(0.2)	592	91.8	54,340	-	-	-	-	-	-	-	55	144	209	248	258	245	249	207	115	24	-	-	-	-	-	-	-	54,340	-
1/31/2042	2042	1	31	-	638	(0.2)	592	97.8	57,860	-	-	-	-	-	-	-	37	138	213	266	289	272	248	211	141	51	-	-	-	-	-	-	-	57,860	-
2/28/2042	2042	2	28	-	638	(0.2)	591	93.6	55,379	-	-	-	-	-	-	0	53	150	222	268	288	291	270	221	141	71	2	-	-	-	-	-	-	55,379	-
3/31/2042	2042	3	31	-	638	(0.2)	591	131.2	77,536	-	-	-	-	-	-	-	22	107	202	265	314	350	352	309	260	193	107	20	-	-	-	-	-	77,536	-
4/30/2042	2042	4	30	-	638	(0.2)	591	136.5	80,657	-	-	-	-	-	-	2	53	146	235	294	336	344	342	329	269	199	112	28	-	-	-	-	-	80,657	-
5/31/2042	2042	5	31	-	638	(0.2)	591	149.5	88,314	-	-	-	-	-	-	11	74	176	261	310	337	361	359	327	272	203	118	38	0	-	-	-	-	88,314	-
6/30/2042	2042	6	30	-	638	(0.2)	590	130.3	76,909	-	-	-	-	-	-	12	67	139	200	281	311	329	318	291	252	202	115	43	5	-	-	-	-	76,909	-
7/31/2042	2042	7	31	-	638	(0.2)	590	132.1	77,948	-	-	-	-	-	-	9	57	141	211	256	293	316	322	295	255	197	114	46	5	-	-	-	-	77,948	-
8/31/2042	2042	8	31	-	638	(0.2)	590	130.7	77,083	-	-	-	-	-	-	2	50	126	210	279	301	306	329	306	245	189	108	34	0	-	-	-	-	77,083	-
9/30/2042	2042	9	30	-	638	(0.2)	590	121.9	71,857	-	-	-	-	-	-	-	47	146	220	274	304	314	314	295	226	165	83	10	-	-	-	-	-	71,857	-
10/31/2042	2042	10	31	-	638	(0.2)	589	126.3	74,457	-	-	-	-	-	-	-	34	126	222	273	329	361	340	282	228	152	54	-	-	-	-	-	-	74,457	-
11/30/2042	2042	11	30	-	638	(0.2)	589	102.0	60,109	-	-	-	-	-	-	12	94	195	256	283	300	275	246	208	112	23	-	-	-	-	-	-	-	60,109	-
12/31/2042	2042	12	31	-	638	(0.2)	589	91.8	54,070	-	-	-	-	-	-	-	54	144	208	247	256	244	248	206	115	24	-	-	-	-	-	-	-	54,070	-
1/31/2043	2043	1	31	-	638	(0.2)	589	97.8	57,572	-	-	-	-	-	-	-	37	137	212	264	287	271	247	210	141	51	-	-	-	-	-	-	-	57,572	-
2/28/2043	2043	2	28	-	638	(0.2)	588	93.6	55,103	-	-	-	-	-	-	0	53	149	221	267	287	290	269	220	140	70	2	-	-	-	-	-	-	55,103	-
3/31/2043	2043	3	31	-	638	(0.2)	588	131.2	77,150	-	-	-	-	-	-	-	22	106	201	264	312	348	350	308	259	192	106	20	-	-	-	-	-	77,150	-
4/30/2043	2043	4	30	-	638	(0.2)	588	136.5	80,256	-	-	-	-	-	-	2	53	145	234	292	334	342	340	327	267	198	112	27	-	-	-	-	-	80,256	-
5/31/2043	2043	5	31	-	638	(0.2)	588	149.5	87,875	-	-	-	-	-	-	11	74	175	260	308	336	359	358	325	271	202	118	38	0	-	-	-	-	87,875	-
6/30/2043	2043	6	30	-	638	(0.2)	588	130.3	76,526	-	-	-	-	-	-	12	66	138	199	279	309	327	317	289	251	201	114	43	5	-	-	-	-	76,526	-
7/31/2043	2043	7	31	-	638	(0.2)	587	132.1	77,560	-	-	-	-	-	-	9	57	140	210	254	291	314	320	293	253	196	114	45	5	-	-	-	-	77,560	-
8/31/2043	2043	8	31	-	638	(0.2)	587	130.7	76,699	-	-	-	-	-	-	2	50	126	209	278	299	305	328	304	243	188	108	34	0	-	-	-	-	76,699	-
9/30/2043	2043	9	30	-	638	(0.2)	587	121.9	71,499	-	-	-	-	-	-	-	46	145	219	272	302	312	312	293	225	164	82	10	-	-	-	-	-	71,499	-
10/31/2043	2043	10	31	-	638	(0.2)	587	126.3	74,086	-	-	-	-	-	-	-	33	126	221	272	328	360	338	280	227	151	54	-	-	-	-	-	-	74,086	-
11/30/2043	2043	11	30	-	638	(0.2)	586	102.0	59,810	-	-	-	-	-	-	12	93	194	254	282	299	273	245	207	111	23	-	-	-	-	-	-	-	59,810	-
12/31/2043	2043	12	31	-	638	(0.2)	586	91.8	53,801	-	-	-	-	-	-	-	54	143	207	245	255	242	246	205	114	24	-	-	-	-	-	-	-	53,801	-
1/31/2044	2044	1	31	-	638	(0.2)	586	97.8	57,285	-	-	-	-	-	-	-	37	136	210	263	286	270	246	209	140	51	-	-	-	-	-	-	-	57,285	-
2/29/2044	2044	2	29	-	638	(0.2)	586	93.6	54,829	-	-	-	-	-	-	0	51	143	212	256	275	279	258	211	135	68	2	-	-	-	-	-	-	54,829	-
3/31/2044	2044	3	31	-	638	(0.2)	585	131.2	76,766	-	-	-	-	-	-	-	22	106	200	262	310	347	348	306	258	191	106	19	-	-	-	-	-	76,766	-
4/30/2044	2044	4	30	-	638	(0.2)	585	136.5	79,856	-	-	-	-	-	-	2	53	145	233	291	332	341	338	326	266	197	111	27	-	-	-	-	-	79,856	-
5/31/2044	2044	5	31	-	638	(0.2)	585	149.5	87,438	-	-	-	-	-	-	11	74	174	258	307	334	358	356	324	269	201	117	38	0	-	-	-	-	87,438	-
6/30/2044	2044	6	30	-	638	(0.2)	585	130.3	76,145	-	-	-	-	-	-	12	66	137	198	278	308	325	315	288	250	200	114	42	5	-	-	-	-	76,145	-
7/31/2044	2044	7	31	-	638	(0.2)	584	132.1	77,174	-	-	-	-	-	-	9	56	139	209	253	290	312	318	292	252	195	113	45	5	-	-	-	-	77,174	-
8/31/2044	2044	8	31	-	638	(0.2)	584	130.7	76,317	-	-	-	-	-	-	2	49	125	208	277	298	303	326	303	242	187	107	34	0	-	-	-	-	76,317	-
9/30/2044	2044	9	30	-	638	(0.2)	584	121.9	71,143	-	-	-	-	-	-	-	46	144	218	271	301	311	311	292	224	163	82	10	-	-	-	-	-	71,143	-
10/31/2044	2044	10	31	-	638	(0.2)	584	126.3	73,718	-	-	-	-	-	-	-	33	125	220	270	326	358	336	279	226	151	54	-	-	-	-	-	-	73,718	-
11/30/2044	2044	11	30	-	638	(0.2)	583	102.0	59,513	-	-	-	-	-	-	12	93	193	253	280	297	272	244	206	110	23	-	-	-	-	-	-	-	59,513	-
12/31/2044	2044	12	31	-	638	(0.2)	583	91.8	53,533	-	-	-	-	-	-	-	54	142	206	244	254	241	245	204	114	24	-	-	-	-	-	-	-	53,533	-
1/31/2045	2045	1	31	-	638	(0.2)	583	97.8	57,000	-	-	-	-	-	-	-	36	136	209	262	285	268	245	208	139	50	-	-	-	-	-	-	-	57,000	-
2/28/2045	2045	2	28	-	638	(0.2)	583	93.6	54,556	-	-	-	-	-	-	0	52	148	219	264	284	287	266	218	139	70	2	-	-	-	-	-	-	54,556	-
3/31/2045	2045	3	31	-	638	(0.2)	582	131.2	76,384	-	-	-	-	-	-	-	22	105	199	261	309	345	347	305	257	190	105	19	-	-	-	-	-	76,384	-
4/30/2045	2045	4	30	-	638	(0.2)	582	136.5	79,459	-	-	-	-	-	-	2	53	144	232	290	331	339	337	324	265	196	111	27	-	-	-	-	-	79,459	-
5/31/2045	2045	5	31	-	638	(0.2)	582	149.5	87,002	-	-	-	-	-	-	11	73	173	257	305	332	356	354	322	268	200	116	38	0	-	-	-	-	87,002	-
6/30/2045	2045	6	30	-	638	(0.2)	582	130.3	75,766	-	-	-	-	-	-	12	66	137	197	277	306	324	313	287	248	199	113	42	5	-	-	-	-	75,766	-
7/31/2045	2045	7	31	-	638	(0.2)	581	132.1	76,790	-	-	-	-	-	-	9	56	138	208	252	288	311	317	290	251	194	113	45	5	-	-	-	-	76,790	-
8/31/2045	2045	8	31	-	638	(0.2)	581	130.7	75,937	-	-	-	-	-	-	2	49	124	207	275	296	302	324	301	241	186	107	34	0	-	-	-	-	75,937	-
9/30/2045	2045	9	30	-	638	(0.2)	581	121.9	70,789	-	-	-	-	-	-	-	46	143	217	270	299	309	309	290	223	162	82	10	-	-	-	-	-	70,789	-
10/31/2045	2045	10	31	-	638	(0.2)	581	126.3	73,351	-	-	-	-	-	-	-	33	125	219	269	325	356	335	278	225	150	53	-	-	-	-	-	-	73,351	-
11/30/2045	2045	11	30	-	638	(0.2)	580	102.0	59,216	-	-	-	-	-	-	12	92	192	252	279	296	270	242	205	110	23	-	-	-	-	-	-	-	59,216	-
12/31/2045	2045	12	31	-	638	(0.2)	580	91.8	53,267	-	-	-	-	-	-	-	54	141	205	243	253	240	244	203	113	23	-	-	-	-	-	-	-	53,267	-
1/31/2046	2046	1	31	-	638	(0.2)	580	97.8	56,716	-	-	-	-	-	-	-	36	135	208	260	283	267	244	207	139	50	-	-	-	-	-	-	-	56,716	-
2/28/2046	2046	2	28	-	638	(0.2)	580	93.6	54,285	-	-	-	-	-	-	0	52	147	218	263	282	286	265	216	138	69	2	-	-	-	-	-	-	54,285	-
3/31/2046	2046	3	31	-	638	(0.2)	579	131.2	76,003	-	-	-	-	-	-	-	22	105	198	260	307	343	345	303	255	189	105	19	-	-	-	-	-	76,003	-
4/30/2046	2046	4	30	-	638	(0.2)	579	136.5	79,063	-	-	-	-	-	-	2	52	143	230	288	329	337	335	322	263	195	110	27	-	-	-	-	-	79,063	-
5/31/2046	2046	5	31	-	638	(0.2)	579	149.5	86,569	-	-	-	-	-	-	11	73	173	256	304	331	354	352	320	267	199	116	38	0	-	-	-	-	86,569	-
6/30/2046	2046	6	30	-	638	(0.2)	579	130.3	75,389	-	-	-	-	-	-	12	65	136	196	275	305	322	312	285	247	198	112	42	5	-	-	-	-	75,389	-
7/31/2046	2046	7	31	-	638	(0.2)	579	132.1	76,407	-	-	-	-	-	-	9	56	138	207	250	287	309	315	289	250	194	112	45	5	-	-	-	-	76,407	-
8/31/2046	2046	8	31	-	638	(0.2)	578	130.7	75,559	-	-	-	-	-	-	2	49	124	206	274	295	300	323	300	240	185	106	34	0	-	-	-	-	75,559	-
9/30/2046	2046	9	30	-	638	(0.2)	578	121.9	70,437	-	-	-	-	-	-	-	46	143	215	268	298	308	307	289	221	162	81	10	-	-	-	-	-	70,437	-
10/31/2046	2046	10	31	-	638	(0.2)	578	126.3	72,986	-	-	-	-	-	-	-	33	124	218	268	323	354	333	276	224	149	53	-	-	-	-	-	-	72,986	-
11/30/2046	2046	11	30	-	638	(0.2)	578	102.0	58,922	-	-	-	-	-	-	12	92	191	251	278	294	269	241	204	109	23	-	-	-	-	-	-	-	58,922	-
12/31/2046	2046	12	31	-	638	(0.2)	577	91.8	53,001	-	-	-	-	-	-	-	53	141	204	242	251	239	243	202	113	23	-	-	-	-	-	-	-	53,001	-
1/31/2047	2047	1	31	-	638	(0.2)	577	97.8	56,434	-	-	-	-	-	-	-	36	134	207	259	282	266	242	206	138	50	-	-	-	-	-	-	-	56,434	-
2/28/2047	2047	2	28	-	638	(0.2)	577	93.6	54,014	-	-	-	-	-	-	0	52	146	216	262	281	284	263	215	137	69	2	-	-	-	-	-	-	54,014	-
3/31/2047	2047	3	31	-	638	(0.2)	577	131.2	75,625	-	-	-	-	-	-	-	22	104	197	258	306	342	343	302	254	188	104	19	-	-	-	-	-	75,625	-
4/30/2047	2047	4	30	-	638	(0.2)	576	136.5	78,670	-	-	-	-	-	-	2	52	142	229	287	327	336	333	321	262	194	109	27	-	-	-	-	-	78,670	-
5/31/2047	2047	5	31	-	638	(0.2)	576	149.5	86,138	-	-	-	-	-	-	11	73	172	254	302	329	352	350	319	265	198	115	37	0	-	-	-	-	86,138	-
6/30/2047	2047	6	30	-	638	(0.2)	576	130.3	75,014	-	-	-	-	-	-	12	65	135	195	274	303	321	310	284	246	197	112	42	5	-	-	-	-	75,014	-
7/31/2047	2047	7	31	-	638	(0.2)	576	132.1	76,027	-	-	-	-	-	-	9	55	137	206	249	285	308	314	287	248	193	112	45	5	-	-	-	-	76,027	-
8/31/2047	2047	8	31	-	638	(0.2)	575	130.7	75,183	-	-	-	-	-	-	2	49	123	205	273	293	299	321	298	239	185	106	33	0	-	-	-	-	75,183	-
9/30/2047	2047	9	30	-	638	(0.2)	575	121.9	70,086	-	-	-	-	-	-	-	45	142	214	267	296	306	306	287	220	161	81	10	-	-	-	-	-	70,086	-
10/31/2047	2047	10	31	-	638	(0.2)	575	126.3	72,622	-	-	-	-	-	-	-	33	123	217	266	321	352	331	275	222	148	53	-	-	-	-	-	-	72,622	-
11/30/2047	2047	11	30	-	638	(0.2)	575	102.0	58,628	-	-	-	-	-	-	12	91	190	249	276	293	268	240	203	109	23	-	-	-	-	-	-	-	58,628	-
12/31/2047	2047	12	31	-	638	(0.2)	574	91.8	52,738	-	-	-	-	-	-	-	53	140	203	240	250	238	241	201	112	23	-	-	-	-	-	-	-	52,738	-

1/31/2048	2048	1	31	-	638	(0.2)	574	97.8	56,153	-	-	-	-	-	-	-	36	134	206	258	280	264	241	205	137	50	-	-	-	-	-	-	-	56,153	-
2/29/2048	2048	2	29	-	638	(0.2)	574	93.6	53,745	-	-	-	-	-	-	0	50	140	208	251	270	273	253	207	132	66	2	-	-	-	-	-	-	53,745	-
3/31/2048	2048	3	31	-	638	(0.2)	574	131.2	75,249	-	-	-	-	-	-	-	22	104	196	257	304	340	342	300	253	188	104	19	-	-	-	-	-	75,249	-
4/30/2048	2048	4	30	-	638	(0.2)	574	136.5	78,278	-	-	-	-	-	-	2	52	142	228	285	326	334	332	319	261	193	109	27	-	-	-	-	-	78,278	-
5/31/2048	2048	5	31	-	638	(0.2)	573	149.5	85,710	-	-	-	-	-	-	11	72	171	253	301	327	351	349	317	264	197	115	37	0	-	-	-	-	85,710	-
6/30/2048	2048	6	30	-	638	(0.2)	573	130.3	74,641	-	-	-	-	-	-	12	65	135	194	272	302	319	309	282	245	196	111	42	5	-	-	-	-	74,641	-
7/31/2048	2048	7	31	-	638	(0.2)	573	132.1	75,649	-	-	-	-	-	-	9	55	136	205	248	284	306	312	286	247	192	111	44	5	-	-	-	-	75,649	-
8/31/2048	2048	8	31	-	638	(0.2)	573	130.7	74,809	-	-	-	-	-	-	2	48	123	204	271	292	297	320	297	237	184	105	33	0	-	-	-	-	74,809	-
9/30/2048	2048	9	30	-	638	(0.2)	572	121.9	69,737	-	-	-	-	-	-	-	45	141	213	266	295	305	304	286	219	160	80	10	-	-	-	-	-	69,737	-
10/31/2048	2048	10	31	-	638	(0.2)	572	126.3	72,261	-	-	-	-	-	-	-	33	123	216	265	320	351	330	273	221	148	53	-	-	-	-	-	-	72,261	-
11/30/2048	2048	11	30	-	638	(0.2)	572	102.0	58,337	-	-	-	-	-	-	12	91	189	248	275	291	266	239	202	108	23	-	-	-	-	-	-	-	58,337	-
12/31/2048	2048	12	31	-	638	(0.2)	572	91.8	52,475	-	-	-	-	-	-	-	53	139	202	239	249	236	240	200	111	23	-	-	-	-	-	-	-	52,475	-
1/31/2049	2049	1	31	-	638	(0.2)	571	97.8	55,874	-	-	-	-	-	-	-	36	133	205	256	279	263	240	204	137	49	-	-	-	-	-	-	-	55,874	-
2/28/2049	2049	2	28	-	638	(0.2)	571	93.6	53,478	-	-	-	-	-	-	0	51	145	214	259	278	281	261	213	136	68	2	-	-	-	-	-	-	53,478	-
3/31/2049	2049	3	31	-	638	(0.2)	571	131.2	74,874	-	-	-	-	-	-	-	21	103	195	256	303	338	340	299	252	187	103	19	-	-	-	-	-	74,874	-
4/30/2049	2049	4	30	-	638	(0.2)	571	136.5	77,889	-	-	-	-	-	-	2	51	141	227	284	324	332	330	318	259	192	108	27	-	-	-	-	-	77,889	-
5/31/2049	2049	5	31	-	638	(0.2)	570	149.5	85,283	-	-	-	-	-	-	11	72	170	252	299	326	349	347	316	263	196	114	37	0	-	-	-	-	85,283	-
6/30/2049	2049	6	30	-	638	(0.2)	570	130.3	74,269	-	-	-	-	-	-	12	64	134	193	271	300	317	307	281	244	195	111	41	5	-	-	-	-	74,269	-
7/31/2049	2049	7	31	-	638	(0.2)	570	132.1	75,272	-	-	-	-	-	-	9	55	136	204	247	283	305	311	284	246	191	110	44	5	-	-	-	-	75,272	-
8/31/2049	2049	8	31	-	638	(0.2)	570	130.7	74,437	-	-	-	-	-	-	2	48	122	203	270	290	296	318	295	236	183	104	33	0	-	-	-	-	74,437	-
9/30/2049	2049	9	30	-	638	(0.2)	569	121.9	69,390	-	-	-	-	-	-	-	45	141	212	264	293	303	303	284	218	159	80	10	-	-	-	-	-	69,390	-
10/31/2049	2049	10	31	-	638	(0.2)	569	126.3	71,901	-	-	-	-	-	-	-	32	122	215	264	318	349	328	272	220	147	52	-	-	-	-	-	-	71,901	-
11/30/2049	2049	11	30	-	638	(0.2)	569	102.0	58,046	-	-	-	-	-	-	12	91	188	247	274	290	265	238	201	108	23	-	-	-	-	-	-	-	58,046	-
12/31/2049	2049	12	31	-	638	(0.2)	569	91.8	52,214	-	-	-	-	-	-	-	53	139	201	238	248	235	239	199	111	23	-	-	-	-	-	-	-	52,214	-
1/31/2050	2050	1	31	-	638	(0.2)	569	97.8	55,596	-	-	-	-	-	-	-	35	132	204	255	278	262	239	203	136	49	-	-	-	-	-	-	-	55,596	-
2/28/2050	2050	2	28	-	638	(0.2)	568	93.6	53,212	-	-	-	-	-	-	0	51	144	213	258	277	280	260	212	135	68	2	-	-	-	-	-	-	53,212	-
3/31/2050	2050	3	31	-	638	(0.2)	568	131.2	74,502	-	-	-	-	-	-	-	21	103	194	255	301	336	338	297	250	186	103	19	-	-	-	-	-	74,502	-
4/30/2050	2050	4	30	-	638	(0.2)	568	136.5	77,501	-	-	-	-	-	-	2	51	140	226	282	322	331	328	316	258	191	108	27	-	-	-	-	-	77,501	-
5/31/2050	2050	5	31	-	638	(0.2)	568	149.5	84,859	-	-	-	-	-	-	11	72	169	251	298	324	347	345	314	261	195	114	37	0	-	-	-	-	84,859	-
6/30/2050	2050	6	30	-	638	(0.2)	567	130.3	73,899	-	-	-	-	-	-	12	64	133	192	270	299	316	306	279	242	194	110	41	5	-	-	-	-	73,899	-
7/31/2050	2050	7	31	-	638	(0.2)	567	132.1	74,898	-	-	-	-	-	-	9	55	135	203	246	281	303	309	283	245	190	110	44	5	-	-	-	-	74,898	-
8/31/2050	2050	8	31	-	638	(0.2)	567	130.7	74,066	-	-	-	-	-	-	2	48	121	202	269	289	294	316	294	235	182	104	33	0	-	-	-	-	74,066	-
9/30/2050	2050	9	30	-	638	(0.2)	567	121.9	69,045	-	-	-	-	-	-	-	45	140	211	263	292	301	301	283	217	158	80	10	-	-	-	-	-	69,045	-
10/31/2050	2050	10	31	-	638	(0.2)	566	126.3	71,543	-	-	-	-	-	-	-	32	121	214	262	317	347	326	271	219	146	52	-	-	-	-	-	-	71,543	-
11/30/2050	2050	11	30	-	638	(0.2)	566	102.0	57,757	-	-	-	-	-	-	12	90	187	246	272	288	264	236	200	107	22	-	-	-	-	-	-	-	57,757	-
12/31/2050	2050	12	31	-	638	(0.2)	566	91.8	51,954	-	-	-	-	-	-	-	52	138	200	237	246	234	238	198	110	23	-	-	-	-	-	-	-	51,954	-
1/31/2051	2051	1	31	-	638	(0.2)	566	97.8	55,319	-	-	-	-	-	-	-	35	132	203	254	276	260	238	202	135	49	-	-	-	-	-	-	-	55,319	-
2/28/2051	2051	2	28	-	638	(0.2)	565	93.6	52,947	-	-	-	-	-	-	0	51	143	212	256	276	279	258	211	135	68	2	-	-	-	-	-	-	52,947	-
3/31/2051	2051	3	31	-	638	(0.2)	565	131.2	74,131	-	-	-	-	-	-	-	21	102	193	253	300	335	337	296	249	185	102	19	-	-	-	-	-	74,131	-
4/30/2051	2051	4	30	-	638	(0.2)	565	136.5	77,115	-	-	-	-	-	-	2	51	140	225	281	321	329	327	315	257	190	107	26	-	-	-	-	-	77,115	-
5/31/2051	2051	5	31	-	638	(0.2)	565	149.5	84,436	-	-	-	-	-	-	11	71	168	249	296	322	345	344	312	260	194	113	37	0	-	-	-	-	84,436	-
6/30/2051	2051	6	30	-	638	(0.2)	565	130.3	73,532	-	-	-	-	-	-	12	64	133	191	268	297	314	304	278	241	193	110	41	5	-	-	-	-	73,532	-
7/31/2051	2051	7	31	-	638	(0.2)	564	132.1	74,525	-	-	-	-	-	-	9	54	134	202	244	280	302	307	282	244	189	109	44	5	-	-	-	-	74,525	-
8/31/2051	2051	8	31	-	638	(0.2)	564	130.7	73,698	-	-	-	-	-	-	2	48	121	201	267	288	293	315	292	234	181	103	33	0	-	-	-	-	73,698	-
9/30/2051	2051	9	30	-	638	(0.2)	564	121.9	68,701	-	-	-	-	-	-	-	45	139	210	262	290	300	300	282	216	158	79	10	-	-	-	-	-	68,701	-
10/31/2051	2051	10	31	-	638	(0.2)	564	126.3	71,187	-	-	-	-	-	-	-	32	121	213	261	315	345	325	269	218	145	52	-	-	-	-	-	-	71,187	-
11/30/2051	2051	11	30	-	638	(0.2)	563	102.0	57,470	-	-	-	-	-	-	12	90	186	244	271	287	263	235	199	107	22	-	-	-	-	-	-	-	57,470	-
12/31/2051	2051	12	31	-	638	(0.2)	563	91.8	51,696	-	-	-	-	-	-	-	52	137	199	236	245	233	237	197	110	23	-	-	-	-	-	-	-	51,696	-
1/31/2052	2052	1	31	-	638	(0.2)	563	97.8	55,044	-	-	-	-	-	-	-	35	131	202	253	275	259	236	201	135	49	-	-	-	-	-	-	-	55,044	-
2/29/2052	2052	2	29	-	638	(0.2)	563	93.6	52,683	-	-	-	-	-	-	0	49	138	204	246	265	268	248	203	129	65	2	-	-	-	-	-	-	52,683	-
3/31/2052	2052	3	31	-	638	(0.2)	562	131.2	73,762	-	-	-	-	-	-	-	21	102	192	252	298	333	335	294	248	184	102	19	-	-	-	-	-	73,762	-
4/30/2052	2052	4	30	-	638	(0.2)	562	136.5	76,731	-	-	-	-	-	-	2	51	139	224	280	319	327	325	313	256	189	107	26	-	-	-	-	-	76,731	-
5/31/2052	2052	5	31	-	638	(0.2)	562	149.5	84,016	-	-	-	-	-	-	11	71	167	248	295	321	344	342	311	259	193	112	36	0	-	-	-	-	84,016	-
6/30/2052	2052	6	30	-	638	(0.2)	562	130.3	73,166	-	-	-	-	-	-	12	64	132	190	267	296	313	303	277	240	192	109	41	5	-	-	-	-	73,166	-
7/31/2052	2052	7	31	-	638	(0.2)	561	132.1	74,154	-	-	-	-	-	-	8	54	134	201	243	278	300	306	280	242	188	109	43	5	-	-	-	-	74,154	-
8/31/2052	2052	8	31	-	638	(0.2)	561	130.7	73,331	-	-	-	-	-	-	2	47	120	200	266	286	291	313	291	233	180	103	33	0	-	-	-	-	73,331	-
9/30/2052	2052	9	30	-	638	(0.2)	561	121.9	68,359	-	-	-	-	-	-	-	44	139	209	260	289	298	298	280	215	157	79	10	-	-	-	-	-	68,359	-
10/31/2052	2052	10	31	-	638	(0.2)	561	126.3	70,833	-	-	-	-	-	-	-	32	120	211	260	313	344	323	268	217	145	52	-	-	-	-	-	-	70,833	-
11/30/2052	2052	11	30	-	638	(0.2)	561	102.0	57,184	-	-	-	-	-	-	12	89	185	243	269	285	261	234	198	106	22	-	-	-	-	-	-	-	57,184	-
12/31/2052	2052	12	31	-	638	(0.2)	560	91.8	51,438	-	-	-	-	-	-	-	52	137	198	235	244	232	235	196	109	23	-	-	-	-	-	-	-	51,438	-
1/31/2053	2053	1	31	-	638	(0.2)	560	97.8	54,770	-	-	-	-	-	-	-	35	130	201	251	273	258	235	200	134	49	-	-	-	-	-	-	-	54,770	-
2/28/2053	2053	2	28	-	638	(0.2)	560	93.6	52,421	-	-	-	-	-	-	0	50	142	210	254	273	276	256	209	133	67	2	-	-	-	-	-	-	52,421	-
3/31/2053	2053	3	31	-	638	(0.2)	560	131.2	73,395	-	-	-	-	-	-	-	21	101	191	251	297	331	333	293	247	183	101	19	-	-	-	-	-	73,395	-
4/30/2053	2053	4	30	-	638	(0.2)	559	136.5	76,350	-	-	-	-	-	-	2	50	138	223	278	318	326	324	311	254	188	106	26	-	-	-	-	-	76,350	-
5/31/2053	2053	5	31	-	638	(0.2)	559	149.5	83,598	-	-	-	-	-	-	11	70	167	247	293	319	342	340	309	258	192	112	36	0	-	-	-	-	83,598	-
6/30/2053	2053	6	30	-	638	(0.2)	559	130.3	72,802	-	-	-	-	-	-	12	63	131	189	266	294	311	301	275	239	191	109	40	5	-	-	-	-	72,802	-
7/31/2053	2053	7	31	-	638	(0.2)	559	132.1	73,785	-	-	-	-	-	-	8	54	133	200	242	277	299	304	279	241	187	108	43	4	-	-	-	-	73,785	-
8/31/2053	2053	8	31	-	638	(0.2)	558	130.7	72,966	-	-	-	-	-	-	2	47	120	199	265	285	290	312	289	232	179	102	32	0	-	-	-	-	72,966	-
9/30/2053	2053	9	30	-	638	(0.2)	558	121.9	68,019	-	-	-	-	-	-	-	44	138	208	259	287	297	297	279	214	156	78	10	-	-	-	-	-	68,019	-
10/31/2053	2053	10	31	-	638	(0.2)	558	126.3	70,480	-	-	-	-	-	-	-	32	120	210	258	312	342	321	267	216	144	51	-	-	-	-	-	-	70,480	-
11/30/2053	2053	11	30	-	638	(0.2)	558	102.0	56,899	-	-	-	-	-	-	12	89	184	242	268	284	260	233	197	106	22	-	-	-	-	-	-	-	56,899	-
12/31/2053	2053	12	31	-	638	(0.2)	558	91.8	51,182	-	-	-	-	-	-	-	51	136	197	233	243	231	234	195	109	22	-	-	-	-	-	-	-	51,182	-

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						Ann. Degrade																																
						0.50%									1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Date	Year	Month	Num Days	New Capacity (MWdc)	Cumulative Capacity (MWdc)	Monthly Degradation	Cumulative Capacity after Degradation (MWdc)	Energy per MWdc (MWh-ac)	Monthly Generation (MWh)	Hourly Gen. Ending 1:00	Hourly Gen. Ending 2:00	Hourly Gen. Ending 3:00	Hourly Gen. Ending 4:00	Hourly Gen. Ending 5:00	Hourly Gen. Ending 6:00	Hourly Gen. Ending 7:00	Hourly Gen. Ending 8:00	Hourly Gen. Ending 9:00	Hourly Gen. Ending 10:00	Hourly Gen. Ending 11:00	Hourly Gen. Ending 12:00	Hourly Gen. Ending 13:00	Hourly Gen. Ending 14:00	Hourly Gen. Ending 15:00	Hourly Gen. Ending 16:00	Hourly Gen. Ending 17:00	Hourly Gen. Ending 18:00	Hourly Gen. Ending 19:00	Hourly Gen. Ending 20:00	Hourly Gen. Ending 21:00	Hourly Gen. Ending 22:00	Hourly Gen. Ending 23:00	Hourly Gen. Ending 0:00	Monthly Generation (check)	check
1/31/2013	2013	1	31	-				97.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/28/2013	2013	2	28	-	-	-	-	93.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/31/2013	2013	3	31	-	-	-	-	131.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/30/2013	2013	4	30	-	-	-	-	136.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/31/2013	2013	5	31	-	-	-	-	149.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/30/2013	2013	6	30	-	-	-	-	130.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31/2013	2013	7	31	-	-	-	-	132.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/31/2013	2013	8	31	-	-	-	-	130.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9/30/2013	2013	9	30	-	-	-	-	121.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/31/2013	2013	10	31	-	-	-	-	126.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/30/2013	2013	11	30	-	-	-	-	102.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/31/2013	2013	12	31	-	-	-	-	91.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/31/2014	2014	1	31	0	0	-	0	97.8	2	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	2	-
2/28/2014	2014	2	28	0	0	(0.0)	0	93.6	4	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	4	-
3/31/2014	2014	3	31	0	0	(0.0)	0	131.2	8	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	8	-
4/30/2014	2014	4	30	0	0	(0.0)	0	136.5	11	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	11	-
5/31/2014	2014	5	31	0	0	(0.0)	0	149.5	15	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	15	-
6/30/2014	2014	6	30	0	0	(0.0)	0	130.3	16	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	16	-
7/31/2014	2014	7	31	0	0	(0.0)	0	132.1	19	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	19	-
8/31/2014	2014	8	31	0	0	(0.0)	0	130.7	21	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	21	-
9/30/2014	2014	9	30	0	0	(0.0)	0	121.9	23	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	23	-
10/31/2014	2014	10	31	0	0	(0.0)	0	126.3	26	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	26	-
11/30/2014	2014	11	30	0	0	(0.0)	0	102.0	23	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	23	-
12/31/2014	2014	12	31	0	0	(0.0)	0	91.8	23	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	23	-
1/31/2015	2015	1	31	0	0	(0.0)	0	97.8	25	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	25	-
2/28/2015	2015	2	28	0	0	(0.0)	0	93.6	25	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	25	-
3/31/2015	2015	3	31	0	0	(0.0)	0	131.2	37	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	37	-
4/30/2015	2015	4	30	0	0	(0.0)	0	136.5	39	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	39	-
5/31/2015	2015	5	31	0	0	(0.0)	0	149.5	45	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	45	-
6/30/2015	2015	6	30	0	0	(0.0)	0	130.3	40	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	40	-
7/31/2015	2015	7	31	0	0	(0.0)	0	132.1	42	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	42	-
8/31/2015	2015	8	31	0	0	(0.0)	0	130.7	43	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	43	-
9/30/2015	2015	9	30	0	0	(0.0)	0	121.9	42	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	42	-
10/31/2015	2015	10	31	0	0	(0.0)	0	126.3	45	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	45	-
11/30/2015	2015	11	30	0	0	(0.0)	0	102.0	37	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	37	-
12/31/2015	2015	12	31	0	0	(0.0)	0	91.8	34	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	34	-
1/31/2016	2016	1	31	0	0	(0.0)	0	97.8	38	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	38	-
2/29/2016	2016	2	29	0	0	(0.0)	0	93.6	37	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	37	-
3/31/2016	2016	3	31	0	0	(0.0)	0	131.2	54	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	54	-
4/30/2016	2016	4	30	0	0	(0.0)	0	136.5	58	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	58	-
5/31/2016	2016	5	31	0	0	(0.0)	0	149.5	65	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	65	-
6/30/2016	2016	6	30	0	0	(0.0)	0	130.3	59	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	59	-
7/31/2016	2016	7	31	0	0	(0.0)	0	132.1	61	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	61	-
8/31/2016	2016	8	31	0	0	(0.0)	0	130.7	62	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	62	-
9/30/2016	2016	9	30	0	0	(0.0)	0	121.9	59	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	59	-
10/31/2016	2016	10	31	0	1	(0.0)	1	126.3	63	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	63	-
11/30/2016	2016	11	30	0	1	(0.0)	1	102.0	52	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	52	-
12/31/2016	2016	12	31	0	1	(0.0)	1	91.8	48	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	48	-
1/31/2017	2017	1	31	0	1	(0.0)	1	97.8	53	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	53	-
2/28/2017	2017	2	28	0	1	(0.0)	1	93.6	52	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	52	-
3/31/2017	2017	3	31	0	1	(0.0)	1	131.2	74	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	74	-
4/30/2017	2017	4	30	0	1	(0.0)	1	136.5	79	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	79	-
5/31/2017	2017	5	31	0	1	(0.0)	1	149.5	88	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	88	-
6/30/2017	2017	6	30	0	1	(0.0)	1	130.3	79	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	79	-
7/31/2017	2017	7	31	0	1	(0.0)	1	132.1	81	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	81	-
8/31/2017	2017	8	31	0	1	(0.0)	1	130.7	82	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	82	-
9/30/2017	2017	9	30	0	1	(0.0)	1	121.9	78	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	78	-
10/31/2017	2017	10	31	0	1	(0.0)	1	126.3	83	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	83	-
11/30/2017	2017	11	30	0	1	(0.0)	1	102.0	68	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	68	-
12/31/2017	2017	12	31	0	1	(0.0)	1	91.8	63	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	63	-
1/31/2018	2018	1	31	0	1	(0.0)	1	97.8	67	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	67	-
2/28/2018	2018	2	28	0	1	(0.0)	1	93.6	65	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	65	-
3/31/2018	2018	3	31	0	1	(0.0)	1	131.2	92	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	92	-
4/30/2018	2018	4	30	0	1	(0.0)	1	136.5	97	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	97	-
5/31/2018	2018	5	31	0	1	(0.0)	1	149.5	107	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	107	-
6/30/2018	2018	6	30	0	1	(0.0)	1	130.3	95	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	95	-
7/31/2018	2018	7	31	0	1	(0.0)	1	132.1	97	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	97	-
8/31/2018	2018	8	31	0	1	(0.0)	1	130.7	97	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	97	-
9/30/2018	2018	9	30	0	1	(0.0)	1	121.9	91	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	91	-
10/31/2018	2018	10	31	0	1	(0.0)	1	126.3	96	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	96	-
11/30/2018	2018	11	30	0	1	(0.0)	1	102.0	78	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	78	-
12/31/2018	2018	12	31	0	1	(0.0)	1	91.8	71	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	71	-
1/31/2019	2019	1	31	0	1	(0.0)	1	97.8	76	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	76	-
2/28/2019	2019	2	28	0	1	(0.0)	1	93.6	74	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	74	-
3/31/2019	2019	3	31	0	1	(0.0)	1	131.2	104	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	104	-
4/30/2019	2019	4	30	0	1	(0.0)	1	136.5	110	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	110	-
5/31/2019	2019	5	31	0	1	(0.0)	1	149.5	121	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	121	-
6/30/2019	2019	6	30	0	1	(0.0)	1	130.3	107	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	107	-
7/31/2019	2019	7	31	0	1	(0.0)	1	132.1	109	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	109	-
8/31/2019	2019	8	31	0	1	(0.0)	1	130.7	109	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	109	-
9/30/2019	2019	9	30	0	1	(0.0)	1	121.9	102	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	102	-
10/31/2019	2019	10	31	0	1	(0.0)	1	126.3	107	-	-	-	-	-	-	-	0	0	0	0	0	1	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	107	-
11/30/2019	2019	11	30	0	1	(0.0)	1	102.0	87	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	87	-
12/31/2019	2019	12	31	0	1	(0.0)	1	91.8	79	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	79	-
1/31/2020	2020	1	31	0	1	(0.0)	1	97.8	97	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	97	-
2/29/2020	2020	2	29	0	1	(0.0)	1	93.6	106	-	-	-	-	-	-	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	106	-
3/31/2020	2020	3	31	0	1	(0.0)	1	131.2	165	-	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	0	0	0	0	-	-	-	-	-	-	-	-	-	165	-
4/30/2020	2020	4	30	0	1	(0.0)	1	136.5	190	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	-	-	-	-	-	-	-	-	-	190	-
5/31/2020	2020	5	31	0	2	(0.0)	2	149.5	228	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	228	-
6/30/2020	2020	6	30	0	2	(0.0)	2	130.3	216	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	216	-
7/31/2020	2020	7	31	0	2	(0.0)	2	132.1	236	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	236	-
8/31/2020	2020	8	31	0	2	(0.0)	2	130.7	251	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	-	-	-	-	-	-	-	-	-	251	-
9/30/2020	2020	9	30	0	2	(0.0)	2	121.9	250	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	-	-	250	-

10/31/2020	2020	10	31	0	2	(0.0)	2	126.3	276	-	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	0	-	-	-	-	-	-	276	-
11/30/2020	2020	11	30	0	2	(0.0)	2	102.0	236	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	236	-
12/31/2020	2020	12	31	0	2	(0.0)	2	91.8	225	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	-	225	-
1/31/2021	2021	1	31	0	3	(0.0)	2	97.8	242	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	0	-	-	-	-	-	-	-	242	-
2/28/2021	2021	2	28	0	3	(0.0)	3	93.6	235	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	235	-
3/31/2021	2021	3	31	0	3	(0.0)	3	131.2	333	-	-	-	-	-	-	-	0	0	1	1	1	2	2	1	1	1	0	0	-	-	-	-	-	333	-
4/30/2021	2021	4	30	0	3	(0.0)	3	136.5	351	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	351	-
5/31/2021	2021	5	31	0	3	(0.0)	3	149.5	389	-	-	-	-	-	-	0	0	1	1	1	1	2	2	1	1	1	1	0	0	-	-	-	-	389	-
6/30/2021	2021	6	30	0	3	(0.0)	3	130.3	343	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	343	-
7/31/2021	2021	7	31	0	3	(0.0)	3	132.1	351	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	351	-
8/31/2021	2021	8	31	0	3	(0.0)	3	130.7	352	-	-	-	-	-	-	0	0	1	1	1	1	1	2	1	1	1	0	0	0	-	-	-	-	352	-
9/30/2021	2021	9	30	0	3	(0.0)	3	121.9	332	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	332	-
10/31/2021	2021	10	31	0	3	(0.0)	3	126.3	348	-	-	-	-	-	-	-	0	1	1	1	2	2	2	1	1	1	0	-	-	-	-	-	-	348	-
11/30/2021	2021	11	30	0	3	(0.0)	3	102.0	284	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	0	-	-	-	-	-	-	-	284	-
12/31/2021	2021	12	31	0	3	(0.0)	3	91.8	258	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	0	-	-	-	-	-	-	-	258	-
1/31/2022	2022	1	31	0	3	(0.0)	3	97.8	281	-	-	-	-	-	-	-	0	1	1	1	1	1	1	1	1	0	-	-	-	-	-	-	-	281	-
2/28/2022	2022	2	28	0	3	(0.0)	3	93.6	276	-	-	-	-	-	-	0	0	1	1	1	1	1	1	1	1	0	0	-	-	-	-	-	-	276	-
3/31/2022	2022	3	31	0	3	(0.0)	3	131.2	394	-	-	-	-	-	-	-	0	1	1	1	2	2	2	2	1	1	1	0	-	-	-	-	-	394	-
4/30/2022	2022	4	30	0	3	(0.0)	3	136.5	419	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	1	1	1	0	-	-	-	-	-	419	-
5/31/2022	2022	5	31	0	3	(0.0)	3	149.5	469	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	1	1	1	0	0	-	-	-	-	469	-
6/30/2022	2022	6	30	0	3	(0.0)	3	130.3	417	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	1	1	1	0	0	-	-	-	-	417	-
7/31/2022	2022	7	31	0	3	(0.0)	3	132.1	432	-	-	-	-	-	-	0	0	1	1	1	2	2	2	2	1	1	1	0	0	-	-	-	-	432	-
8/31/2022	2022	8	31	0	3	(0.0)	3	130.7	435	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	1	1	1	0	0	-	-	-	-	435	-
9/30/2022	2022	9	30	0	3	(0.0)	3	121.9	414	-	-	-	-	-	-	-	0	1	1	2	2	2	2	2	1	1	0	0	-	-	-	-	-	414	-
10/31/2022	2022	10	31	0	4	(0.0)	3	126.3	437	-	-	-	-	-	-	-	0	1	1	2	2	2	2	2	1	1	0	-	-	-	-	-	-	437	-
11/30/2022	2022	11	30	0	4	(0.0)	4	102.0	360	-	-	-	-	-	-	0	1	1	2	2	2	2	1	1	1	0	-	-	-	-	-	-	-	360	-
12/31/2022	2022	12	31	0	4	(0.0)	4	91.8	330	-	-	-	-	-	-	-	0	1	1	2	2	1	2	1	1	0	-	-	-	-	-	-	-	330	-
1/31/2023	2023	1	31	0	4	(0.0)	4	97.8	357	-	-	-	-	-	-	-	0	1	1	2	2	2	2	1	1	0	-	-	-	-	-	-	-	357	-
2/28/2023	2023	2	28	0	4	(0.0)	4	93.6	347	-	-	-	-	-	-	0	0	1	1	2	2	2	2	1	1	0	0	-	-	-	-	-	-	347	-
3/31/2023	2023	3	31	0	4	(0.0)	4	131.2	493	-	-	-	-	-	-	-	0	1	1	2	2	2	2	2	2	1	1	0	-	-	-	-	-	493	-
4/30/2023	2023	4	30	0	4	(0.0)	4	136.5	521	-	-	-	-	-	-	0	0	1	2	2	2	2	2	2	2	1	1	0	-	-	-	-	-	521	-
5/31/2023	2023	5	31	0	4	(0.0)	4	149.5	579	-	-	-	-	-	-	0	0	1	2	2	2	2	2	2	2	1	1	0	0	-	-	-	-	579	-
6/30/2023	2023	6	30	0	4	(0.0)	4	130.3	512	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	2	1	1	0	0	-	-	-	-	512	-
7/31/2023	2023	7	31	0	4	(0.0)	4	132.1	526	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	2	1	1	0	0	-	-	-	-	526	-
8/31/2023	2023	8	31	0	4	(0.0)	4	130.7	528	-	-	-	-	-	-	0	0	1	1	2	2	2	2	2	2	1	1	0	0	-	-	-	-	528	-
9/30/2023	2023	9	30	0	4	(0.0)	4	121.9	499	-	-	-	-	-	-	-	0	1	2	2	2	2	2	2	2	1	1	0	-	-	-	-	-	499	-
10/31/2023	2023	10	31	0	4	(0.0)	4	126.3	524	-	-	-	-	-	-	-	0	1	2	2	2	3	2	2	2	1	0	-	-	-	-	-	-	524	-
11/30/2023	2023	11	30	0	4	(0.0)	4	102.0	429	-	-	-	-	-	-	0	1	1	2	2	2	2	2	1	1	0	-	-	-	-	-	-	-	429	-
12/31/2023	2023	12	31	0	4	(0.0)	4	91.8	391	-	-	-	-	-	-	-	0	1	2	2	2	2	2	1	1	0	-	-	-	-	-	-	-	391	-
1/31/2024	2024	1	31	0	4	(0.0)	4	97.8	423	-	-	-	-	-	-	-	0	1	2	2	2	2	2	2	1	0	-	-	-	-	-	-	-	423	-
2/29/2024	2024	2	29	0	4	(0.0)	4	93.6	411	-	-	-	-	-	-	0	0	1	2	2	2	2	2	2	1	1	0	-	-	-	-	-	-	411	-
3/31/2024	2024	3	31	0	5	(0.0)	4	131.2	584	-	-	-	-	-	-	-	0	1	2	2	2	3	3	2	2	1	1	0	-	-	-	-	-	584	-
4/30/2024	2024	4	30	0	5	(0.0)	5	136.5	616	-	-	-	-	-	-	0	0	1	2	2	3	3	3	3	2	2	1	0	-	-	-	-	-	616	-
5/31/2024	2024	5	31	0	5	(0.0)	5	149.5	684	-	-	-	-	-	-	0	1	1	2	2	3	3	3	3	2	2	1	0	0	-	-	-	-	684	-
6/30/2024	2024	6	30	0	5	(0.0)	5	130.3	604	-	-	-	-	-	-	0	1	1	2	2	2	3	2	2	2	2	1	0	0	-	-	-	-	604	-
7/31/2024	2024	7	31	0	5	(0.0)	5	132.1	621	-	-	-	-	-	-	0	0	1	2	2	2	3	3	2	2	2	1	0	0	-	-	-	-	621	-
8/31/2024	2024	8	31	0	5	(0.0)	5	130.7	622	-	-	-	-	-	-	0	0	1	2	2	2	2	3	2	2	2	1	0	0	-	-	-	-	622	-
9/30/2024	2024	9	30	0	5	(0.0)	5	121.9	588	-	-	-	-	-	-	-	0	1	2	2	2	3	3	2	2	1	1	0	-	-	-	-	-	588	-
10/31/2024	2024	10	31	0	5	(0.0)	5	126.3	617	-	-	-	-	-	-	-	0	1	2	2	3	3	3	2	2	1	0	-	-	-	-	-	-	617	-
11/30/2024	2024	11	30	0	5	(0.0)	5	102.0	505	-	-	-	-	-	-	0	1	2	2	2	3	2	2	2	1	0	-	-	-	-	-	-	-	505	-
12/31/2024	2024	12	31	0	5	(0.0)	5	91.8	460	-	-	-	-	-	-	-	0	1	2	2	2	2	2	2	1	0	-	-	-	-	-	-	-	460	-
1/31/2025	2025	1	31	0	5	(0.0)	5	97.8	496	-	-	-	-	-	-	-	0	1	2	2	2	2	2	2	1	0	-	-	-	-	-	-	-	496	-
2/28/2025	2025	2	28	0	5	(0.0)	5	93.6	481	-	-	-	-	-	-	0	0	1	2	2	3	3	2	2	1	1	0	-	-	-	-	-	-	481	-
3/31/2025	2025	3	31	0	5	(0.0)	5	131.2	681	-	-	-	-	-	-	-	0	1	2	2	3	3	3	3	2	2	1	0	-	-	-	-	-	681	-
4/30/2025	2025	4	30	0	5	(0.0)	5	136.5	717	-	-	-	-	-	-	0	0	1	2	3	3	3	3	3	2	2	1	0	-	-	-	-	-	717	-
5/31/2025	2025	5	31	0	5	(0.0)	5	149.5	794	-	-	-	-	-	-	0	1	2	2	3	3	3	3	3	2	2	1	0	0	-	-	-	-	794	-
6/30/2025	2025	6	30	0	5	(0.0)	5	130.3	699	-	-	-	-	-	-	0	1	1	2	3	3	3	3	3	2	2	1	0	0	-	-	-	-	699	-
7/31/2025	2025	7	31	0	6	(0.0)	5	132.1	717	-	-	-	-	-	-	0	1	1	2	2	3	3	3	3	2	2	1	0	0	-	-	-	-	717	-
8/31/2025	2025	8	31	0	6	(0.0)	5	130.7	717	-	-	-	-	-	-	0	0	1	2	3	3	3	3	3	2	2	1	0	0	-	-	-	-	717	-
9/30/2025	2025	9	30	0	6	(0.0)	6	121.9	676	-	-	-	-	-	-	-	0	1	2	3	3	3	3	3	2	2	1	0	-	-	-	-	-	676	-
10/31/2025	2025	10	31	0	6	(0.0)	6	126.3	708	-	-	-	-	-	-	-	0	1	2	3	3	3	3	3	2	1	1	-	-	-	-	-	-	708	-
11/30/2025	2025	11	30	0	6	(0.0)	6	102.0	578	-	-	-	-	-	-	0	1	2	2	3	3	3	2	2	1	0	-	-	-	-	-	-	-	578	-
12/31/2025	2025	12	31	0	6	(0.0)	6	91.8	526	-	-	-	-	-	-	-	1	1	2	2	2	2	2	2	1	0	-	-	-	-	-	-	-	526	-
1/31/2026	2026	1	31	0	6	(0.0)	6	97.8	566	-	-	-	-	-	-	-	0	1	2	3	3	3	2	2	1	1	-	-	-	-	-	-	-	566	-
2/28/2026	2026	2	28	0	6	(0.0)	6	93.6	547	-	-	-	-	-	-	0	1	1	2	3	3	3	3	2	1	1	0	-	-	-	-	-	-	547	-
3/31/2026	2026	3	31	0	6	(0.0)	6	131.2	775	-	-	-	-	-	-	-	0	1	2	3	3	3	4	3	3	2	1	0	-	-	-	-	-	775	-
4/30/2026	2026	4	30	0	6	(0.0)	6	136.5	814	-	-	-	-	-	-	0	1	1	2	3	3	3	3	3	3	2	1	0	-	-	-	-	-	814	-
5/31/2026	2026	5	31	0	6	(0.0)	6	149.5	901	-	-	-	-	-	-	0	1	2	3	3	3	4	4	3	3	2	1	0	0	-	-	-	-	901	-
6/30/2026	2026	6	30	0	6	(0.0)	6	130.3	793	-	-	-	-	-	-	0	1	1	2	3	3	3	3	3	3	2	1	0	0	-	-	-	-	793	-
7/31/2026	2026	7	31	0	6	(0.0)	6	132.1	812	-	-	-	-	-	-	0	1	1	2	3	3	3	3	3	3	2	1	0	0	-	-	-	-	812	-
8/31/2026	2026	8	31	0	6	(0.0)	6	130.7	811	-	-	-	-	-	-	0	1	1	2	3	3	3	3	3	3	2	1	0	0	-	-	-	-	811	-
9/30/2026	2026	9	30	0	6	(0.0)	6	121.9	764	-	-	-	-	-	-	-	0	2	2	3	3	3	3	3	2	2	1	0	-	-	-	-	-	764	-
10/31/2026	2026	10	31	0	6	(0.0)	6	126.3	800	-	-	-	-	-	-	-	0	1	2	3	4	4	4	3	2	2	1	-	-	-	-	-	-	800	-
11/30/2026	2026	11	30	0	7	(0.0)	6	102.0	652	-	-	-	-	-	-	0	1	2	3	3	3	3	3	2	1	0	-	-	-	-	-	-	-	652	-
12/31/2026	2026	12	31	0	7	(0.0)	6	91.8	592	-	-	-	-	-	-	-	1	2	2	3	3	3	3	2	1	0	-	-	-	-	-	-	-	592	-
1/31/2027	2027	1	31	0	7	(0.0)	7	97.8	638	-	-	-	-	-	-	-	0	2	2	3	3	3	3	2	2	1	-	-	-	-	-	-	-	638	-
2/28/2027	2027	2	28	0	7	(0.0)	7	93.6	618	-	-	-	-	-	-	0	1	2	2	3	3	3	3	2	2	1	0	-	-	-	-	-	-	618	-
3/31/2027	2027	3	31	0	7	(0.0)	7	131.2	876	-	-	-	-	-	-	-	0	1	2	3	4	4	4	3	3	2	1	0	-	-	-	-	-	876	-
4/30/2027	2027	4	30	0	7	(0.0)	7	136.5	922	-	-	-	-	-	-	0	1	2	3	3	4	4	4	4	3	2	1	0	-	-	-	-	-	922	-
5/31/2027	2027	5	31	0	7	(0.0)	7	149.5	1,021	-	-	-	-	-	-	0	1	2	3	4	4	4	4	4	3	2	1	0	0	-	-	-	-	1,021	-
6/30/2027	2027	6	30	0	7	(0.0)	7	130.3	900	-	-	-	-	-	-	0	1	2	2	3	4	4	4	3	3	2	1	1	0	-	-	-	-	900	-
7/31/2027	2027	7	31	0	7	(0.0)	7	132.1	922	-	-	-	-	-	-	0	1	2	2	3	3	4	4	3	3	2	1	1	0	-	-	-	-	922	-
8/31/2027	2027	8	31	0	7	(0.0)	7	130.7	922	-	-	-	-	-	-	0	1	2	3	3	4	4	4	4	3	2	1	0	0	-	-	-	-	922	-
9/30/2027	2027	9	30	0	7	(0.0)	7	121.9	869	-	-	-	-	-	-	-	1	2	3	3	4	4	4	4	3	2	1	0	-	-	-	-	-	869	-
10/31/2027	2027	10	31	0	7	(0.0)	7	126.3	911	-	-	-	-	-	-	-	0	2	3	3	4	4	4	3	3	2	1	-	-	-	-	-	-	911	-
11/30/2027	2027	11	30	0	7	(0.0)	7	102.0	743	-	-	-	-	-	-	0	1	2	3	4	4	3	3	3	1	0	-	-	-	-	-	-	-	743	-
12/31/2027	2027	12	31	0	8	(0.0)	7	91.8	676	-	-	-	-	-	-	-	1	2	3	3	3	3	3	3	1	0	-	-	-	-	-	-	-	676	-
1/31/2028	2028	1	31	0	8	(0.0)	8	97.8	738	-	-	-	-	-	-	-	0	2	3	3	4	3	3	3	2	1	-	-	-	-	-	-	-	738	-
2/29/2028	2028	2	29	0	8	(0.0)	8	93.6	723	-	-	-	-	-	-	0	1	2	3	3	4	4	3	3	2	1	0	-	-	-	-	-	-	723	-
3/31/2028	2028	3	31	0	8	(0.0)	8	131.2	1,037	-	-	-	-	-	-	-	0	1	3	4	4	5	5	4	3	3	1	0	-	-	-	-	-	1,037	-
4/30/2028	2028	4	30	0	8	(0.0)	8	136.5	1,104	-	-	-	-	-	-	0	1	2	3	4	5	5	5	5	4	3	2	0	-	-	-	-	-	1,104	-
5/31/2028	2028	5	31	0	8	(0.0)	8	149.5	1,237	-	-	-	-	-	-	0	1	2	4	4	5	5	5	5	4	3	2	1	0	-	-	-	-	1,237	-
6/30/2028	2028	6	30	0	9	(0.0)	8	130.3	1,101	-	-	-	-	-	-	0	1	2	3	4	4	5	5	4	4	3	2	1	0	-	-	-	-	1,101	-
7/31/2028	2028	7	31	0	9	(0.0)	9	132.1	1,141	-	-	-	-	-	-	0	1	2	3	4	4	5	5	4	4	3	2	1	0	-	-	-	-	1,141	-
8/31/2028	2028	8	31	0	9	(0.0)	9	130.7	1,152	-	-	-	-	-	-	0	1	2	3	4	4	5	5	5	4	3	2	1	0	-	-	-	-	1,152	-
9/30/2028	2028	9	30	0	9	(0.0)	9	121.9	1,097	-	-	-	-	-	-	-	1	2	3	4	5	5	5	4	3	3	1	0	-	-	-	-	-	1,097	-
10/31/2028	2028	10	31	0	9	(0.0)	9	126.3	1,160	-	-	-	-	-	-	-	1	2	3	4	5	6	5	4	4	2	1	-	-	-	-	-	-	1,160	-
11/30/2028	2028	11	30	0	10	(0.0)	9	102.0	955	-	-	-	-	-	-	0	1	3	4	5	5	4	4	3	2	0	-	-	-	-	-	-	-	955	-
12/31/2028	2028	12	31	0	10	(0.0)	10	91.8	876	-	-	-	-	-	-	-	1	2	3	4	4	4	4	3	2	0	-	-	-	-	-	-	-	876	-
1/31/2029	2029	1	31	0	10	(0.0)	10	97.8	952	-	-	-	-	-	-	-	1	2	3	4	5	4	4	3	2	1	-	-	-	-	-	-	-	952	-
2/28/2029	2029	2	28	0	10	(0.0)	10	93.6	929	-	-	-	-	-	-	0	1	3	4	5	5	5	5	4	2	1	0	-	-	-	-	-	-	929	-
3/31/2029	2029	3	31	0	10	(0.0)	10	131.2	1,326	-	-	-	-	-	-	-	0	2	3	5	5	6	6	5	4	3	2	0	-	-	-	-	-	1,326	-
4/30/2029	2029	4	30	0	11	(0.0)	10	136.5	1,406	-	-	-	-	-	-	0	1	3	4	5	6	6	6	6	5	3	2	0	-	-	-	-	-	1,406	-
5/31/2029	2029	5	31	0	11	(0.0)	10	149.5	1,569	-	-	-	-	-	-	0	1	3	5	6	6	6	6	6	5	4	2	1	0	-	-	-	-	1,569	-
6/30/2029	2029	6	30	0	11	(0.0)	11	130.3	1,391	-	-	-	-	-	-	0	1	3	4	5	6	6	6	5	5	4	2	1	0	-	-	-	-	1,391	-
7/31/2029	2029	7	31	0	11	(0.0)	11	132.1	1,435	-	-	-	-	-	-	0	1	3	4	5	5	6	6	5	5	4	2	1	0	-	-	-	-	1,435	-
8/31/2029	2029	8	31	0	11	(0.0)	11	130.7	1,445	-	-	-	-	-	-	0	1	2	4	5	6	6	6	6	5	4	2	1	0	-	-	-	-	1,445	-
9/30/2029	2029	9	30	0	12	(0.0)	11	121.9	1,370	-	-	-	-	-	-	-	1	3	4	5	6	6	6	6	4	3	2	0	-	-	-	-	-	1,370	-
10/31/2029	2029	10	31	0	12	(0.0)	11	126.3	1,444	-	-	-	-	-	-	-	1	2	4	5	6	7	7	5	4	3	1	-	-	-	-	-	-	1,444	-

11/30/2029	2029	11	30	0	12	(0.0)	12	102.0	1,186	-	-	-	-	-	-	0	2	4	5	6	6	5	5	4	2	0	-	-	-	-	-	-	-	1,186	-
12/31/2029	2029	12	31	0	12	(0.0)	12	91.8	1,084	-	-	-	-	-	-	-	1	3	4	5	5	5	5	4	2	0	-	-	-	-	-	-	-	1,084	-
1/31/2030	2030	1	31	0	12	(0.0)	12	97.8	1,183	-	-	-	-	-	-	-	1	3	4	5	6	6	5	4	3	1	-	-	-	-	-	-	-	1,183	-
2/28/2030	2030	2	28	0	13	(0.0)	12	93.6	1,160	-	-	-	-	-	-	0	1	3	5	6	6	6	6	5	3	1	0	-	-	-	-	-	-	1,160	-
3/31/2030	2030	3	31	0	13	(0.0)	13	131.2	1,662	-	-	-	-	-	-	-	0	2	4	6	7	8	8	7	6	4	2	0	-	-	-	-	-	1,662	-
4/30/2030	2030	4	30	0	13	(0.0)	13	136.5	1,769	-	-	-	-	-	-	0	1	3	5	6	7	8	7	7	6	4	2	1	-	-	-	-	-	1,769	-
5/31/2030	2030	5	31	0	14	(0.0)	13	149.5	1,981	-	-	-	-	-	-	0	2	4	6	7	8	8	8	7	6	5	3	1	0	-	-	-	-	1,981	-
6/30/2030	2030	6	30	0	14	(0.0)	14	130.3	1,763	-	-	-	-	-	-	0	2	3	5	6	7	8	7	7	6	5	3	1	0	-	-	-	-	1,763	-
7/31/2030	2030	7	31	0	14	(0.0)	14	132.1	1,825	-	-	-	-	-	-	0	1	3	5	6	7	7	8	7	6	5	3	1	0	-	-	-	-	1,825	-
8/31/2030	2030	8	31	0	14	(0.0)	14	130.7	1,843	-	-	-	-	-	-	0	1	3	5	7	7	7	8	7	6	5	3	1	0	-	-	-	-	1,843	-
9/30/2030	2030	9	30	0	15	(0.0)	14	121.9	1,754	-	-	-	-	-	-	-	1	4	5	7	7	8	8	7	6	4	2	0	-	-	-	-	-	1,754	-
10/31/2030	2030	10	31	0	15	(0.0)	15	126.3	1,854	-	-	-	-	-	-	-	1	3	6	7	8	9	8	7	6	4	1	-	-	-	-	-	-	1,854	-
11/30/2030	2030	11	30	0	15	(0.0)	15	102.0	1,527	-	-	-	-	-	-	0	2	5	6	7	8	7	6	5	3	1	-	-	-	-	-	-	-	1,527	-
12/31/2030	2030	12	31	0	16	(0.0)	15	91.8	1,400	-	-	-	-	-	-	-	1	4	5	6	7	6	6	5	3	1	-	-	-	-	-	-	-	1,400	-
1/31/2031	2031	1	31	0	16	(0.0)	15	97.8	1,513	-	-	-	-	-	-	-	1	4	6	7	8	7	6	6	4	1	-	-	-	-	-	-	-	1,513	-
2/28/2031	2031	2	28	0	16	(0.0)	16	93.6	1,468	-	-	-	-	-	-	0	1	4	6	7	8	8	7	6	4	2	0	-	-	-	-	-	-	1,468	-
3/31/2031	2031	3	31	0	16	(0.0)	16	131.2	2,085	-	-	-	-	-	-	-	1	3	5	7	8	9	9	8	7	5	3	1	-	-	-	-	-	2,085	-
4/30/2031	2031	4	30	0	16	(0.0)	16	136.5	2,199	-	-	-	-	-	-	0	1	4	6	8	9	9	9	9	7	5	3	1	-	-	-	-	-	2,199	-
5/31/2031	2031	5	31	0	17	(0.0)	16	149.5	2,440	-	-	-	-	-	-	0	2	5	7	9	9	10	10	9	8	6	3	1	0	-	-	-	-	2,440	-
6/30/2031	2031	6	30	0	17	(0.0)	16	130.3	2,154	-	-	-	-	-	-	0	2	4	6	8	9	9	9	8	7	6	3	1	0	-	-	-	-	2,154	-
7/31/2031	2031	7	31	0	17	(0.0)	17	132.1	2,212	-	-	-	-	-	-	0	2	4	6	7	8	9	9	8	7	6	3	1	0	-	-	-	-	2,212	-
8/31/2031	2031	8	31	0	17	(0.0)	17	130.7	2,216	-	-	-	-	-	-	0	1	4	6	8	9	9	9	9	7	5	3	1	0	-	-	-	-	2,216	-
9/30/2031	2031	9	30	0	18	(0.0)	17	121.9	2,093	-	-	-	-	-	-	-	1	4	6	8	9	9	9	9	7	5	2	0	-	-	-	-	-	2,093	-
10/31/2031	2031	10	31	0	18	(0.0)	17	126.3	2,196	-	-	-	-	-	-	-	1	4	7	8	10	11	10	8	7	4	2	-	-	-	-	-	-	2,196	-
11/30/2031	2031	11	30	0	18	(0.0)	18	102.0	1,795	-	-	-	-	-	-	0	3	6	8	8	9	8	7	6	3	1	-	-	-	-	-	-	-	1,795	-
12/31/2031	2031	12	31	0	18	(0.0)	18	91.8	1,635	-	-	-	-	-	-	-	2	4	6	7	8	7	7	6	3	1	-	-	-	-	-	-	-	1,635	-
1/31/2032	2032	1	31	0	18	(0.0)	18	97.8	1,755	-	-	-	-	-	-	-	1	4	6	8	9	8	8	6	4	2	-	-	-	-	-	-	-	1,755	-
2/29/2032	2032	2	29	0	19	(0.0)	18	93.6	1,693	-	-	-	-	-	-	0	2	4	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,693	-
3/31/2032	2032	3	31	0	19	(0.0)	18	131.2	2,388	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,388	-
4/30/2032	2032	4	30	0	19	(0.0)	18	136.5	2,503	-	-	-	-	-	-	0	2	5	7	9	10	11	11	10	8	6	3	1	-	-	-	-	-	2,503	-
5/31/2032	2032	5	31	0	19	(0.0)	18	149.5	2,762	-	-	-	-	-	-	0	2	6	8	10	11	11	11	10	9	6	4	1	0	-	-	-	-	2,762	-
6/30/2032	2032	6	30	0	19	(0.0)	19	130.3	2,424	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,424	-
7/31/2032	2032	7	31	0	19	(0.0)	19	132.1	2,475	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,475	-
8/31/2032	2032	8	31	0	19	(0.0)	19	130.7	2,466	-	-	-	-	-	-	0	2	4	7	9	10	10	11	10	8	6	3	1	0	-	-	-	-	2,466	-
9/30/2032	2032	9	30	0	19	(0.0)	19	121.9	2,315	-	-	-	-	-	-	-	2	5	7	9	10	10	10	9	7	5	3	0	-	-	-	-	-	2,315	-
10/31/2032	2032	10	31	0	20	(0.0)	19	126.3	2,417	-	-	-	-	-	-	-	1	4	7	9	11	12	11	9	7	5	2	-	-	-	-	-	-	2,417	-
11/30/2032	2032	11	30	0	20	(0.0)	19	102.0	1,966	-	-	-	-	-	-	0	3	6	8	9	10	9	8	7	4	1	-	-	-	-	-	-	-	1,966	-
12/31/2032	2032	12	31	0	20	(0.0)	19	91.8	1,781	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,781	-
1/31/2033	2033	1	31	-	20	(0.0)	19	97.8	1,896	-	-	-	-	-	-	-	1	5	7	9	9	9	8	7	5	2	-	-	-	-	-	-	-	1,896	-
2/28/2033	2033	2	28	-	20	(0.0)	19	93.6	1,815	-	-	-	-	-	-	0	2	5	7	9	9	10	9	7	5	2	0	-	-	-	-	-	-	1,815	-
3/31/2033	2033	3	31	-	20	(0.0)	19	131.2	2,541	-	-	-	-	-	-	-	1	3	7	9	10	11	12	10	9	6	4	1	-	-	-	-	-	2,541	-
4/30/2033	2033	4	30	-	20	(0.0)	19	136.5	2,643	-	-	-	-	-	-	0	2	5	8	10	11	11	11	11	9	7	4	1	-	-	-	-	-	2,643	-
5/31/2033	2033	5	31	-	20	(0.0)	19	149.5	2,894	-	-	-	-	-	-	0	2	6	9	10	11	12	12	11	9	7	4	1	0	-	-	-	-	2,894	-
6/30/2033	2033	6	30	-	20	(0.0)	19	130.3	2,521	-	-	-	-	-	-	0	2	5	7	9	10	11	10	10	8	7	4	1	0	-	-	-	-	2,521	-
7/31/2033	2033	7	31	-	20	(0.0)	19	132.1	2,555	-	-	-	-	-	-	0	2	5	7	8	10	10	11	10	8	6	4	1	0	-	-	-	-	2,555	-
8/31/2033	2033	8	31	-	20	(0.0)	19	130.7	2,526	-	-	-	-	-	-	0	2	4	7	9	10	10	11	10	8	6	4	1	0	-	-	-	-	2,526	-
9/30/2033	2033	9	30	-	20	(0.0)	19	121.9	2,355	-	-	-	-	-	-	-	2	5	7	9	10	10	10	10	7	5	3	0	-	-	-	-	-	2,355	-
10/31/2033	2033	10	31	-	20	(0.0)	19	126.3	2,440	-	-	-	-	-	-	-	1	4	7	9	11	12	11	9	7	5	2	-	-	-	-	-	-	2,440	-
11/30/2033	2033	11	30	-	20	(0.0)	19	102.0	1,970	-	-	-	-	-	-	0	3	6	8	9	10	9	8	7	4	1	-	-	-	-	-	-	-	1,970	-
12/31/2033	2033	12	31	-	20	(0.0)	19	91.8	1,772	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,772	-
1/31/2034	2034	1	31	-	20	(0.0)	19	97.8	1,887	-	-	-	-	-	-	-	1	4	7	9	9	9	8	7	5	2	-	-	-	-	-	-	-	1,887	-
2/28/2034	2034	2	28	-	20	(0.0)	19	93.6	1,806	-	-	-	-	-	-	0	2	5	7	9	9	10	9	7	5	2	0	-	-	-	-	-	-	1,806	-
3/31/2034	2034	3	31	-	20	(0.0)	19	131.2	2,528	-	-	-	-	-	-	-	1	3	7	9	10	11	11	10	8	6	3	1	-	-	-	-	-	2,528	-
4/30/2034	2034	4	30	-	20	(0.0)	19	136.5	2,630	-	-	-	-	-	-	0	2	5	8	10	11	11	11	11	9	6	4	1	-	-	-	-	-	2,630	-
5/31/2034	2034	5	31	-	20	(0.0)	19	149.5	2,880	-	-	-	-	-	-	0	2	6	9	10	11	12	12	11	9	7	4	1	0	-	-	-	-	2,880	-
6/30/2034	2034	6	30	-	20	(0.0)	19	130.3	2,508	-	-	-	-	-	-	0	2	5	7	9	10	11	10	9	8	7	4	1	0	-	-	-	-	2,508	-
7/31/2034	2034	7	31	-	20	(0.0)	19	132.1	2,542	-	-	-	-	-	-	0	2	5	7	8	10	10	10	10	8	6	4	1	0	-	-	-	-	2,542	-
8/31/2034	2034	8	31	-	20	(0.0)	19	130.7	2,514	-	-	-	-	-	-	0	2	4	7	9	10	10	11	10	8	6	4	1	0	-	-	-	-	2,514	-
9/30/2034	2034	9	30	-	20	(0.0)	19	121.9	2,343	-	-	-	-	-	-	-	2	5	7	9	10	10	10	10	7	5	3	0	-	-	-	-	-	2,343	-
10/31/2034	2034	10	31	-	20	(0.0)	19	126.3	2,428	-	-	-	-	-	-	-	1	4	7	9	11	12	11	9	7	5	2	-	-	-	-	-	-	2,428	-
11/30/2034	2034	11	30	-	20	(0.0)	19	102.0	1,960	-	-	-	-	-	-	0	3	6	8	9	10	9	8	7	4	1	-	-	-	-	-	-	-	1,960	-
12/31/2034	2034	12	31	-	20	(0.0)	19	91.8	1,763	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,763	-
1/31/2035	2035	1	31	-	20	(0.0)	19	97.8	1,877	-	-	-	-	-	-	-	1	4	7	9	9	9	8	7	5	2	-	-	-	-	-	-	-	1,877	-
2/28/2035	2035	2	28	-	20	(0.0)	19	93.6	1,797	-	-	-	-	-	-	0	2	5	7	9	9	9	9	7	5	2	0	-	-	-	-	-	-	1,797	-
3/31/2035	2035	3	31	-	20	(0.0)	19	131.2	2,516	-	-	-	-	-	-	-	1	3	7	9	10	11	11	10	8	6	3	1	-	-	-	-	-	2,516	-
4/30/2035	2035	4	30	-	20	(0.0)	19	136.5	2,617	-	-	-	-	-	-	0	2	5	8	10	11	11	11	11	9	6	4	1	-	-	-	-	-	2,617	-
5/31/2035	2035	5	31	-	20	(0.0)	19	149.5	2,866	-	-	-	-	-	-	0	2	6	8	10	11	12	12	11	9	7	4	1	0	-	-	-	-	2,866	-
6/30/2035	2035	6	30	-	20	(0.0)	19	130.3	2,495	-	-	-	-	-	-	0	2	4	6	9	10	11	10	9	8	7	4	1	0	-	-	-	-	2,495	-
7/31/2035	2035	7	31	-	20	(0.0)	19	132.1	2,529	-	-	-	-	-	-	0	2	5	7	8	9	10	10	10	8	6	4	1	0	-	-	-	-	2,529	-
8/31/2035	2035	8	31	-	20	(0.0)	19	130.7	2,501	-	-	-	-	-	-	0	2	4	7	9	10	10	11	10	8	6	4	1	0	-	-	-	-	2,501	-
9/30/2035	2035	9	30	-	20	(0.0)	19	121.9	2,332	-	-	-	-	-	-	-	2	5	7	9	10	10	10	10	7	5	3	0	-	-	-	-	-	2,332	-
10/31/2035	2035	10	31	-	20	(0.0)	19	126.3	2,416	-	-	-	-	-	-	-	1	4	7	9	11	12	11	9	7	5	2	-	-	-	-	-	-	2,416	-
11/30/2035	2035	11	30	-	20	(0.0)	19	102.0	1,950	-	-	-	-	-	-	0	3	6	8	9	10	9	8	7	4	1	-	-	-	-	-	-	-	1,950	-
12/31/2035	2035	12	31	-	20	(0.0)	19	91.8	1,754	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,754	-
1/31/2036	2036	1	31	-	20	(0.0)	19	97.8	1,868	-	-	-	-	-	-	-	1	4	7	9	9	9	8	7	5	2	-	-	-	-	-	-	-	1,868	-
2/29/2036	2036	2	29	-	20	(0.0)	19	93.6	1,788	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,788	-
3/31/2036	2036	3	31	-	20	(0.0)	19	131.2	2,503	-	-	-	-	-	-	-	1	3	7	9	10	11	11	10	8	6	3	1	-	-	-	-	-	2,503	-
4/30/2036	2036	4	30	-	20	(0.0)	19	136.5	2,604	-	-	-	-	-	-	0	2	5	8	9	11	11	11	11	9	6	4	1	-	-	-	-	-	2,604	-
5/31/2036	2036	5	31	-	20	(0.0)	19	149.5	2,851	-	-	-	-	-	-	0	2	6	8	10	11	12	12	11	9	7	4	1	0	-	-	-	-	2,851	-
6/30/2036	2036	6	30	-	20	(0.0)	19	130.3	2,483	-	-	-	-	-	-	0	2	4	6	9	10	11	10	9	8	7	4	1	0	-	-	-	-	2,483	-
7/31/2036	2036	7	31	-	20	(0.0)	19	132.1	2,517	-	-	-	-	-	-	0	2	5	7	8	9	10	10	10	8	6	4	1	0	-	-	-	-	2,517	-
8/31/2036	2036	8	31	-	20	(0.0)	19	130.7	2,489	-	-	-	-	-	-	0	2	4	7	9	10	10	11	10	8	6	3	1	0	-	-	-	-	2,489	-
9/30/2036	2036	9	30	-	20	(0.0)	19	121.9	2,320	-	-	-	-	-	-	-	2	5	7	9	10	10	10	10	7	5	3	0	-	-	-	-	-	2,320	-
10/31/2036	2036	10	31	-	20	(0.0)	19	126.3	2,404	-	-	-	-	-	-	-	1	4	7	9	11	12	11	9	7	5	2	-	-	-	-	-	-	2,404	-
11/30/2036	2036	11	30	-	20	(0.0)	19	102.0	1,941	-	-	-	-	-	-	0	3	6	8	9	10	9	8	7	4	1	-	-	-	-	-	-	-	1,941	-
12/31/2036	2036	12	31	-	20	(0.0)	19	91.8	1,746	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,746	-
1/31/2037	2037	1	31	-	20	(0.0)	19	97.8	1,859	-	-	-	-	-	-	-	1	4	7	9	9	9	8	7	5	2	-	-	-	-	-	-	-	1,859	-
2/28/2037	2037	2	28	-	20	(0.0)	19	93.6	1,779	-	-	-	-	-	-	0	2	5	7	9	9	9	9	7	5	2	0	-	-	-	-	-	-	1,779	-
3/31/2037	2037	3	31	-	20	(0.0)	19	131.2	2,491	-	-	-	-	-	-	-	1	3	6	9	10	11	11	10	8	6	3	1	-	-	-	-	-	2,491	-
4/30/2037	2037	4	30	-	20	(0.0)	19	136.5	2,591	-	-	-	-	-	-	0	2	5	8	9	11	11	11	11	9	6	4	1	-	-	-	-	-	2,591	-
5/31/2037	2037	5	31	-	20	(0.0)	19	149.5	2,837	-	-	-	-	-	-	0	2	6	8	10	11	12	12	10	9	7	4	1	0	-	-	-	-	2,837	-
6/30/2037	2037	6	30	-	20	(0.0)	19	130.3	2,471	-	-	-	-	-	-	0	2	4	6	9	10	11	10	9	8	6	4	1	0	-	-	-	-	2,471	-
7/31/2037	2037	7	31	-	20	(0.0)	19	132.1	2,504	-	-	-	-	-	-	0	2	5	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,504	-
8/31/2037	2037	8	31	-	20	(0.0)	19	130.7	2,476	-	-	-	-	-	-	0	2	4	7	9	10	10	11	10	8	6	3	1	0	-	-	-	-	2,476	-
9/30/2037	2037	9	30	-	20	(0.0)	19	121.9	2,308	-	-	-	-	-	-	-	1	5	7	9	10	10	10	9	7	5	3	0	-	-	-	-	-	2,308	-
10/31/2037	2037	10	31	-	20	(0.0)	19	126.3	2,392	-	-	-	-	-	-	-	1	4	7	9	11	12	11	9	7	5	2	-	-	-	-	-	-	2,392	-
11/30/2037	2037	11	30	-	20	(0.0)	19	102.0	1,931	-	-	-	-	-	-	0	3	6	8	9	10	9	8	7	4	1	-	-	-	-	-	-	-	1,931	-
12/31/2037	2037	12	31	-	20	(0.0)	19	91.8	1,737	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,737	-
1/31/2038	2038	1	31	-	20	(0.0)	19	97.8	1,850	-	-	-	-	-	-	-	1	4	7	8	9	9	8	7	5	2	-	-	-	-	-	-	-	1,850	-
2/28/2038	2038	2	28	-	20	(0.0)	19	93.6	1,770	-	-	-	-	-	-	0	2	5	7	9	9	9	9	7	5	2	0	-	-	-	-	-	-	1,770	-
3/31/2038	2038	3	31	-	20	(0.0)	19	131.2	2,478	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,478	-
4/30/2038	2038	4	30	-	20	(0.0)	19	136.5	2,578	-	-	-	-	-	-	0	2	5	8	9	11	11	11	11	9	6	4	1	-	-	-	-	-	2,578	-
5/31/2038	2038	5	31	-	20	(0.0)	19	149.5	2,823	-	-	-	-	-	-	0	2	6	8	10	11	12	11	10	9	6	4	1	0	-	-	-	-	2,823	-
6/30/2038	2038	6	30	-	20	(0.0)	19	130.3	2,458	-	-	-	-	-	-	0	2	4	6	9	10	11	10	9	8	6	4	1	0	-	-	-	-	2,458	-
7/31/2038	2038	7	31	-	20	(0.0)	19	132.1	2,492	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,492	-
8/31/2038	2038	8	31	-	20	(0.0)	19	130.7	2,464	-	-	-	-	-	-	0	2	4	7	9	10	10	11	10	8	6	3	1	0	-	-	-	-	2,464	-
9/30/2038	2038	9	30	-	20	(0.0)	19	121.9	2,297	-	-	-	-	-	-	-	1	5	7	9	10	10	10	9	7	5	3	0	-	-	-	-	-	2,297	-
10/31/2038	2038	10	31	-	20	(0.0)	19	126.3	2,380	-	-	-	-	-	-	-	1	4	7	9	11	12	11	9	7	5	2	-	-	-	-	-	-	2,380	-
11/30/2038	2038	11	30	-	20	(0.0)	19	102.0	1,921	-	-	-	-	-	-	0	3	6	8	9	10	9	8	7	4	1	-	-	-	-	-	-	-	1,921	-

12/31/2038	2038	12	31	-	20	(0.0)	19	91.8	1,728	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,728	-
1/31/2039	2039	1	31	-	20	(0.0)	19	97.8	1,840	-	-	-	-	-	-	-	1	4	7	8	9	9	8	7	4	2	-	-	-	-	-	-	-	1,840	-
2/28/2039	2039	2	28	-	20	(0.0)	19	93.6	1,761	-	-	-	-	-	-	0	2	5	7	9	9	9	9	7	4	2	0	-	-	-	-	-	-	1,761	-
3/31/2039	2039	3	31	-	20	(0.0)	19	131.2	2,466	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,466	-
4/30/2039	2039	4	30	-	20	(0.0)	19	136.5	2,565	-	-	-	-	-	-	0	2	5	7	9	11	11	11	10	9	6	4	1	-	-	-	-	-	2,565	-
5/31/2039	2039	5	31	-	20	(0.0)	19	149.5	2,809	-	-	-	-	-	-	0	2	6	8	10	11	11	11	10	9	6	4	1	0	-	-	-	-	2,809	-
6/30/2039	2039	6	30	-	20	(0.0)	19	130.3	2,446	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,446	-
7/31/2039	2039	7	31	-	20	(0.0)	19	132.1	2,479	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,479	-
8/31/2039	2039	8	31	-	20	(0.0)	19	130.7	2,452	-	-	-	-	-	-	0	2	4	7	9	10	10	10	10	8	6	3	1	0	-	-	-	-	2,452	-
9/30/2039	2039	9	30	-	20	(0.0)	19	121.9	2,285	-	-	-	-	-	-	-	1	5	7	9	10	10	10	9	7	5	3	0	-	-	-	-	-	2,285	-
10/31/2039	2039	10	31	-	20	(0.0)	19	126.3	2,368	-	-	-	-	-	-	-	1	4	7	9	10	11	11	9	7	5	2	-	-	-	-	-	-	2,368	-
11/30/2039	2039	11	30	-	20	(0.0)	19	102.0	1,912	-	-	-	-	-	-	0	3	6	8	9	10	9	8	7	4	1	-	-	-	-	-	-	-	1,912	-
12/31/2039	2039	12	31	-	20	(0.0)	19	91.8	1,720	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,720	-
1/31/2040	2040	1	31	-	20	(0.0)	19	97.8	1,831	-	-	-	-	-	-	-	1	4	7	8	9	9	8	7	4	2	-	-	-	-	-	-	-	1,831	-
2/29/2040	2040	2	29	-	20	(0.0)	19	93.6	1,753	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,753	-
3/31/2040	2040	3	31	-	20	(0.0)	19	131.2	2,454	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,454	-
4/30/2040	2040	4	30	-	20	(0.0)	19	136.5	2,553	-	-	-	-	-	-	0	2	5	7	9	11	11	11	10	9	6	4	1	-	-	-	-	-	2,553	-
5/31/2040	2040	5	31	-	20	(0.0)	19	149.5	2,795	-	-	-	-	-	-	0	2	6	8	10	11	11	11	10	9	6	4	1	0	-	-	-	-	2,795	-
6/30/2040	2040	6	30	-	20	(0.0)	19	130.3	2,434	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,434	-
7/31/2040	2040	7	31	-	20	(0.0)	19	132.1	2,467	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,467	-
8/31/2040	2040	8	31	-	20	(0.0)	19	130.7	2,440	-	-	-	-	-	-	0	2	4	7	9	10	10	10	10	8	6	3	1	0	-	-	-	-	2,440	-
9/30/2040	2040	9	30	-	20	(0.0)	19	121.9	2,274	-	-	-	-	-	-	-	1	5	7	9	10	10	10	9	7	5	3	0	-	-	-	-	-	2,274	-
10/31/2040	2040	10	31	-	20	(0.0)	19	126.3	2,356	-	-	-	-	-	-	-	1	4	7	9	10	11	11	9	7	5	2	-	-	-	-	-	-	2,356	-
11/30/2040	2040	11	30	-	20	(0.0)	19	102.0	1,902	-	-	-	-	-	-	0	3	6	8	9	9	9	8	7	4	1	-	-	-	-	-	-	-	1,902	-
12/31/2040	2040	12	31	-	20	(0.0)	19	91.8	1,711	-	-	-	-	-	-	-	2	5	7	8	8	8	8	7	4	1	-	-	-	-	-	-	-	1,711	-
1/31/2041	2041	1	31	-	20	(0.0)	19	97.8	1,822	-	-	-	-	-	-	-	1	4	7	8	9	9	8	7	4	2	-	-	-	-	-	-	-	1,822	-
2/28/2041	2041	2	28	-	20	(0.0)	19	93.6	1,744	-	-	-	-	-	-	0	2	5	7	8	9	9	9	7	4	2	0	-	-	-	-	-	-	1,744	-
3/31/2041	2041	3	31	-	20	(0.0)	19	131.2	2,442	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,442	-
4/30/2041	2041	4	30	-	20	(0.0)	19	136.5	2,540	-	-	-	-	-	-	0	2	5	7	9	11	11	11	10	8	6	4	1	-	-	-	-	-	2,540	-
5/31/2041	2041	5	31	-	20	(0.0)	19	149.5	2,781	-	-	-	-	-	-	0	2	6	8	10	11	11	11	10	9	6	4	1	0	-	-	-	-	2,781	-
6/30/2041	2041	6	30	-	20	(0.0)	19	130.3	2,422	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,422	-
7/31/2041	2041	7	31	-	20	(0.0)	19	132.1	2,455	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,455	-
8/31/2041	2041	8	31	-	20	(0.0)	19	130.7	2,427	-	-	-	-	-	-	0	2	4	7	9	9	10	10	10	8	6	3	1	0	-	-	-	-	2,427	-
9/30/2041	2041	9	30	-	20	(0.0)	19	121.9	2,263	-	-	-	-	-	-	-	1	5	7	9	10	10	10	9	7	5	3	0	-	-	-	-	-	2,263	-
10/31/2041	2041	10	31	-	20	(0.0)	19	126.3	2,345	-	-	-	-	-	-	-	1	4	7	9	10	11	11	9	7	5	2	-	-	-	-	-	-	2,345	-
11/30/2041	2041	11	30	-	20	(0.0)	19	102.0	1,893	-	-	-	-	-	-	0	3	6	8	9	9	9	8	7	4	1	-	-	-	-	-	-	-	1,893	-
12/31/2041	2041	12	31	-	20	(0.0)	19	91.8	1,703	-	-	-	-	-	-	-	2	5	7	8	8	8	8	6	4	1	-	-	-	-	-	-	-	1,703	-
1/31/2042	2042	1	31	-	20	(0.0)	19	97.8	1,813	-	-	-	-	-	-	-	1	4	7	8	9	9	8	7	4	2	-	-	-	-	-	-	-	1,813	-
2/28/2042	2042	2	28	-	20	(0.0)	19	93.6	1,735	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,735	-
3/31/2042	2042	3	31	-	20	(0.0)	19	131.2	2,429	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,429	-
4/30/2042	2042	4	30	-	20	(0.0)	19	136.5	2,527	-	-	-	-	-	-	0	2	5	7	9	11	11	11	10	8	6	4	1	-	-	-	-	-	2,527	-
5/31/2042	2042	5	31	-	20	(0.0)	19	149.5	2,767	-	-	-	-	-	-	0	2	6	8	10	11	11	11	10	9	6	4	1	0	-	-	-	-	2,767	-
6/30/2042	2042	6	30	-	20	(0.0)	19	130.3	2,410	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,410	-
7/31/2042	2042	7	31	-	20	(0.0)	18	132.1	2,442	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,442	-
8/31/2042	2042	8	31	-	20	(0.0)	18	130.7	2,415	-	-	-	-	-	-	0	2	4	7	9	9	10	10	10	8	6	3	1	0	-	-	-	-	2,415	-
9/30/2042	2042	9	30	-	20	(0.0)	18	121.9	2,252	-	-	-	-	-	-	-	1	5	7	9	10	10	10	9	7	5	3	0	-	-	-	-	-	2,252	-
10/31/2042	2042	10	31	-	20	(0.0)	18	126.3	2,333	-	-	-	-	-	-	-	1	4	7	9	10	11	11	9	7	5	2	-	-	-	-	-	-	2,333	-
11/30/2042	2042	11	30	-	20	(0.0)	18	102.0	1,883	-	-	-	-	-	-	0	3	6	8	9	9	9	8	7	3	1	-	-	-	-	-	-	-	1,883	-
12/31/2042	2042	12	31	-	20	(0.0)	18	91.8	1,694	-	-	-	-	-	-	-	2	4	7	8	8	8	8	6	4	1	-	-	-	-	-	-	-	1,694	-
1/31/2043	2043	1	31	-	20	(0.0)	18	97.8	1,804	-	-	-	-	-	-	-	1	4	7	8	9	8	8	7	4	2	-	-	-	-	-	-	-	1,804	-
2/28/2043	2043	2	28	-	20	(0.0)	18	93.6	1,727	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,727	-
3/31/2043	2043	3	31	-	20	(0.0)	18	131.2	2,417	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,417	-
4/30/2043	2043	4	30	-	20	(0.0)	18	136.5	2,515	-	-	-	-	-	-	0	2	5	7	9	10	11	11	10	8	6	3	1	-	-	-	-	-	2,515	-
5/31/2043	2043	5	31	-	20	(0.0)	18	149.5	2,753	-	-	-	-	-	-	0	2	5	8	10	11	11	11	10	8	6	4	1	0	-	-	-	-	2,753	-
6/30/2043	2043	6	30	-	20	(0.0)	18	130.3	2,398	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,398	-
7/31/2043	2043	7	31	-	20	(0.0)	18	132.1	2,430	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,430	-
8/31/2043	2043	8	31	-	20	(0.0)	18	130.7	2,403	-	-	-	-	-	-	0	2	4	7	9	9	10	10	10	8	6	3	1	0	-	-	-	-	2,403	-
9/30/2043	2043	9	30	-	20	(0.0)	18	121.9	2,240	-	-	-	-	-	-	-	1	5	7	9	9	10	10	9	7	5	3	0	-	-	-	-	-	2,240	-
10/31/2043	2043	10	31	-	20	(0.0)	18	126.3	2,321	-	-	-	-	-	-	-	1	4	7	9	10	11	11	9	7	5	2	-	-	-	-	-	-	2,321	-
11/30/2043	2043	11	30	-	20	(0.0)	18	102.0	1,874	-	-	-	-	-	-	0	3	6	8	9	9	9	8	6	3	1	-	-	-	-	-	-	-	1,874	-
12/31/2043	2043	12	31	-	20	(0.0)	18	91.8	1,686	-	-	-	-	-	-	-	2	4	6	8	8	8	8	6	4	1	-	-	-	-	-	-	-	1,686	-
1/31/2044	2044	1	31	-	20	(0.0)	18	97.8	1,795	-	-	-	-	-	-	-	1	4	7	8	9	8	8	7	4	2	-	-	-	-	-	-	-	1,795	-
2/29/2044	2044	2	29	-	20	(0.0)	18	93.6	1,718	-	-	-	-	-	-	0	2	4	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,718	-
3/31/2044	2044	3	31	-	20	(0.0)	18	131.2	2,405	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,405	-
4/30/2044	2044	4	30	-	20	(0.0)	18	136.5	2,502	-	-	-	-	-	-	0	2	5	7	9	10	11	11	10	8	6	3	1	-	-	-	-	-	2,502	-
5/31/2044	2044	5	31	-	20	(0.0)	18	149.5	2,740	-	-	-	-	-	-	0	2	5	8	10	10	11	11	10	8	6	4	1	0	-	-	-	-	2,740	-
6/30/2044	2044	6	30	-	20	(0.0)	18	130.3	2,386	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,386	-
7/31/2044	2044	7	31	-	20	(0.0)	18	132.1	2,418	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,418	-
8/31/2044	2044	8	31	-	20	(0.0)	18	130.7	2,391	-	-	-	-	-	-	0	2	4	7	9	9	9	10	9	8	6	3	1	0	-	-	-	-	2,391	-
9/30/2044	2044	9	30	-	20	(0.0)	18	121.9	2,229	-	-	-	-	-	-	-	1	5	7	8	9	10	10	9	7	5	3	0	-	-	-	-	-	2,229	-
10/31/2044	2044	10	31	-	20	(0.0)	18	126.3	2,310	-	-	-	-	-	-	-	1	4	7	8	10	11	11	9	7	5	2	-	-	-	-	-	-	2,310	-
11/30/2044	2044	11	30	-	20	(0.0)	18	102.0	1,865	-	-	-	-	-	-	0	3	6	8	9	9	9	8	6	3	1	-	-	-	-	-	-	-	1,865	-
12/31/2044	2044	12	31	-	20	(0.0)	18	91.8	1,677	-	-	-	-	-	-	-	2	4	6	8	8	8	8	6	4	1	-	-	-	-	-	-	-	1,677	-
1/31/2045	2045	1	31	-	20	(0.0)	18	97.8	1,786	-	-	-	-	-	-	-	1	4	7	8	9	8	8	7	4	2	-	-	-	-	-	-	-	1,786	-
2/28/2045	2045	2	28	-	20	(0.0)	18	93.6	1,709	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,709	-
3/31/2045	2045	3	31	-	20	(0.0)	18	131.2	2,393	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,393	-
4/30/2045	2045	4	30	-	20	(0.0)	18	136.5	2,490	-	-	-	-	-	-	0	2	5	7	9	10	11	11	10	8	6	3	1	-	-	-	-	-	2,490	-
5/31/2045	2045	5	31	-	20	(0.0)	18	149.5	2,726	-	-	-	-	-	-	0	2	5	8	10	10	11	11	10	8	6	4	1	0	-	-	-	-	2,726	-
6/30/2045	2045	6	30	-	20	(0.0)	18	130.3	2,374	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,374	-
7/31/2045	2045	7	31	-	20	(0.0)	18	132.1	2,406	-	-	-	-	-	-	0	2	4	7	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,406	-
8/31/2045	2045	8	31	-	20	(0.0)	18	130.7	2,379	-	-	-	-	-	-	0	2	4	6	9	9	9	10	9	8	6	3	1	0	-	-	-	-	2,379	-
9/30/2045	2045	9	30	-	20	(0.0)	18	121.9	2,218	-	-	-	-	-	-	-	1	4	7	8	9	10	10	9	7	5	3	0	-	-	-	-	-	2,218	-
10/31/2045	2045	10	31	-	20	(0.0)	18	126.3	2,298	-	-	-	-	-	-	-	1	4	7	8	10	11	10	9	7	5	2	-	-	-	-	-	-	2,298	-
11/30/2045	2045	11	30	-	20	(0.0)	18	102.0	1,855	-	-	-	-	-	-	0	3	6	8	9	9	8	8	6	3	1	-	-	-	-	-	-	-	1,855	-
12/31/2045	2045	12	31	-	20	(0.0)	18	91.8	1,669	-	-	-	-	-	-	-	2	4	6	8	8	8	8	6	4	1	-	-	-	-	-	-	-	1,669	-
1/31/2046	2046	1	31	-	20	(0.0)	18	97.8	1,777	-	-	-	-	-	-	-	1	4	7	8	9	8	8	6	4	2	-	-	-	-	-	-	-	1,777	-
2/28/2046	2046	2	28	-	20	(0.0)	18	93.6	1,701	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,701	-
3/31/2046	2046	3	31	-	20	(0.0)	18	131.2	2,381	-	-	-	-	-	-	-	1	3	6	8	10	11	11	10	8	6	3	1	-	-	-	-	-	2,381	-
4/30/2046	2046	4	30	-	20	(0.0)	18	136.5	2,477	-	-	-	-	-	-	0	2	4	7	9	10	11	10	10	8	6	3	1	-	-	-	-	-	2,477	-
5/31/2046	2046	5	31	-	20	(0.0)	18	149.5	2,713	-	-	-	-	-	-	0	2	5	8	10	10	11	11	10	8	6	4	1	0	-	-	-	-	2,713	-
6/30/2046	2046	6	30	-	20	(0.0)	18	130.3	2,362	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,362	-
7/31/2046	2046	7	31	-	20	(0.0)	18	132.1	2,394	-	-	-	-	-	-	0	2	4	6	8	9	10	10	9	8	6	4	1	0	-	-	-	-	2,394	-
8/31/2046	2046	8	31	-	20	(0.0)	18	130.7	2,368	-	-	-	-	-	-	0	2	4	6	9	9	9	10	9	8	6	3	1	0	-	-	-	-	2,368	-
9/30/2046	2046	9	30	-	20	(0.0)	18	121.9	2,207	-	-	-	-	-	-	-	1	4	7	8	9	10	10	9	7	5	3	0	-	-	-	-	-	2,207	-
10/31/2046	2046	10	31	-	20	(0.0)	18	126.3	2,287	-	-	-	-	-	-	-	1	4	7	8	10	11	10	9	7	5	2	-	-	-	-	-	-	2,287	-
11/30/2046	2046	11	30	-	20	(0.0)	18	102.0	1,846	-	-	-	-	-	-	0	3	6	8	9	9	8	8	6	3	1	-	-	-	-	-	-	-	1,846	-
12/31/2046	2046	12	31	-	20	(0.0)	18	91.8	1,661	-	-	-	-	-	-	-	2	4	6	8	8	7	8	6	4	1	-	-	-	-	-	-	-	1,661	-
1/31/2047	2047	1	31	-	20	(0.0)	18	97.8	1,768	-	-	-	-	-	-	-	1	4	6	8	9	8	8	6	4	2	-	-	-	-	-	-	-	1,768	-
2/28/2047	2047	2	28	-	20	(0.0)	18	93.6	1,692	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,692	-
3/31/2047	2047	3	31	-	20	(0.0)	18	131.2	2,370	-	-	-	-	-	-	-	1	3	6	8	10	11	11	9	8	6	3	1	-	-	-	-	-	2,370	-
4/30/2047	2047	4	30	-	20	(0.0)	18	136.5	2,465	-	-	-	-	-	-	0	2	4	7	9	10	11	10	10	8	6	3	1	-	-	-	-	-	2,465	-
5/31/2047	2047	5	31	-	20	(0.0)	18	149.5	2,699	-	-	-	-	-	-	0	2	5	8	9	10	11	11	10	8	6	4	1	0	-	-	-	-	2,699	-
6/30/2047	2047	6	30	-	20	(0.0)	18	130.3	2,350	-	-	-	-	-	-	0	2	4	6	9	10	10	10	9	8	6	4	1	0	-	-	-	-	2,350	-
7/31/2047	2047	7	31	-	20	(0.0)	18	132.1	2,382	-	-	-	-	-	-	0	2	4	6	8	9	10	10	9	8	6	3	1	0	-	-	-	-	2,382	-
8/31/2047	2047	8	31	-	20	(0.0)	18	130.7	2,356	-	-	-	-	-	-	0	2	4	6	9	9	9	10	9	7	6	3	1	0	-	-	-	-	2,356	-
9/30/2047	2047	9	30	-	20	(0.0)	18	121.9	2,196	-	-	-	-	-	-	-	1	4	7	8	9	10	10	9	7	5	3	0	-	-	-	-	-	2,196	-
10/31/2047	2047	10	31	-	20	(0.0)	18	126.3	2,276	-	-	-	-	-	-	-	1	4	7	8	10	11	10	9	7	5	2	-	-	-	-	-	-	2,276	-
11/30/2047	2047	11	30	-	20	(0.0)	18	102.0	1,837	-	-	-	-	-	-	0	3	6	8	9	9	8	8	6	3	1	-	-	-	-	-	-	-	1,837	-
12/31/2047	2047	12	31	-	20	(0.0)	18	91.8	1,652	-	-	-	-	-	-	-	2	4	6	8	8	7	8	6	4	1	-	-	-	-	-	-	-	1,652	-

1/31/2048	2048	1	31	-	20	(0.0)	18	97.8	1,759	-	-	-	-	-	-	-	1	4	6	8	9	8	8	6	4	2	-	-	-	-	-	-	-	1,759	-
2/29/2048	2048	2	29	-	20	(0.0)	18	93.6	1,684	-	-	-	-	-	-	0	2	4	7	8	8	9	8	6	4	2	0	-	-	-	-	-	-	1,684	-
3/31/2048	2048	3	31	-	20	(0.0)	18	131.2	2,358	-	-	-	-	-	-	-	1	3	6	8	10	11	11	9	8	6	3	1	-	-	-	-	-	2,358	-
4/30/2048	2048	4	30	-	20	(0.0)	18	136.5	2,453	-	-	-	-	-	-	0	2	4	7	9	10	10	10	10	8	6	3	1	-	-	-	-	-	2,453	-
5/31/2048	2048	5	31	-	20	(0.0)	18	149.5	2,686	-	-	-	-	-	-	0	2	5	8	9	10	11	11	10	8	6	4	1	0	-	-	-	-	2,686	-
6/30/2048	2048	6	30	-	20	(0.0)	18	130.3	2,339	-	-	-	-	-	-	0	2	4	6	9	9	10	10	9	8	6	3	1	0	-	-	-	-	2,339	-
7/31/2048	2048	7	31	-	20	(0.0)	18	132.1	2,370	-	-	-	-	-	-	0	2	4	6	8	9	10	10	9	8	6	3	1	0	-	-	-	-	2,370	-
8/31/2048	2048	8	31	-	20	(0.0)	18	130.7	2,344	-	-	-	-	-	-	0	2	4	6	8	9	9	10	9	7	6	3	1	0	-	-	-	-	2,344	-
9/30/2048	2048	9	30	-	20	(0.0)	18	121.9	2,185	-	-	-	-	-	-	-	1	4	7	8	9	10	10	9	7	5	3	0	-	-	-	-	-	2,185	-
10/31/2048	2048	10	31	-	20	(0.0)	18	126.3	2,264	-	-	-	-	-	-	-	1	4	7	8	10	11	10	9	7	5	2	-	-	-	-	-	-	2,264	-
11/30/2048	2048	11	30	-	20	(0.0)	18	102.0	1,828	-	-	-	-	-	-	0	3	6	8	9	9	8	7	6	3	1	-	-	-	-	-	-	-	1,828	-
12/31/2048	2048	12	31	-	20	(0.0)	18	91.8	1,644	-	-	-	-	-	-	-	2	4	6	7	8	7	8	6	3	1	-	-	-	-	-	-	-	1,644	-
1/31/2049	2049	1	31	-	20	(0.0)	18	97.8	1,751	-	-	-	-	-	-	-	1	4	6	8	9	8	8	6	4	2	-	-	-	-	-	-	-	1,751	-
2/28/2049	2049	2	28	-	20	(0.0)	18	93.6	1,676	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,676	-
3/31/2049	2049	3	31	-	20	(0.0)	18	131.2	2,346	-	-	-	-	-	-	-	1	3	6	8	9	11	11	9	8	6	3	1	-	-	-	-	-	2,346	-
4/30/2049	2049	4	30	-	20	(0.0)	18	136.5	2,441	-	-	-	-	-	-	0	2	4	7	9	10	10	10	10	8	6	3	1	-	-	-	-	-	2,441	-
5/31/2049	2049	5	31	-	20	(0.0)	18	149.5	2,672	-	-	-	-	-	-	0	2	5	8	9	10	11	11	10	8	6	4	1	0	-	-	-	-	2,672	-
6/30/2049	2049	6	30	-	20	(0.0)	18	130.3	2,327	-	-	-	-	-	-	0	2	4	6	8	9	10	10	9	8	6	3	1	0	-	-	-	-	2,327	-
7/31/2049	2049	7	31	-	20	(0.0)	18	132.1	2,359	-	-	-	-	-	-	0	2	4	6	8	9	10	10	9	8	6	3	1	0	-	-	-	-	2,359	-
8/31/2049	2049	8	31	-	20	(0.0)	18	130.7	2,332	-	-	-	-	-	-	0	2	4	6	8	9	9	10	9	7	6	3	1	0	-	-	-	-	2,332	-
9/30/2049	2049	9	30	-	20	(0.0)	18	121.9	2,174	-	-	-	-	-	-	-	1	4	7	8	9	9	9	9	7	5	3	0	-	-	-	-	-	2,174	-
10/31/2049	2049	10	31	-	20	(0.0)	18	126.3	2,253	-	-	-	-	-	-	-	1	4	7	8	10	11	10	9	7	5	2	-	-	-	-	-	-	2,253	-
11/30/2049	2049	11	30	-	20	(0.0)	18	102.0	1,819	-	-	-	-	-	-	0	3	6	8	9	9	8	7	6	3	1	-	-	-	-	-	-	-	1,819	-
12/31/2049	2049	12	31	-	20	(0.0)	18	91.8	1,636	-	-	-	-	-	-	-	2	4	6	7	8	7	7	6	3	1	-	-	-	-	-	-	-	1,636	-
1/31/2050	2050	1	31	-	20	(0.0)	18	97.8	1,742	-	-	-	-	-	-	-	1	4	6	8	9	8	7	6	4	2	-	-	-	-	-	-	-	1,742	-
2/28/2050	2050	2	28	-	20	(0.0)	18	93.6	1,667	-	-	-	-	-	-	0	2	5	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,667	-
3/31/2050	2050	3	31	-	20	(0.0)	18	131.2	2,334	-	-	-	-	-	-	-	1	3	6	8	9	11	11	9	8	6	3	1	-	-	-	-	-	2,334	-
4/30/2050	2050	4	30	-	20	(0.0)	18	136.5	2,428	-	-	-	-	-	-	0	2	4	7	9	10	10	10	10	8	6	3	1	-	-	-	-	-	2,428	-
5/31/2050	2050	5	31	-	20	(0.0)	18	149.5	2,659	-	-	-	-	-	-	0	2	5	8	9	10	11	11	10	8	6	4	1	0	-	-	-	-	2,659	-
6/30/2050	2050	6	30	-	20	(0.0)	18	130.3	2,316	-	-	-	-	-	-	0	2	4	6	8	9	10	10	9	8	6	3	1	0	-	-	-	-	2,316	-
7/31/2050	2050	7	31	-	20	(0.0)	18	132.1	2,347	-	-	-	-	-	-	0	2	4	6	8	9	9	10	9	8	6	3	1	0	-	-	-	-	2,347	-
8/31/2050	2050	8	31	-	20	(0.0)	18	130.7	2,321	-	-	-	-	-	-	0	2	4	6	8	9	9	10	9	7	6	3	1	0	-	-	-	-	2,321	-
9/30/2050	2050	9	30	-	20	(0.0)	18	121.9	2,163	-	-	-	-	-	-	-	1	4	7	8	9	9	9	9	7	5	2	0	-	-	-	-	-	2,163	-
10/31/2050	2050	10	31	-	20	(0.0)	18	126.3	2,242	-	-	-	-	-	-	-	1	4	7	8	10	11	10	8	7	5	2	-	-	-	-	-	-	2,242	-
11/30/2050	2050	11	30	-	20	(0.0)	18	102.0	1,810	-	-	-	-	-	-	0	3	6	8	9	9	8	7	6	3	1	-	-	-	-	-	-	-	1,810	-
12/31/2050	2050	12	31	-	20	(0.0)	18	91.8	1,628	-	-	-	-	-	-	-	2	4	6	7	8	7	7	6	3	1	-	-	-	-	-	-	-	1,628	-
1/31/2051	2051	1	31	-	20	(0.0)	18	97.8	1,733	-	-	-	-	-	-	-	1	4	6	8	9	8	7	6	4	2	-	-	-	-	-	-	-	1,733	-
2/28/2051	2051	2	28	-	20	(0.0)	18	93.6	1,659	-	-	-	-	-	-	0	2	4	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,659	-
3/31/2051	2051	3	31	-	20	(0.0)	18	131.2	2,323	-	-	-	-	-	-	-	1	3	6	8	9	10	11	9	8	6	3	1	-	-	-	-	-	2,323	-
4/30/2051	2051	4	30	-	20	(0.0)	18	136.5	2,416	-	-	-	-	-	-	0	2	4	7	9	10	10	10	10	8	6	3	1	-	-	-	-	-	2,416	-
5/31/2051	2051	5	31	-	20	(0.0)	18	149.5	2,646	-	-	-	-	-	-	0	2	5	8	9	10	11	11	10	8	6	4	1	0	-	-	-	-	2,646	-
6/30/2051	2051	6	30	-	20	(0.0)	18	130.3	2,304	-	-	-	-	-	-	0	2	4	6	8	9	10	10	9	8	6	3	1	0	-	-	-	-	2,304	-
7/31/2051	2051	7	31	-	20	(0.0)	18	132.1	2,335	-	-	-	-	-	-	0	2	4	6	8	9	9	10	9	8	6	3	1	0	-	-	-	-	2,335	-
8/31/2051	2051	8	31	-	20	(0.0)	18	130.7	2,309	-	-	-	-	-	-	0	1	4	6	8	9	9	10	9	7	6	3	1	0	-	-	-	-	2,309	-
9/30/2051	2051	9	30	-	20	(0.0)	18	121.9	2,153	-	-	-	-	-	-	-	1	4	7	8	9	9	9	9	7	5	2	0	-	-	-	-	-	2,153	-
10/31/2051	2051	10	31	-	20	(0.0)	18	126.3	2,231	-	-	-	-	-	-	-	1	4	7	8	10	11	10	8	7	5	2	-	-	-	-	-	-	2,231	-
11/30/2051	2051	11	30	-	20	(0.0)	18	102.0	1,801	-	-	-	-	-	-	0	3	6	8	8	9	8	7	6	3	1	-	-	-	-	-	-	-	1,801	-
12/31/2051	2051	12	31	-	20	(0.0)	18	91.8	1,620	-	-	-	-	-	-	-	2	4	6	7	8	7	7	6	3	1	-	-	-	-	-	-	-	1,620	-
1/31/2052	2052	1	31	-	20	(0.0)	18	97.8	1,725	-	-	-	-	-	-	-	1	4	6	8	9	8	7	6	4	2	-	-	-	-	-	-	-	1,725	-
2/29/2052	2052	2	29	-	20	(0.0)	18	93.6	1,651	-	-	-	-	-	-	0	2	4	6	8	8	8	8	6	4	2	0	-	-	-	-	-	-	1,651	-
3/31/2052	2052	3	31	-	20	(0.0)	18	131.2	2,311	-	-	-	-	-	-	-	1	3	6	8	9	10	10	9	8	6	3	1	-	-	-	-	-	2,311	-
4/30/2052	2052	4	30	-	20	(0.0)	18	136.5	2,404	-	-	-	-	-	-	0	2	4	7	9	10	10	10	10	8	6	3	1	-	-	-	-	-	2,404	-
5/31/2052	2052	5	31	-	20	(0.0)	18	149.5	2,633	-	-	-	-	-	-	0	2	5	8	9	10	11	11	10	8	6	4	1	0	-	-	-	-	2,633	-
6/30/2052	2052	6	30	-	20	(0.0)	18	130.3	2,293	-	-	-	-	-	-	0	2	4	6	8	9	10	9	9	8	6	3	1	0	-	-	-	-	2,293	-
7/31/2052	2052	7	31	-	20	(0.0)	18	132.1	2,324	-	-	-	-	-	-	0	2	4	6	8	9	9	10	9	8	6	3	1	0	-	-	-	-	2,324	-
8/31/2052	2052	8	31	-	20	(0.0)	18	130.7	2,298	-	-	-	-	-	-	0	1	4	6	8	9	9	10	9	7	6	3	1	0	-	-	-	-	2,298	-
9/30/2052	2052	9	30	-	20	(0.0)	18	121.9	2,142	-	-	-	-	-	-	-	1	4	7	8	9	9	9	9	7	5	2	0	-	-	-	-	-	2,142	-
10/31/2052	2052	10	31	-	20	(0.0)	18	126.3	2,219	-	-	-	-	-	-	-	1	4	7	8	10	11	10	8	7	5	2	-	-	-	-	-	-	2,219	-
11/30/2052	2052	11	30	-	20	(0.0)	18	102.0	1,792	-	-	-	-	-	-	0	3	6	8	8	9	8	7	6	3	1	-	-	-	-	-	-	-	1,792	-
12/31/2052	2052	12	31	-	20	(0.0)	18	91.8	1,612	-	-	-	-	-	-	-	2	4	6	7	8	7	7	6	3	1	-	-	-	-	-	-	-	1,612	-
1/31/2053	2053	1	31	-	20	(0.0)	18	97.8	1,716	-	-	-	-	-	-	-	1	4	6	8	9	8	7	6	4	2	-	-	-	-	-	-	-	1,716	-
2/28/2053	2053	2	28	-	20	(0.0)	18	93.6	1,643	-	-	-	-	-	-	0	2	4	7	8	9	9	8	7	4	2	0	-	-	-	-	-	-	1,643	-
3/31/2053	2053	3	31	-	20	(0.0)	18	131.2	2,300	-	-	-	-	-	-	-	1	3	6	8	9	10	10	9	8	6	3	1	-	-	-	-	-	2,300	-
4/30/2053	2053	4	30	-	20	(0.0)	18	136.5	2,392	-	-	-	-	-	-	0	2	4	7	9	10	10	10	10	8	6	3	1	-	-	-	-	-	2,392	-
5/31/2053	2053	5	31	-	20	(0.0)	18	149.5	2,619	-	-	-	-	-	-	0	2	5	8	9	10	11	11	10	8	6	4	1	0	-	-	-	-	2,619	-
6/30/2053	2053	6	30	-	20	(0.0)	18	130.3	2,281	-	-	-	-	-	-	0	2	4	6	8	9	10	9	9	7	6	3	1	0	-	-	-	-	2,281	-
7/31/2053	2053	7	31	-	20	(0.0)	18	132.1	2,312	-	-	-	-	-	-	0	2	4	6	8	9	9	10	9	8	6	3	1	0	-	-	-	-	2,312	-
8/31/2053	2053	8	31	-	20	(0.0)	17	130.7	2,286	-	-	-	-	-	-	0	1	4	6	8	9	9	10	9	7	6	3	1	0	-	-	-	-	2,286	-
9/30/2053	2053	9	30	-	20	(0.0)	17	121.9	2,131	-	-	-	-	-	-	-	1	4	7	8	9	9	9	9	7	5	2	0	-	-	-	-	-	2,131	-
10/31/2053	2053	10	31	-	20	(0.0)	17	126.3	2,208	-	-	-	-	-	-	-	1	4	7	8	10	11	10	8	7	5	2	-	-	-	-	-	-	2,208	-
11/30/2053	2053	11	30	-	20	(0.0)	17	102.0	1,783	-	-	-	-	-	-	0	3	6	8	8	9	8	7	6	3	1	-	-	-	-	-	-	-	1,783	-
12/31/2053	2053	12	31	-	20	(0.0)	17	91.8	1,604	-	-	-	-	-	-	-	2	4	6	7	8	7	7	6	3	1	-	-	-	-	-	-	-	1,604	-

Florida Power & Light Company
Docket No. 20220000-OT
Ten-Year Site Plan
Staff's Third Data Request
Request No. 12
Attachment 1 of 1
Tab 12 of 19

FPL & GULF 000013
20220000-OT

Location: 1 Energy Pl, Pensacola, FL 32520
Output: 1,444 kWh/kWdc
PVWatts NCF: 16.5%

Month	1	2	3	4	5	6	7	8	9	10	11	12
Days	31	28	31	30	31	30	31	31	30	31	30	31

Hour Ending	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	0.1%	-	0.4%	1.9%	2.1%	1.5%	0.4%	-	-	2.1%	-	0.7%
8	6.2%	9.0%	3.8%	9.0%	12.6%	11.3%	9.6%	8.5%	7.9%	5.7%	15.9%	9.2%	9.0%
9	23.3%	25.3%	18.1%	24.7%	29.8%	23.5%	23.8%	21.4%	24.7%	21.4%	33.1%	24.4%	24.4%
10	35.9%	37.5%	34.1%	39.8%	44.2%	33.9%	35.8%	35.7%	37.3%	37.7%	43.4%	35.3%	37.5%
11	44.9%	45.4%	44.8%	49.7%	52.4%	47.6%	43.3%	47.4%	46.4%	46.3%	48.1%	41.9%	46.5%
12	48.8%	48.7%	53.0%	56.8%	57.1%	52.7%	49.6%	51.0%	51.5%	55.9%	50.9%	43.5%	51.6%
13	46.0%	49.3%	59.2%	58.2%	61.1%	55.7%	53.5%	51.9%	53.2%	61.3%	46.6%	41.4%	53.1%
14	42.0%	45.7%	59.5%	57.8%	60.8%	53.9%	54.5%	55.8%	53.2%	57.6%	41.8%	42.0%	52.1%
15	35.7%	37.3%	52.3%	55.7%	55.3%	49.3%	49.9%	51.8%	49.9%	47.8%	35.3%	34.9%	46.3%
16	23.9%	23.8%	44.1%	45.5%	46.1%	42.7%	43.2%	41.5%	38.3%	38.7%	18.9%	19.5%	35.6%
17	8.7%	12.0%	32.7%	33.7%	34.4%	34.2%	33.4%	32.1%	28.0%	25.8%	4.0%	4.0%	23.6%
18	-	0.3%	18.1%	19.0%	20.0%	19.4%	19.4%	18.3%	14.1%	9.2%	-	-	11.6%
19	-	-	3.3%	4.7%	6.5%	7.2%	7.7%	5.8%	1.7%	-	-	-	3.1%
20	-	-	-	-	0.1%	0.8%	0.8%	0.0%	-	-	-	-	0.1%
21	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
	13.1%	13.9%	17.6%	19.0%	20.1%	18.1%	17.8%	17.6%	16.9%	17.0%	14.2%	12.3%	16.5%

Hour Ending	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	0.0	-	0.1	0.6	0.6	0.5	0.1	-	-	0.6	-	3
8	1.9	2.5	1.2	2.7	3.9	3.4	3.0	2.6	2.4	1.8	4.8	2.9	33
9	7.2	7.1	5.6	7.4	9.2	7.0	7.4	6.6	7.4	6.6	9.9	7.6	89
10	11.1	10.5	10.6	11.9	13.7	10.2	11.1	11.1	11.2	11.7	13.0	10.9	137
11	13.9	12.7	13.9	14.9	16.3	14.3	13.4	14.7	13.9	14.4	14.4	13.0	170
12	15.1	13.6	16.4	17.0	17.7	15.8	15.4	15.8	15.4	17.3	15.3	13.5	188
13	14.3	13.8	18.4	17.5	19.0	16.7	16.6	16.1	16.0	19.0	14.0	12.8	194
14	13.0	12.8	18.5	17.4	18.9	16.2	16.9	17.3	16.0	17.9	12.5	13.0	190
15	11.1	10.5	16.2	16.7	17.1	14.8	15.5	16.1	15.0	14.8	10.6	10.8	169
16	7.4	6.7	13.7	13.6	14.3	12.8	13.4	12.9	11.5	12.0	5.7	6.0	130
17	2.7	3.4	10.1	10.1	10.7	10.3	10.4	9.9	8.4	8.0	1.2	1.3	86
18	-	0.1	5.6	5.7	6.2	5.8	6.0	5.7	4.2	2.9	-	-	42
19	-	-	1.0	1.4	2.0	2.2	2.4	1.8	0.5	-	-	-	11
20	-	-	-	-	0.0	0.2	0.2	0.0	-	-	-	-	1
21	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
	98	94	131	136	150	130	132	131	122	126	102	92	1,444

16.48%

	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	0	1	1	0	0	-	-	-	-	2
7	-	0	1	3	4	3	3	3	2	2	1	-	22
8	2	3	6	7	9	7	7	7	7	7	5	3	69
9	7	7	11	12	14	10	11	11	11	12	10	8	123
10	11	11	14	15	16	14	13	15	14	14	13	11	161
11	14	13	16	17	18	16	15	16	15	17	14	13	185
12	15	14	18	17	19	17	17	16	16	19	15	13	197
13	14	14	18	17	19	16	17	17	16	18	14	13	194
14	13	13	16	17	17	15	15	16	15	15	13	13	178
15	11	10	14	14	14	13	13	13	11	12	11	11	147
16	7	7	10	10	11	10	10	10	8	8	6	6	104
17	3	3	6	6	6	6	6	6	4	3	1	1	51
18	-	0	1	1	2	2	2	2	1	-	-	-	11
19	-	-	-	-	0	0	0	0	-	-	-	-	1
20	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
	98	94	131	136	150	130	132	131	122	126	102	92	1,444

16.48%

Florida Power & Light Company
Docket No. 20220000-OT
Ten-Year Site Plan
Staff's Third Data Request
Request No. 12
Attachment 1 of 1
Tab 13 of 19

PVWatts: Hourly PV Performance Data

Requested Location:	**1 Energy Pl, Pensacola, FL 32520**
Location:	Lat, Lon: 30.41, -87.22
Lat (deg N):	30.41
Long (deg W):	87.22
Elev (m):	12.66667
DC System Size (kW):	1
Module Type:	Standard
Array Type:	Fixed (roof mount)
Array Tilt (deg):	20
Array Azimuth (deg):	**180**
System Losses:	15.5
Invert Efficiency:	96
DC to AC Size Ratio:	1.2
Average Cost of Electricity Purchased from Utility ($/kWh):	0.121
Capacity Factor (%)	16.5

Month	Day	Hour	Beam Irradianc	Diffuse Irradiance (W/m^2)	Ambient Temperature (C)	Wind Speed (m/s)	Plane of Array Irradiance (W/m^2)	Cell Temperature (C)	DC Array Output (W)	AC System Output (W)
1.0	1.0	-	-	-	16.0	1.0	-	16.0	-	-
1.0	1.0	1.0	-	-	15.0	1.0	-	15.0	-	-
1.0	1.0	2.0	-	-	15.0	1.0	-	15.0	-	-
1.0	1.0	3.0	-	-	16.0	1.0	-	16.0	-	-
1.0	1.0	4.0	-	-	16.0	1.0	-	16.0	-	-
1.0	1.0	5.0	-	-	16.0	1.0	-	16.0	-	-
1.0	1.0	6.0	-	-	17.0	1.0	-	17.0	-	-
1.0	1.0	7.0	97.0	48.0	19.0	1.0	85.2	19.5	69.4	63.0
1.0	1.0	8.0	6.0	110.0	20.0	1.0	112.7	22.2	96.4	89.4
1.0	1.0	9.0	240.0	191.0	21.0	1.0	379.3	33.0	306.3	294.0
1.0	1.0	10.0	696.0	132.0	21.0	1.0	710.9	45.6	540.0	519.7
1.0	1.0	11.0	157.0	282.0	22.0	2.0	442.5	36.6	353.2	339.4
1.0	1.0	12.0	83.0	267.0	22.0	2.0	351.8	32.8	286.2	274.4
1.0	1.0	13.0	-	123.0	22.0	2.0	118.7	25.3	100.2	93.1
1.0	1.0	14.0	-	72.0	21.0	2.0	68.4	21.6	58.7	52.5
1.0	1.0	15.0	-	79.0	20.0	2.0	77.3	20.6	66.7	60.3
1.0	1.0	16.0	-	17.0	20.0	2.0	16.1	18.7	14.0	8.7
1.0	1.0	17.0	-	-	20.0	2.0	-	20.0	-	-
1.0	1.0	18.0	-	-	20.0	2.0	-	20.0	-	-
1.0	1.0	19.0	-	-	20.0	2.0	-	20.0	-	-
1.0	1.0	20.0	-	-	20.0	2.0	-	20.0	-	-
1.0	1.0	21.0	-	-	20.0	2.0	-	20.0	-	-
1.0	1.0	22.0	-	-	20.0	3.0	-	20.0	-	-
1.0	1.0	23.0	-	-	20.0	3.0	-	20.0	-	-
1.0	2.0	-	-	-	20.0	2.0	-	20.0	-	-
1.0	2.0	1.0	-	-	20.0	2.0	-	20.0	-	-
1.0	2.0	2.0	-	-	20.0	2.0	-	20.0	-	-
1.0	2.0	3.0	-	-	20.0	2.0	-	20.0	-	-
1.0	2.0	4.0	-	-	20.0	3.0	-	20.0	-	-
1.0	2.0	5.0	-	-	20.0	3.0	-	20.0	-	-
1.0	2.0	6.0	-	-	20.0	3.0	-	20.0	-	-
1.0	2.0	7.0	-	20.0	20.0	3.0	18.9	18.6	16.5	11.1
1.0	2.0	8.0	36.0	119.0	21.0	3.0	143.4	23.2	121.4	113.8
1.0	2.0	9.0	3.0	153.0	21.0	3.0	153.3	23.9	130.2	122.4
1.0	2.0	10.0	702.0	134.0	22.0	3.0	717.9	40.1	560.8	539.8
1.0	2.0	11.0	739.0	138.0	22.0	4.0	792.9	42.0	615.0	591.8
1.0	2.0	12.0	30.0	236.0	22.0	3.0	272.1	30.5	223.9	213.9
1.0	2.0	13.0	697.0	136.0	21.0	3.0	701.2	39.1	550.1	529.4
1.0	2.0	14.0	641.0	116.0	21.0	3.0	553.3	36.7	434.9	418.4
1.0	2.0	15.0	520.0	84.0	20.0	2.0	347.2	31.1	271.3	260.0
1.0	2.0	16.0	205.0	34.0	19.0	2.0	103.3	21.7	78.4	71.8
1.0	2.0	17.0	-	-	18.0	2.0	-	18.0	-	-
1.0	2.0	18.0	-	-	18.0	2.0	-	18.0	-	-
1.0	2.0	19.0	-	-	17.0	2.0	-	17.0	-	-
1.0	2.0	20.0	-	-	17.0	2.0	-	17.0	-	-
1.0	2.0	21.0	-	-	16.0	2.0	-	16.0	-	-
1.0	2.0	22.0	-	-	16.0	2.0	-	16.0	-	-
1.0	2.0	23.0	-	-	15.0	2.0	-	15.0	-	-
1.0	3.0	-	-	-	15.0	2.0	-	15.0	-	-
1.0	3.0	1.0	-	-	14.0	2.0	-	14.0	-	-
1.0	3.0	2.0	-	-	13.0	2.0	-	13.0	-	-
1.0	3.0	3.0	-	-	13.0	2.0	-	13.0	-	-
1.0	3.0	4.0	-	-	12.0	2.0	-	12.0	-	-
1.0	3.0	5.0	-	-	12.0	1.0	-	12.0	-	-

1.0	3.0	6.0	-	-	12.0	1.0	-	12.0	-	-
1.0	3.0	7.0	512.0	35.0	13.0	2.0	203.7	17.1	154.6	146.3
1.0	3.0	8.0	764.0	58.0	15.0	2.0	462.5	28.1	368.2	354.0
1.0	3.0	9.0	870.0	70.0	16.0	2.0	673.0	36.4	530.3	510.5
1.0	3.0	10.0	920.0	77.0	16.0	2.0	813.8	41.3	631.4	607.6
1.0	3.0	11.0	939.0	80.0	17.0	2.0	883.7	44.8	675.2	649.5
1.0	3.0	12.0	939.0	79.0	18.0	2.0	876.3	45.8	665.9	640.6
1.0	3.0	13.0	910.0	76.0	18.0	1.0	787.2	47.8	589.9	567.7
1.0	3.0	14.0	848.0	68.0	18.0	1.0	629.6	42.4	479.5	461.5
1.0	3.0	15.0	720.0	55.0	17.0	1.0	407.6	33.2	312.6	300.0
1.0	3.0	16.0	402.0	27.0	15.0	1.0	148.2	20.7	107.6	100.3
1.0	3.0	17.0	-	-	14.0	1.0	-	14.0	-	-
1.0	3.0	18.0	-	-	14.0	1.0	-	14.0	-	-
1.0	3.0	19.0	-	-	13.0	1.0	-	13.0	-	-
1.0	3.0	20.0	-	-	13.0	1.0	-	13.0	-	-
1.0	3.0	21.0	-	-	12.0	1.0	-	12.0	-	-
1.0	3.0	22.0	-	-	12.0	1.0	-	12.0	-	-
1.0	3.0	23.0	-	-	12.0	1.0	-	12.0	-	-
1.0	4.0	-	-	-	12.0	1.0	-	12.0	-	-
1.0	4.0	1.0	-	-	11.0	1.0	-	11.0	-	-
1.0	4.0	2.0	-	-	11.0	1.0	-	11.0	-	-
1.0	4.0	3.0	-	-	11.0	1.0	-	11.0	-	-
1.0	4.0	4.0	-	-	11.0	1.0	-	11.0	-	-
1.0	4.0	5.0	-	-	11.0	1.0	-	11.0	-	-
1.0	4.0	6.0	-	-	11.0	1.0	-	11.0	-	-
1.0	4.0	7.0	124.0	46.0	13.0	-	94.8	13.3	78.6	72.0
1.0	4.0	8.0	757.0	58.0	15.0	-	458.4	33.5	355.5	341.6
1.0	4.0	9.0	843.0	75.0	16.0	-	660.6	45.1	498.1	479.4
1.0	4.0	10.0	430.0	210.0	17.0	-	585.9	45.0	446.9	430.0
1.0	4.0	11.0	584.0	185.0	18.0	1.0	712.0	43.9	546.8	526.3
1.0	4.0	12.0	701.0	144.0	18.0	1.0	764.5	46.3	579.8	558.1
1.0	4.0	13.0	862.0	78.0	18.0	1.0	754.5	46.2	570.2	548.8
1.0	4.0	14.0	267.0	175.0	17.0	1.0	371.1	32.8	299.2	287.0
1.0	4.0	15.0	664.0	54.0	16.0	1.0	381.9	29.8	298.3	286.2
1.0	4.0	16.0	307.0	32.0	15.0	1.0	128.5	19.8	95.8	88.8
1.0	4.0	17.0	-	-	15.0	1.0	-	15.0	-	-
1.0	4.0	18.0	-	-	15.0	1.0	-	15.0	-	-
1.0	4.0	19.0	-	-	15.0	1.0	-	15.0	-	-
1.0	4.0	20.0	-	-	15.0	1.0	-	15.0	-	-
1.0	4.0	21.0	-	-	15.0	1.0	-	15.0	-	-
1.0	4.0	22.0	-	-	15.0	1.0	-	15.0	-	-
1.0	4.0	23.0	-	-	15.0	2.0	-	15.0	-	-
1.0	5.0	-	-	-	15.0	2.0	-	15.0	-	-
1.0	5.0	1.0	-	-	14.0	1.0	-	14.0	-	-
1.0	5.0	2.0	-	-	14.0	1.0	-	14.0	-	-
1.0	5.0	3.0	-	-	14.0	1.0	-	14.0	-	-
1.0	5.0	4.0	-	-	14.0	1.0	-	14.0	-	-
1.0	5.0	5.0	-	-	13.0	1.0	-	13.0	-	-
1.0	5.0	6.0	-	-	13.0	2.0	-	13.0	-	-
1.0	5.0	7.0	121.0	46.0	13.0	2.0	93.8	13.6	77.7	71.1
1.0	5.0	8.0	677.0	70.0	14.0	2.0	433.3	25.7	349.7	336.0
1.0	5.0	9.0	797.0	87.0	15.0	2.0	643.4	34.4	512.2	493.1
1.0	5.0	10.0	857.0	97.0	16.0	2.0	793.9	40.6	618.3	595.0
1.0	5.0	11.0	892.0	98.0	17.0	3.0	873.1	41.4	679.0	653.1
1.0	5.0	12.0	921.0	87.0	17.0	3.0	873.1	41.6	678.0	652.1
1.0	5.0	13.0	906.0	79.0	16.0	3.0	790.7	38.6	621.6	598.1
1.0	5.0	14.0	857.0	69.0	15.0	4.0	639.9	31.6	514.5	495.2
1.0	5.0	15.0	733.0	56.0	14.0	3.0	417.9	25.9	332.4	319.3
1.0	5.0	16.0	433.0	28.0	13.0	3.0	155.3	16.9	114.2	106.8
1.0	5.0	17.0	-	-	12.0	3.0	-	12.0	-	-
1.0	5.0	18.0	-	-	11.0	3.0	-	11.0	-	-
1.0	5.0	19.0	-	-	11.0	3.0	-	11.0	-	-
1.0	5.0	20.0	-	-	10.0	3.0	-	10.0	-	-
1.0	5.0	21.0	-	-	10.0	3.0	-	10.0	-	-
1.0	5.0	22.0	-	-	10.0	3.0	-	10.0	-	-
1.0	5.0	23.0	-	-	9.0	2.0	-	9.0	-	-
1.0	6.0	-	-	-	8.0	2.0	-	8.0	-	-
1.0	6.0	1.0	-	-	8.0	2.0	-	8.0	-	-
1.0	6.0	2.0	-	-	7.0	3.0	-	7.0	-	-
1.0	6.0	3.0	-	-	6.0	3.0	-	6.0	-	-
1.0	6.0	4.0	-	-	6.0	2.0	-	6.0	-	-
1.0	6.0	5.0	-	-	5.0	2.0	-	5.0	-	-
1.0	6.0	6.0	-	-	5.0	2.0	-	5.0	-	-
1.0	6.0	7.0	130.0	46.0	6.0	3.0	96.3	6.5	82.1	75.4
1.0	6.0	8.0	739.0	65.0	7.0	3.0	456.1	18.1	380.6	366.0
1.0	6.0	9.0	827.0	86.0	8.0	3.0	662.2	26.0	549.0	528.5
1.0	6.0	10.0	290.0	241.0	8.0	3.0	501.8	22.4	428.0	411.8
1.0	6.0	11.0	25.0	234.0	9.0	3.0	254.6	16.0	224.2	214.1
1.0	6.0	12.0	-	163.0	9.0	3.0	159.0	12.4	142.3	134.3
1.0	6.0	13.0	-	143.0	9.0	4.0	139.1	11.2	125.2	117.5
1.0	6.0	14.0	-	102.0	8.0	3.0	98.3	9.2	89.2	82.4

1.0	6.0	15.0	-	55.0	7.0	3.0	52.2	6.7	47.9	41.9
1.0	6.0	16.0	-	14.0	6.0	3.0	13.3	4.4	12.3	7.0
1.0	6.0	17.0	-	-	5.0	3.0	-	5.0	-	-
1.0	6.0	18.0	-	-	5.0	2.0	-	5.0	-	-
1.0	6.0	19.0	-	-	4.0	2.0	-	4.0	-	-
1.0	6.0	20.0	-	-	3.0	2.0	-	3.0	-	-
1.0	6.0	21.0	-	-	3.0	2.0	-	3.0	-	-
1.0	6.0	22.0	-	-	3.0	2.0	-	3.0	-	-
1.0	6.0	23.0	-	-	2.0	2.0	-	2.0	-	-
1.0	7.0	-	-	-	2.0	1.0	-	2.0	-	-
1.0	7.0	1.0	-	-	2.0	1.0	-	2.0	-	-
1.0	7.0	2.0	-	-	2.0	1.0	-	2.0	-	-
1.0	7.0	3.0	-	-	1.0	1.0	-	1.0	-	-
1.0	7.0	4.0	-	-	1.0	1.0	-	1.0	-	-
1.0	7.0	5.0	-	-	1.0	1.0	-	1.0	-	-
1.0	7.0	6.0	-	-	1.0	1.0	-	1.0	-	-
1.0	7.0	7.0	68.0	46.0	3.0	1.0	73.3	2.6	65.0	58.7
1.0	7.0	8.0	700.0	73.0	5.0	-	447.4	23.1	365.4	351.3
1.0	7.0	9.0	573.0	129.0	6.0	-	543.3	31.5	439.8	423.2
1.0	7.0	10.0	895.0	91.0	7.0	-	817.4	42.9	629.2	605.4
1.0	7.0	11.0	926.0	91.0	8.0	1.0	888.8	41.5	690.9	664.5
1.0	7.0	12.0	934.0	86.0	9.0	1.0	885.3	42.7	683.8	657.7
1.0	7.0	13.0	912.0	80.0	10.0	1.0	799.6	40.9	621.3	597.9
1.0	7.0	14.0	511.0	135.0	10.0	1.0	493.3	30.5	400.6	385.3
1.0	7.0	15.0	717.0	59.0	9.0	1.0	416.9	25.0	333.8	320.6
1.0	7.0	16.0	119.0	35.0	8.0	1.0	76.8	11.2	62.9	56.6
1.0	7.0	17.0	-	-	8.0	1.0	-	8.0	-	-
1.0	7.0	18.0	-	-	8.0	1.0	-	8.0	-	-
1.0	7.0	19.0	-	-	8.0	1.0	-	8.0	-	-
1.0	7.0	20.0	-	-	8.0	1.0	-	8.0	-	-
1.0	7.0	21.0	-	-	8.0	1.0	-	8.0	-	-
1.0	7.0	22.0	-	-	9.0	2.0	-	9.0	-	-
1.0	7.0	23.0	-	-	9.0	2.0	-	9.0	-	-
1.0	8.0	-	-	-	9.0	2.0	-	9.0	-	-
1.0	8.0	1.0	-	-	9.0	2.0	-	9.0	-	-
1.0	8.0	2.0	-	-	10.0	2.0	-	10.0	-	-
1.0	8.0	3.0	-	-	10.0	2.0	-	10.0	-	-
1.0	8.0	4.0	-	-	10.0	2.0	-	10.0	-	-
1.0	8.0	5.0	-	-	11.0	2.0	-	11.0	-	-
1.0	8.0	6.0	-	-	12.0	2.0	-	12.0	-	-
1.0	8.0	7.0	123.0	46.0	14.0	2.0	93.9	14.6	77.4	70.8
1.0	8.0	8.0	742.0	60.0	16.0	2.0	451.4	28.2	359.0	345.0
1.0	8.0	9.0	849.0	73.0	17.0	2.0	661.9	37.0	520.1	500.6
1.0	8.0	10.0	900.0	80.0	18.0	3.0	803.4	40.1	627.3	603.6
1.0	8.0	11.0	920.0	84.0	19.0	3.0	876.5	43.4	674.7	649.0
1.0	8.0	12.0	918.0	83.0	19.0	3.0	869.7	43.5	669.1	643.6
1.0	8.0	13.0	886.0	82.0	19.0	3.0	783.6	41.3	607.9	585.0
1.0	8.0	14.0	816.0	76.0	18.0	2.0	626.7	38.4	488.1	469.8
1.0	8.0	15.0	674.0	64.0	17.0	2.0	405.7	30.2	317.6	304.9
1.0	8.0	16.0	344.0	34.0	16.0	2.0	141.4	20.2	105.1	97.9
1.0	8.0	17.0	-	-	16.0	2.0	-	16.0	-	-
1.0	8.0	18.0	-	-	16.0	2.0	-	16.0	-	-
1.0	8.0	19.0	-	-	16.0	2.0	-	16.0	-	-
1.0	8.0	20.0	-	-	17.0	2.0	-	17.0	-	-
1.0	8.0	21.0	-	-	17.0	2.0	-	17.0	-	-
1.0	8.0	22.0	-	-	17.0	2.0	-	17.0	-	-
1.0	8.0	23.0	-	-	16.0	2.0	-	16.0	-	-
1.0	9.0	-	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	1.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	2.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	3.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	4.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	5.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	6.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	7.0	109.0	46.0	17.0	1.0	89.6	17.6	73.2	66.7
1.0	9.0	8.0	663.0	71.0	18.0	1.0	425.9	31.5	334.3	321.1
1.0	9.0	9.0	267.0	190.0	19.0	1.0	395.2	33.5	318.1	305.4
1.0	9.0	10.0	848.0	93.0	20.0	1.0	783.9	47.1	590.6	568.4
1.0	9.0	11.0	875.0	96.0	20.0	1.0	859.9	51.5	634.5	610.5
1.0	9.0	12.0	874.0	95.0	20.0	1.0	854.4	51.7	629.7	605.9
1.0	9.0	13.0	115.0	250.0	20.0	1.0	353.7	35.7	283.4	271.7
1.0	9.0	14.0	781.0	82.0	19.0	1.0	612.6	40.4	472.5	454.7
1.0	9.0	15.0	40.0	111.0	18.0	1.0	135.7	24.7	113.9	106.5
1.0	9.0	16.0	321.0	35.0	17.0	1.0	137.0	20.4	102.4	95.2
1.0	9.0	17.0	-	-	17.0	1.0	-	17.0	-	-
1.0	9.0	18.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	19.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	20.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	21.0	-	-	16.0	1.0	-	16.0	-	-
1.0	9.0	22.0	-	-	15.0	1.0	-	15.0	-	-
1.0	9.0	23.0	-	-	15.0	1.0	-	15.0	-	-

1.0	10.0	-	-	-	15.0	1.0	-	15.0	-	-
1.0	10.0	1.0	-	-	15.0	1.0	-	15.0	-	-
1.0	10.0	2.0	-	-	14.0	1.0	-	14.0	-	-
1.0	10.0	3.0	-	-	14.0	1.0	-	14.0	-	-
1.0	10.0	4.0	-	-	14.0	1.0	-	14.0	-	-
1.0	10.0	5.0	-	-	14.0	1.0	-	14.0	-	-
1.0	10.0	6.0	-	-	14.0	1.0	-	14.0	-	-
1.0	10.0	7.0	403.0	41.0	16.0	1.0	176.6	19.8	134.0	126.1
1.0	10.0	8.0	665.0	73.0	17.0	1.0	428.9	31.1	337.2	323.9
1.0	10.0	9.0	456.0	157.0	18.0	2.0	492.9	32.9	396.7	381.6
1.0	10.0	10.0	659.0	143.0	19.0	2.0	696.3	40.1	544.2	523.8
1.0	10.0	11.0	494.0	221.0	19.0	2.0	679.6	40.5	531.5	511.6
1.0	10.0	12.0	295.0	274.0	19.0	2.0	559.9	37.0	445.9	429.1
1.0	10.0	13.0	192.0	251.0	19.0	2.0	424.5	32.5	345.3	331.8
1.0	10.0	14.0	125.0	192.0	19.0	2.0	292.4	27.9	242.4	231.8
1.0	10.0	15.0	-	101.0	18.0	2.0	100.3	20.4	86.6	79.8
1.0	10.0	16.0	-	33.0	17.0	2.0	32.5	16.2	28.5	22.9
1.0	10.0	17.0	-	-	17.0	2.0	-	17.0	-	-
1.0	10.0	18.0	-	-	17.0	2.0	-	17.0	-	-
1.0	10.0	19.0	-	-	17.0	2.0	-	17.0	-	-
1.0	10.0	20.0	-	-	17.0	2.0	-	17.0	-	-
1.0	10.0	21.0	-	-	17.0	2.0	-	17.0	-	-
1.0	10.0	22.0	-	-	17.0	1.0	-	17.0	-	-
1.0	10.0	23.0	-	-	17.0	1.0	-	17.0	-	-
1.0	11.0	-	-	-	17.0	1.0	-	17.0	-	-
1.0	11.0	1.0	-	-	16.0	1.0	-	16.0	-	-
1.0	11.0	2.0	-	-	16.0	1.0	-	16.0	-	-
1.0	11.0	3.0	-	-	16.0	-	-	16.0	-	-
1.0	11.0	4.0	-	-	16.0	-	-	16.0	-	-
1.0	11.0	5.0	-	-	16.0	-	-	16.0	-	-
1.0	11.0	6.0	-	-	16.0	-	-	16.0	-	-
1.0	11.0	7.0	-	28.0	18.0	-	26.6	14.9	23.5	18.0
1.0	11.0	8.0	-	88.0	19.0	-	85.7	19.7	74.2	67.7
1.0	11.0	9.0	-	112.0	20.0	-	108.2	23.1	92.2	85.3
1.0	11.0	10.0	836.0	94.0	20.0	-	776.8	50.3	575.3	553.7
1.0	11.0	11.0	871.0	95.0	21.0	-	857.3	58.6	608.5	585.5
1.0	11.0	12.0	863.0	99.0	21.0	-	852.6	59.0	603.8	581.0
1.0	11.0	13.0	844.0	92.0	21.0	-	773.1	56.4	553.8	533.1
1.0	11.0	14.0	795.0	80.0	20.0	-	622.8	49.9	457.3	440.1
1.0	11.0	15.0	683.0	63.0	19.0	-	413.4	40.5	308.2	295.8
1.0	11.0	16.0	397.0	34.0	18.0	-	158.4	27.7	113.3	105.9
1.0	11.0	17.0	-	-	17.0	-	-	17.0	-	-
1.0	11.0	18.0	-	-	16.0	-	-	16.0	-	-
1.0	11.0	19.0	-	-	15.0	-	-	15.0	-	-
1.0	11.0	20.0	-	-	15.0	1.0	-	15.0	-	-
1.0	11.0	21.0	-	-	14.0	1.0	-	14.0	-	-
1.0	11.0	22.0	-	-	14.0	1.0	-	14.0	-	-
1.0	11.0	23.0	-	-	14.0	1.0	-	14.0	-	-
1.0	12.0	-	-	-	14.0	-	-	14.0	-	-
1.0	12.0	1.0	-	-	13.0	-	-	13.0	-	-
1.0	12.0	2.0	-	-	13.0	1.0	-	13.0	-	-
1.0	12.0	3.0	-	-	13.0	1.0	-	13.0	-	-
1.0	12.0	4.0	-	-	13.0	-	-	13.0	-	-
1.0	12.0	5.0	-	-	13.0	-	-	13.0	-	-
1.0	12.0	6.0	-	-	13.0	-	-	13.0	-	-
1.0	12.0	7.0	72.0	46.0	14.0	-	73.9	13.2	62.5	56.2
1.0	12.0	8.0	448.0	95.0	15.0	-	341.3	28.5	273.6	262.2
1.0	12.0	9.0	838.0	85.0	16.0	-	668.9	44.5	506.1	487.2
1.0	12.0	10.0	675.0	139.0	17.0	-	705.4	49.2	525.9	506.2
1.0	12.0	11.0	644.0	170.0	18.0	-	755.2	52.0	555.8	535.0
1.0	12.0	12.0	907.0	101.0	18.0	-	893.4	56.9	640.0	615.8
1.0	12.0	13.0	607.0	158.0	18.0	-	667.7	50.5	494.4	475.9
1.0	12.0	14.0	547.0	134.0	18.0	-	521.0	43.8	396.3	381.1
1.0	12.0	15.0	678.0	72.0	17.0	-	422.8	38.1	319.7	306.9
1.0	12.0	16.0	271.0	41.0	15.0	1.0	131.4	20.2	100.3	93.2
1.0	12.0	17.0	-	-	14.0	1.0	-	14.0	-	-
1.0	12.0	18.0	-	-	14.0	1.0	-	14.0	-	-
1.0	12.0	19.0	-	-	14.0	1.0	-	14.0	-	-
1.0	12.0	20.0	-	-	15.0	1.0	-	15.0	-	-
1.0	12.0	21.0	-	-	15.0	1.0	-	15.0	-	-
1.0	12.0	22.0	-	-	15.0	1.0	-	15.0	-	-
1.0	12.0	23.0	-	-	15.0	1.0	-	15.0	-	-
1.0	13.0	-	-	-	15.0	1.0	-	15.0	-	-
1.0	13.0	1.0	-	-	16.0	1.0	-	16.0	-	-
1.0	13.0	2.0	-	-	17.0	2.0	-	17.0	-	-
1.0	13.0	3.0	-	-	17.0	2.0	-	17.0	-	-
1.0	13.0	4.0	-	-	18.0	3.0	-	18.0	-	-
1.0	13.0	5.0	-	-	18.0	3.0	-	18.0	-	-
1.0	13.0	6.0	-	-	18.0	3.0	-	18.0	-	-
1.0	13.0	7.0	-	24.0	18.0	3.0	22.7	16.7	20.0	14.5
1.0	13.0	8.0	-	75.0	19.0	3.0	72.1	19.2	62.6	56.3

1.0	13.0	9.0	-	57.0	19.0	4.0	54.1	18.9	47.0	41.1
1.0	13.0	10.0	-	11.0	20.0	4.0	10.4	18.7	9.1	3.8
1.0	13.0	11.0	118.0	289.0	20.0	4.0	406.4	28.6	337.4	324.1
1.0	13.0	12.0	60.0	271.0	19.0	4.0	336.4	27.0	281.5	269.9
1.0	13.0	13.0	829.0	101.0	18.0	4.0	775.0	36.6	616.0	592.8
1.0	13.0	14.0	828.0	79.0	17.0	4.0	646.9	33.7	516.2	496.8
1.0	13.0	15.0	747.0	59.0	15.0	4.0	441.3	26.3	352.5	338.8
1.0	13.0	16.0	484.0	32.0	14.0	4.0	179.7	18.1	133.0	125.2
1.0	13.0	17.0	-	-	12.0	4.0	-	12.0	-	-
1.0	13.0	18.0	-	-	12.0	3.0	-	12.0	-	-
1.0	13.0	19.0	-	-	11.0	3.0	-	11.0	-	-
1.0	13.0	20.0	-	-	11.0	3.0	-	11.0	-	-
1.0	13.0	21.0	-	-	11.0	3.0	-	11.0	-	-
1.0	13.0	22.0	-	-	10.0	3.0	-	10.0	-	-
1.0	13.0	23.0	-	-	9.0	3.0	-	9.0	-	-
1.0	14.0	-	-	-	8.0	4.0	-	8.0	-	-
1.0	14.0	1.0	-	-	7.0	4.0	-	7.0	-	-
1.0	14.0	2.0	-	-	7.0	4.0	-	7.0	-	-
1.0	14.0	3.0	-	-	6.0	3.0	-	6.0	-	-
1.0	14.0	4.0	-	-	6.0	3.0	-	6.0	-	-
1.0	14.0	5.0	-	-	6.0	3.0	-	6.0	-	-
1.0	14.0	6.0	-	-	6.0	3.0	-	6.0	-	-
1.0	14.0	7.0	152.0	46.0	7.0	4.0	101.5	7.7	85.2	78.4
1.0	14.0	8.0	829.0	54.0	8.0	4.0	487.0	18.9	403.8	388.4
1.0	14.0	9.0	933.0	64.0	9.0	4.0	704.5	26.5	582.4	560.5
1.0	14.0	10.0	983.0	69.0	10.0	4.0	859.8	31.9	699.4	672.6
1.0	14.0	11.0	1,003.0	70.0	11.0	4.0	937.0	35.1	752.1	722.9
1.0	14.0	12.0	994.0	73.0	12.0	4.0	931.1	36.2	743.5	714.7
1.0	14.0	13.0	974.0	68.0	12.0	4.0	846.2	34.1	680.6	654.7
1.0	14.0	14.0	922.0	61.0	12.0	3.0	685.5	31.9	551.7	531.0
1.0	14.0	15.0	807.0	52.0	11.0	3.0	464.4	24.4	374.0	359.6
1.0	14.0	16.0	532.0	31.0	10.0	3.0	193.5	15.1	144.7	136.6
1.0	14.0	17.0	-	-	9.0	3.0	-	9.0	-	-
1.0	14.0	18.0	-	-	8.0	2.0	-	8.0	-	-
1.0	14.0	19.0	-	-	8.0	2.0	-	8.0	-	-
1.0	14.0	20.0	-	-	7.0	2.0	-	7.0	-	-
1.0	14.0	21.0	-	-	7.0	2.0	-	7.0	-	-
1.0	14.0	22.0	-	-	6.0	2.0	-	6.0	-	-
1.0	14.0	23.0	-	-	6.0	2.0	-	6.0	-	-
1.0	15.0	-	-	-	6.0	2.0	-	6.0	-	-
1.0	15.0	1.0	-	-	5.0	2.0	-	5.0	-	-
1.0	15.0	2.0	-	-	5.0	2.0	-	5.0	-	-
1.0	15.0	3.0	-	-	5.0	2.0	-	5.0	-	-
1.0	15.0	4.0	-	-	5.0	1.0	-	5.0	-	-
1.0	15.0	5.0	-	-	4.0	1.0	-	4.0	-	-
1.0	15.0	6.0	-	-	5.0	1.0	-	5.0	-	-
1.0	15.0	7.0	223.0	45.0	6.0	1.0	126.0	7.7	104.0	96.8
1.0	15.0	8.0	779.0	56.0	8.0	1.0	464.3	23.2	377.6	363.1
1.0	15.0	9.0	882.0	63.0	10.0	-	669.6	39.9	518.5	499.0
1.0	15.0	10.0	198.0	261.0	11.0	-	442.5	34.4	356.6	342.7
1.0	15.0	11.0	663.0	166.0	11.0	-	769.5	44.2	590.4	568.2
1.0	15.0	12.0	106.0	288.0	12.0	-	394.9	34.5	318.6	305.8
1.0	15.0	13.0	161.0	260.0	13.0	-	411.5	32.7	334.6	321.4
1.0	15.0	14.0	11.0	164.0	13.0	1.0	169.9	19.6	147.1	139.0
1.0	15.0	15.0	123.0	124.0	12.0	1.0	197.0	17.8	169.1	160.4
1.0	15.0	16.0	-	26.0	11.0	1.0	24.7	10.5	22.3	16.7
1.0	15.0	17.0	-	-	11.0	1.0	-	11.0	-	-
1.0	15.0	18.0	-	-	11.0	1.0	-	11.0	-	-
1.0	15.0	19.0	-	-	11.0	1.0	-	11.0	-	-
1.0	15.0	20.0	-	-	12.0	1.0	-	12.0	-	-
1.0	15.0	21.0	-	-	12.0	1.0	-	12.0	-	-
1.0	15.0	22.0	-	-	12.0	2.0	-	12.0	-	-
1.0	15.0	23.0	-	-	12.0	2.0	-	12.0	-	-
1.0	16.0	-	-	-	13.0	2.0	-	13.0	-	-
1.0	16.0	1.0	-	-	13.0	2.0	-	13.0	-	-
1.0	16.0	2.0	-	-	13.0	2.0	-	13.0	-	-
1.0	16.0	3.0	-	-	13.0	1.0	-	13.0	-	-
1.0	16.0	4.0	-	-	13.0	1.0	-	13.0	-	-
1.0	16.0	5.0	-	-	14.0	1.0	-	14.0	-	-
1.0	16.0	6.0	-	-	15.0	1.0	-	15.0	-	-
1.0	16.0	7.0	210.0	45.0	16.0	1.0	122.0	17.8	96.6	89.5
1.0	16.0	8.0	68.0	127.0	17.0	1.0	167.6	21.4	142.4	134.4
1.0	16.0	9.0	72.0	202.0	18.0	2.0	261.0	24.8	220.1	210.1
1.0	16.0	10.0	20.0	215.0	19.0	2.0	229.7	25.2	193.8	184.5
1.0	16.0	11.0	102.0	290.0	19.0	2.0	393.8	30.1	324.6	311.7
1.0	16.0	12.0	289.0	281.0	20.0	2.0	565.0	36.9	450.2	433.3
1.0	16.0	13.0	-	164.0	20.0	2.0	160.3	25.5	135.1	127.2
1.0	16.0	14.0	68.0	195.0	19.0	2.0	250.0	25.4	210.2	200.5
1.0	16.0	15.0	337.0	109.0	18.0	2.0	298.7	26.3	243.0	232.4
1.0	16.0	16.0	35.0	44.0	18.0	2.0	56.6	19.0	47.4	41.4
1.0	16.0	17.0	-	-	18.0	2.0	-	18.0	-	-

1.0	16.0	18.0	-	-	18.0	2.0	-	18.0	-	-
1.0	16.0	19.0	-	-	18.0	3.0	-	18.0	-	-
1.0	16.0	20.0	-	-	18.0	3.0	-	18.0	-	-
1.0	16.0	21.0	-	-	18.0	3.0	-	18.0	-	-
1.0	16.0	22.0	-	-	18.0	3.0	-	18.0	-	-
1.0	16.0	23.0	-	-	18.0	3.0	-	18.0	-	-
1.0	17.0	-	-	-	18.0	4.0	-	18.0	-	-
1.0	17.0	1.0	-	-	18.0	4.0	-	18.0	-	-
1.0	17.0	2.0	-	-	18.0	4.0	-	18.0	-	-
1.0	17.0	3.0	-	-	19.0	4.0	-	19.0	-	-
1.0	17.0	4.0	-	-	19.0	4.0	-	19.0	-	-
1.0	17.0	5.0	-	-	19.0	4.0	-	19.0	-	-
1.0	17.0	6.0	-	-	19.0	4.0	-	19.0	-	-
1.0	17.0	7.0	-	36.0	19.0	4.0	34.7	18.2	30.3	24.6
1.0	17.0	8.0	-	11.0	20.0	5.0	10.4	18.8	9.1	3.8
1.0	17.0	9.0	-	57.0	20.0	5.0	54.1	19.8	46.9	40.9
1.0	17.0	10.0	-	41.0	21.0	6.0	38.9	20.6	33.6	27.9
1.0	17.0	11.0	-	119.0	20.0	5.0	114.2	21.2	98.2	91.1
1.0	17.0	12.0	-	91.0	18.0	5.0	86.6	18.7	75.3	68.8
1.0	17.0	13.0	-	64.0	16.0	5.0	60.8	16.0	53.6	47.4
1.0	17.0	14.0	-	7.0	14.0	4.0	6.6	12.5	5.9	0.7
1.0	17.0	15.0	-	43.0	14.0	3.0	40.8	13.1	36.4	30.6
1.0	17.0	16.0	-	4.0	13.0	3.0	3.8	11.2	3.4	-
1.0	17.0	17.0	-	-	13.0	3.0	-	13.0	-	-
1.0	17.0	18.0	-	-	12.0	4.0	-	12.0	-	-
1.0	17.0	19.0	-	-	11.0	4.0	-	11.0	-	-
1.0	17.0	20.0	-	-	10.0	4.0	-	10.0	-	-
1.0	17.0	21.0	-	-	8.0	4.0	-	8.0	-	-
1.0	17.0	22.0	-	-	8.0	4.0	-	8.0	-	-
1.0	17.0	23.0	-	-	7.0	4.0	-	7.0	-	-
1.0	18.0	-	-	-	7.0	3.0	-	7.0	-	-
1.0	18.0	1.0	-	-	6.0	3.0	-	6.0	-	-
1.0	18.0	2.0	-	-	6.0	2.0	-	6.0	-	-
1.0	18.0	3.0	-	-	6.0	2.0	-	6.0	-	-
1.0	18.0	4.0	-	-	5.0	2.0	-	5.0	-	-
1.0	18.0	5.0	-	-	5.0	2.0	-	5.0	-	-
1.0	18.0	6.0	-	-	5.0	1.0	-	5.0	-	-
1.0	18.0	7.0	239.0	45.0	7.0	1.0	130.1	8.9	106.4	99.2
1.0	18.0	8.0	831.0	55.0	9.0	1.0	489.5	25.1	394.5	379.4
1.0	18.0	9.0	932.0	65.0	10.0	1.0	707.2	35.7	559.4	538.4
1.0	18.0	10.0	978.0	72.0	11.0	1.0	863.6	42.9	665.2	639.9
1.0	18.0	11.0	677.0	164.0	12.0	1.0	782.2	42.1	606.8	583.9
1.0	18.0	12.0	991.0	76.0	12.0	1.0	939.5	46.5	711.8	684.5
1.0	18.0	13.0	965.0	73.0	13.0	1.0	853.3	45.6	647.9	623.3
1.0	18.0	14.0	911.0	67.0	13.0	1.0	693.6	40.1	536.4	516.3
1.0	18.0	15.0	802.0	56.0	12.0	1.0	473.9	31.1	371.0	356.7
1.0	18.0	16.0	546.0	34.0	10.0	1.0	205.3	18.3	152.8	144.5
1.0	18.0	17.0	-	-	10.0	1.0	-	10.0	-	-
1.0	18.0	18.0	-	-	10.0	1.0	-	10.0	-	-
1.0	18.0	19.0	-	-	10.0	1.0	-	10.0	-	-
1.0	18.0	20.0	-	-	10.0	1.0	-	10.0	-	-
1.0	18.0	21.0	-	-	10.0	1.0	-	10.0	-	-
1.0	18.0	22.0	-	-	10.0	1.0	-	10.0	-	-
1.0	18.0	23.0	-	-	10.0	1.0	-	10.0	-	-
1.0	19.0	-	-	-	10.0	1.0	-	10.0	-	-
1.0	19.0	1.0	-	-	10.0	1.0	-	10.0	-	-
1.0	19.0	2.0	-	-	10.0	1.0	-	10.0	-	-
1.0	19.0	3.0	-	-	10.0	1.0	-	10.0	-	-
1.0	19.0	4.0	-	-	9.0	2.0	-	9.0	-	-
1.0	19.0	5.0	-	-	9.0	2.0	-	9.0	-	-
1.0	19.0	6.0	-	-	10.0	2.0	-	10.0	-	-
1.0	19.0	7.0	158.0	48.0	12.0	2.0	104.9	12.9	86.0	79.2
1.0	19.0	8.0	807.0	55.0	14.0	2.0	477.7	27.1	381.5	366.8
1.0	19.0	9.0	907.0	67.0	15.0	2.0	693.5	36.1	547.5	527.0
1.0	19.0	10.0	631.0	158.0	15.0	2.0	695.9	37.1	552.5	531.8
1.0	19.0	11.0	627.0	180.0	16.0	2.0	757.8	39.8	594.7	572.3
1.0	19.0	12.0	972.0	77.0	16.0	2.0	926.3	44.8	708.2	681.0
1.0	19.0	13.0	947.0	75.0	16.0	2.0	843.4	43.2	648.6	624.0
1.0	19.0	14.0	893.0	70.0	15.0	2.0	687.1	37.5	538.8	518.6
1.0	19.0	15.0	785.0	58.0	14.0	2.0	469.5	29.5	370.8	356.5
1.0	19.0	16.0	529.0	36.0	13.0	2.0	203.5	19.4	151.4	143.2
1.0	19.0	17.0	-	-	12.0	2.0	-	12.0	-	-
1.0	19.0	18.0	-	-	12.0	2.0	-	12.0	-	-
1.0	19.0	19.0	-	-	12.0	2.0	-	12.0	-	-
1.0	19.0	20.0	-	-	12.0	2.0	-	12.0	-	-
1.0	19.0	21.0	-	-	12.0	2.0	-	12.0	-	-
1.0	19.0	22.0	-	-	11.0	2.0	-	11.0	-	-
1.0	19.0	23.0	-	-	11.0	2.0	-	11.0	-	-
1.0	20.0	-	-	-	11.0	2.0	-	11.0	-	-
1.0	20.0	1.0	-	-	11.0	2.0	-	11.0	-	-
1.0	20.0	2.0	-	-	11.0	2.0	-	11.0	-	-

1.0	20.0	3.0	-	-	12.0	1.0	-	12.0	-	-
1.0	20.0	4.0	-	-	12.0	1.0	-	12.0	-	-
1.0	20.0	5.0	-	-	12.0	1.0	-	12.0	-	-
1.0	20.0	6.0	-	-	12.0	1.0	-	12.0	-	-
1.0	20.0	7.0	34.0	48.0	13.0	1.0	60.5	12.3	52.5	46.4
1.0	20.0	8.0	50.0	129.0	14.0	2.0	160.3	17.0	139.4	131.4
1.0	20.0	9.0	339.0	195.0	15.0	2.0	449.3	27.5	372.2	357.8
1.0	20.0	10.0	77.0	258.0	16.0	2.0	332.7	26.3	279.2	267.6
1.0	20.0	11.0	-	170.0	17.0	2.0	165.6	21.6	142.2	134.1
1.0	20.0	12.0	-	110.0	18.0	2.0	105.2	19.9	91.0	84.1
1.0	20.0	13.0	-	100.0	18.0	2.0	95.4	19.3	82.8	76.1
1.0	20.0	14.0	42.0	192.0	18.0	2.0	228.7	23.4	194.3	185.0
1.0	20.0	15.0	6.0	115.0	17.0	2.0	117.2	19.6	101.4	94.3
1.0	20.0	16.0	8.0	48.0	17.0	2.0	50.4	16.9	43.9	37.9
1.0	20.0	17.0	-	-	17.0	2.0	-	17.0	-	-
1.0	20.0	18.0	-	-	17.0	2.0	-	17.0	-	-
1.0	20.0	19.0	-	-	17.0	2.0	-	17.0	-	-
1.0	20.0	20.0	-	-	17.0	2.0	-	17.0	-	-
1.0	20.0	21.0	-	-	17.0	1.0	-	17.0	-	-
1.0	20.0	22.0	-	-	17.0	1.0	-	17.0	-	-
1.0	20.0	23.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	-	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	1.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	2.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	3.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	4.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	5.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	6.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	7.0	-	6.0	18.0	1.0	5.7	15.4	5.0	-
1.0	21.0	8.0	-	23.0	18.0	1.0	21.8	16.1	19.2	13.7
1.0	21.0	9.0	-	77.0	19.0	2.0	73.2	19.2	63.5	57.2
1.0	21.0	10.0	-	114.0	19.0	1.0	109.3	20.9	94.1	87.2
1.0	21.0	11.0	-	159.0	20.0	1.0	154.3	23.9	131.1	123.3
1.0	21.0	12.0	-	142.0	20.0	1.0	137.1	23.6	116.6	109.2
1.0	21.0	13.0	107.0	267.0	20.0	1.0	366.9	31.7	299.9	287.7
1.0	21.0	14.0	305.0	195.0	20.0	1.0	427.1	35.2	341.0	327.6
1.0	21.0	15.0	-	70.0	19.0	-	66.8	25.0	56.4	50.3
1.0	21.0	16.0	-	2.0	18.0	-	1.9	14.9	1.7	-
1.0	21.0	17.0	-	-	17.0	-	-	17.0	-	-
1.0	21.0	18.0	-	-	17.0	-	-	17.0	-	-
1.0	21.0	19.0	-	-	17.0	-	-	17.0	-	-
1.0	21.0	20.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	21.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	22.0	-	-	17.0	1.0	-	17.0	-	-
1.0	21.0	23.0	-	-	17.0	1.0	-	17.0	-	-
1.0	22.0	-	-	-	17.0	1.0	-	17.0	-	-
1.0	22.0	1.0	-	-	17.0	1.0	-	17.0	-	-
1.0	22.0	2.0	-	-	17.0	1.0	-	17.0	-	-
1.0	22.0	3.0	-	-	17.0	1.0	-	17.0	-	-
1.0	22.0	4.0	-	-	17.0	2.0	-	17.0	-	-
1.0	22.0	5.0	-	-	17.0	2.0	-	17.0	-	-
1.0	22.0	6.0	-	-	17.0	2.0	-	17.0	-	-
1.0	22.0	7.0	-	4.0	17.0	2.0	3.8	14.8	3.3	-
1.0	22.0	8.0	-	36.0	18.0	2.0	34.1	16.8	29.9	24.3
1.0	22.0	9.0	181.0	210.0	18.0	2.0	351.3	26.9	292.6	280.6
1.0	22.0	10.0	295.0	257.0	19.0	2.0	526.0	34.6	423.5	407.4
1.0	22.0	11.0	343.0	279.0	19.0	2.0	611.2	37.8	484.9	466.7
1.0	22.0	12.0	414.0	261.0	19.0	2.0	652.2	39.3	513.3	494.1
1.0	22.0	13.0	195.0	273.0	20.0	2.0	454.4	34.7	365.8	351.6
1.0	22.0	14.0	45.0	196.0	19.0	2.0	235.0	26.3	196.9	187.6
1.0	22.0	15.0	10.0	119.0	19.0	2.0	123.2	21.8	105.5	98.3
1.0	22.0	16.0	-	32.0	18.0	2.0	30.4	17.3	26.6	21.0
1.0	22.0	17.0	-	-	18.0	1.0	-	18.0	-	-
1.0	22.0	18.0	-	-	18.0	1.0	-	18.0	-	-
1.0	22.0	19.0	-	-	18.0	1.0	-	18.0	-	-
1.0	22.0	20.0	-	-	18.0	1.0	-	18.0	-	-
1.0	22.0	21.0	-	-	18.0	2.0	-	18.0	-	-
1.0	22.0	22.0	-	-	18.0	2.0	-	18.0	-	-
1.0	22.0	23.0	-	-	18.0	2.0	-	18.0	-	-
1.0	23.0	-	-	-	18.0	2.0	-	18.0	-	-
1.0	23.0	1.0	-	-	18.0	3.0	-	18.0	-	-
1.0	23.0	2.0	-	-	18.0	3.0	-	18.0	-	-
1.0	23.0	3.0	-	-	19.0	2.0	-	19.0	-	-
1.0	23.0	4.0	-	-	18.0	2.0	-	18.0	-	-
1.0	23.0	5.0	-	-	18.0	2.0	-	18.0	-	-
1.0	23.0	6.0	-	-	18.0	2.0	-	18.0	-	-
1.0	23.0	7.0	-	41.0	19.0	2.0	39.9	18.0	34.9	29.1
1.0	23.0	8.0	498.0	94.0	19.0	2.0	365.5	28.4	292.9	280.9
1.0	23.0	9.0	472.0	164.0	20.0	2.0	513.9	35.2	409.3	393.7
1.0	23.0	10.0	143.0	273.0	21.0	2.0	412.5	33.9	333.6	320.4
1.0	23.0	11.0	122.0	304.0	21.0	2.0	438.0	34.2	353.9	340.1

1.0	23.0	12.0	-	171.0	21.0	2.0	166.4	26.1	139.9	131.9
1.0	23.0	13.0	108.0	271.0	21.0	2.0	372.2	31.1	305.1	292.8
1.0	23.0	14.0	285.0	202.0	20.0	1.0	422.5	35.1	337.7	324.4
1.0	23.0	15.0	300.0	124.0	20.0	1.0	294.3	31.0	235.2	224.9
1.0	23.0	16.0	145.0	55.0	19.0	1.0	109.7	22.6	87.2	80.3
1.0	23.0	17.0	-	-	18.0	1.0	-	18.0	-	-
1.0	23.0	18.0	-	-	18.0	1.0	-	18.0	-	-
1.0	23.0	19.0	-	-	18.0	1.0	-	18.0	-	-
1.0	23.0	20.0	-	-	17.0	1.0	-	17.0	-	-
1.0	23.0	21.0	-	-	17.0	1.0	-	17.0	-	-
1.0	23.0	22.0	-	-	16.0	1.0	-	16.0	-	-
1.0	23.0	23.0	-	-	15.0	2.0	-	15.0	-	-
1.0	24.0	-	-	-	14.0	2.0	-	14.0	-	-
1.0	24.0	1.0	-	-	14.0	2.0	-	14.0	-	-
1.0	24.0	2.0	-	-	13.0	2.0	-	13.0	-	-
1.0	24.0	3.0	-	-	13.0	2.0	-	13.0	-	-
1.0	24.0	4.0	-	-	13.0	2.0	-	13.0	-	-
1.0	24.0	5.0	-	-	13.0	2.0	-	13.0	-	-
1.0	24.0	6.0	-	-	13.0	2.0	-	13.0	-	-
1.0	24.0	7.0	-	34.0	13.0	2.0	32.3	11.6	29.0	23.4
1.0	24.0	8.0	-	61.0	13.0	2.0	57.9	12.6	51.8	45.7
1.0	24.0	9.0	86.0	209.0	14.0	2.0	277.4	20.7	238.3	227.9
1.0	24.0	10.0	354.0	248.0	15.0	2.0	563.4	31.4	460.6	443.3
1.0	24.0	11.0	601.0	198.0	16.0	2.0	756.0	39.2	595.2	572.8
1.0	24.0	12.0	926.0	96.0	17.0	2.0	918.4	45.5	699.8	673.0
1.0	24.0	13.0	910.0	91.0	17.0	2.0	842.8	44.1	645.6	621.1
1.0	24.0	14.0	866.0	82.0	16.0	2.0	697.1	38.7	544.1	523.8
1.0	24.0	15.0	769.0	66.0	15.0	2.0	479.2	30.8	377.6	363.1
1.0	24.0	16.0	540.0	41.0	14.0	2.0	220.0	21.0	164.6	156.1
1.0	24.0	17.0	-	-	12.0	2.0	-	12.0	-	-
1.0	24.0	18.0	-	-	12.0	2.0	-	12.0	-	-
1.0	24.0	19.0	-	-	11.0	2.0	-	11.0	-	-
1.0	24.0	20.0	-	-	11.0	2.0	-	11.0	-	-
1.0	24.0	21.0	-	-	10.0	2.0	-	10.0	-	-
1.0	24.0	22.0	-	-	10.0	2.0	-	10.0	-	-
1.0	24.0	23.0	-	-	10.0	2.0	-	10.0	-	-
1.0	25.0	-	-	-	9.0	2.0	-	9.0	-	-
1.0	25.0	1.0	-	-	9.0	2.0	-	9.0	-	-
1.0	25.0	2.0	-	-	9.0	2.0	-	9.0	-	-
1.0	25.0	3.0	-	-	9.0	2.0	-	9.0	-	-
1.0	25.0	4.0	-	-	8.0	2.0	-	8.0	-	-
1.0	25.0	5.0	-	-	8.0	2.0	-	8.0	-	-
1.0	25.0	6.0	-	-	8.0	2.0	-	8.0	-	-
1.0	25.0	7.0	193.0	50.0	10.0	2.0	121.5	11.4	99.8	92.7
1.0	25.0	8.0	821.0	55.0	12.0	2.0	487.3	25.5	392.5	377.4
1.0	25.0	9.0	925.0	66.0	13.0	3.0	709.9	32.2	571.5	550.1
1.0	25.0	10.0	977.0	71.0	14.0	3.0	871.1	38.2	687.4	661.2
1.0	25.0	11.0	688.0	169.0	15.0	3.0	805.3	38.0	638.0	613.8
1.0	25.0	12.0	998.0	75.0	15.0	3.0	958.6	41.7	745.0	716.2
1.0	25.0	13.0	977.0	73.0	15.0	3.0	878.0	40.1	686.3	660.1
1.0	25.0	14.0	930.0	67.0	15.0	3.0	721.3	35.8	571.1	549.6
1.0	25.0	15.0	832.0	57.0	14.0	3.0	503.2	28.5	400.5	385.3
1.0	25.0	16.0	606.0	37.0	12.0	2.0	235.0	19.6	175.8	167.0
1.0	25.0	17.0	-	-	10.0	2.0	-	10.0	-	-
1.0	25.0	18.0	-	-	10.0	2.0	-	10.0	-	-
1.0	25.0	19.0	-	-	9.0	2.0	-	9.0	-	-
1.0	25.0	20.0	-	-	8.0	2.0	-	8.0	-	-
1.0	25.0	21.0	-	-	8.0	2.0	-	8.0	-	-
1.0	25.0	22.0	-	-	7.0	2.0	-	7.0	-	-
1.0	25.0	23.0	-	-	7.0	2.0	-	7.0	-	-
1.0	26.0	-	-	-	7.0	2.0	-	7.0	-	-
1.0	26.0	1.0	-	-	6.0	2.0	-	6.0	-	-
1.0	26.0	2.0	-	-	6.0	2.0	-	6.0	-	-
1.0	26.0	3.0	-	-	5.0	2.0	-	5.0	-	-
1.0	26.0	4.0	-	-	5.0	2.0	-	5.0	-	-
1.0	26.0	5.0	-	-	5.0	2.0	-	5.0	-	-
1.0	26.0	6.0	-	-	5.0	2.0	-	5.0	-	-
1.0	26.0	7.0	181.0	51.0	7.0	2.0	114.3	8.2	95.3	88.3
1.0	26.0	8.0	810.0	61.0	9.0	2.0	489.2	22.5	399.8	384.6
1.0	26.0	9.0	907.0	75.0	10.0	2.0	709.2	31.8	572.4	551.0
1.0	26.0	10.0	646.0	160.0	11.0	2.0	716.2	33.9	577.8	556.1
1.0	26.0	11.0	665.0	181.0	12.0	2.0	799.6	37.3	635.7	611.6
1.0	26.0	12.0	936.0	102.0	13.0	2.0	937.9	42.5	726.0	698.1
1.0	26.0	13.0	456.0	227.0	13.0	2.0	635.3	34.5	511.6	492.5
1.0	26.0	14.0	771.0	88.0	13.0	2.0	642.4	33.4	515.4	496.0
1.0	26.0	15.0	723.0	79.0	12.0	1.0	475.2	30.8	375.6	361.1
1.0	26.0	16.0	463.0	50.0	11.0	1.0	207.7	19.4	159.0	150.5
1.0	26.0	17.0	-	-	11.0	1.0	-	11.0	-	-
1.0	26.0	18.0	-	-	11.0	2.0	-	11.0	-	-
1.0	26.0	19.0	-	-	11.0	2.0	-	11.0	-	-
1.0	26.0	20.0	-	-	11.0	2.0	-	11.0	-	-

1.0	26.0	21.0	-	-	10.0	1.0	-	10.0	-	-
1.0	26.0	22.0	-	-	10.0	1.0	-	10.0	-	-
1.0	26.0	23.0	-	-	10.0	1.0	-	10.0	-	-
1.0	27.0	-	-	-	10.0	1.0	-	10.0	-	-
1.0	27.0	1.0	-	-	9.0	1.0	-	9.0	-	-
1.0	27.0	2.0	-	-	9.0	2.0	-	9.0	-	-
1.0	27.0	3.0	-	-	9.0	2.0	-	9.0	-	-
1.0	27.0	4.0	-	-	9.0	2.0	-	9.0	-	-
1.0	27.0	5.0	-	-	9.0	2.0	-	9.0	-	-
1.0	27.0	6.0	-	-	9.0	2.0	-	9.0	-	-
1.0	27.0	7.0	286.0	48.0	11.0	2.0	146.5	13.3	116.8	109.3
1.0	27.0	8.0	746.0	69.0	13.0	3.0	466.2	24.5	378.2	363.7
1.0	27.0	9.0	551.0	148.0	14.0	3.0	551.8	28.9	452.9	435.9
1.0	27.0	10.0	875.0	102.0	15.0	3.0	833.5	37.6	659.8	634.7
1.0	27.0	11.0	884.0	112.0	16.0	3.0	910.6	41.5	708.5	681.3
1.0	27.0	12.0	321.0	293.0	16.0	2.0	610.8	36.5	487.8	469.5
1.0	27.0	13.0	661.0	158.0	16.0	2.0	731.2	38.7	576.2	554.6
1.0	27.0	14.0	488.0	168.0	16.0	2.0	535.8	33.6	430.7	414.4
1.0	27.0	15.0	321.0	127.0	15.0	2.0	310.5	25.0	255.6	244.7
1.0	27.0	16.0	429.0	51.0	14.0	2.0	199.1	19.5	153.1	144.8
1.0	27.0	17.0	-	-	13.0	2.0	-	13.0	-	-
1.0	27.0	18.0	-	-	13.0	2.0	-	13.0	-	-
1.0	27.0	19.0	-	-	13.0	2.0	-	13.0	-	-
1.0	27.0	20.0	-	-	13.0	2.0	-	13.0	-	-
1.0	27.0	21.0	-	-	13.0	2.0	-	13.0	-	-
1.0	27.0	22.0	-	-	13.0	2.0	-	13.0	-	-
1.0	27.0	23.0	-	-	13.0	2.0	-	13.0	-	-
1.0	28.0	-	-	-	13.0	2.0	-	13.0	-	-
1.0	28.0	1.0	-	-	12.0	2.0	-	12.0	-	-
1.0	28.0	2.0	-	-	12.0	2.0	-	12.0	-	-
1.0	28.0	3.0	-	-	12.0	2.0	-	12.0	-	-
1.0	28.0	4.0	-	-	12.0	2.0	-	12.0	-	-
1.0	28.0	5.0	-	-	12.0	2.0	-	12.0	-	-
1.0	28.0	6.0	-	-	12.0	2.0	-	12.0	-	-
1.0	28.0	7.0	54.0	54.0	14.0	3.0	76.2	14.1	65.0	58.7
1.0	28.0	8.0	-	112.0	15.0	3.0	110.1	16.4	96.8	89.8
1.0	28.0	9.0	29.0	193.0	16.0	3.0	219.7	20.6	189.3	180.1
1.0	28.0	10.0	96.0	275.0	17.0	3.0	366.4	26.0	307.8	295.4
1.0	28.0	11.0	237.0	310.0	18.0	3.0	545.0	32.3	444.3	427.5
1.0	28.0	12.0	240.0	311.0	18.0	3.0	549.3	33.1	446.2	429.4
1.0	28.0	13.0	458.0	230.0	18.0	3.0	642.1	35.5	514.4	495.2
1.0	28.0	14.0	301.0	209.0	17.0	3.0	443.8	29.6	364.5	350.4
1.0	28.0	15.0	351.0	125.0	17.0	2.0	331.5	27.2	270.0	258.7
1.0	28.0	16.0	317.0	61.0	16.0	2.0	175.2	20.9	136.7	128.8
1.0	28.0	17.0	-	-	16.0	3.0	-	16.0	-	-
1.0	28.0	18.0	-	-	17.0	3.0	-	17.0	-	-
1.0	28.0	19.0	-	-	17.0	3.0	-	17.0	-	-
1.0	28.0	20.0	-	-	17.0	3.0	-	17.0	-	-
1.0	28.0	21.0	-	-	17.0	3.0	-	17.0	-	-
1.0	28.0	22.0	-	-	17.0	4.0	-	17.0	-	-
1.0	28.0	23.0	-	-	17.0	4.0	-	17.0	-	-
1.0	29.0	-	-	-	18.0	4.0	-	18.0	-	-
1.0	29.0	1.0	-	-	18.0	4.0	-	18.0	-	-
1.0	29.0	2.0	-	-	18.0	4.0	-	18.0	-	-
1.0	29.0	3.0	-	-	18.0	4.0	-	18.0	-	-
1.0	29.0	4.0	-	-	18.0	4.0	-	18.0	-	-
1.0	29.0	5.0	-	-	18.0	3.0	-	18.0	-	-
1.0	29.0	6.0	-	-	18.0	3.0	-	18.0	-	-
1.0	29.0	7.0	-	2.0	18.0	2.0	1.9	15.8	1.7	-
1.0	29.0	8.0	-	49.0	18.0	2.0	46.5	17.2	40.7	34.9
1.0	29.0	9.0	-	146.0	18.0	1.0	142.4	21.0	122.6	115.0
1.0	29.0	10.0	43.0	254.0	19.0	1.0	299.5	28.4	249.0	238.2
1.0	29.0	11.0	-	159.0	19.0	1.0	154.0	24.2	130.6	122.9
1.0	29.0	12.0	-	127.0	19.0	-	121.9	23.8	103.6	96.5
1.0	29.0	13.0	-	165.0	19.0	-	160.5	25.2	135.5	127.6
1.0	29.0	14.0	-	121.0	19.0	-	116.7	23.7	99.2	92.2
1.0	29.0	15.0	-	108.0	18.0	-	105.5	21.5	90.6	83.7
1.0	29.0	16.0	-	37.0	17.0	-	35.1	16.4	30.9	25.2
1.0	29.0	17.0	-	-	16.0	-	-	16.0	-	-
1.0	29.0	18.0	-	-	16.0	-	-	16.0	-	-
1.0	29.0	19.0	-	-	15.0	-	-	15.0	-	-
1.0	29.0	20.0	-	-	15.0	-	-	15.0	-	-
1.0	29.0	21.0	-	-	14.0	-	-	14.0	-	-
1.0	29.0	22.0	-	-	14.0	1.0	-	14.0	-	-
1.0	29.0	23.0	-	-	13.0	1.0	-	13.0	-	-
1.0	30.0	-	-	-	13.0	1.0	-	13.0	-	-
1.0	30.0	1.0	-	-	13.0	1.0	-	13.0	-	-
1.0	30.0	2.0	-	-	12.0	1.0	-	12.0	-	-
1.0	30.0	3.0	-	-	12.0	1.0	-	12.0	-	-
1.0	30.0	4.0	-	-	13.0	1.0	-	13.0	-	-
1.0	30.0	5.0	-	-	12.0	1.0	-	12.0	-	-

1.0	30.0	6.0	-	-	13.0	1.0	-	13.0	-	-
1.0	30.0	7.0	140.0	56.0	15.0	1.0	107.8	16.2	88.2	81.3
1.0	30.0	8.0	31.0	132.0	16.0	1.0	152.5	19.7	131.3	123.6
1.0	30.0	9.0	519.0	161.0	17.0	1.0	546.2	35.0	435.7	419.2
1.0	30.0	10.0	854.0	102.0	18.0	1.0	820.9	47.2	619.1	595.7
1.0	30.0	11.0	866.0	112.0	18.0	1.0	900.1	51.0	666.5	641.1
1.0	30.0	12.0	456.0	264.0	19.0	1.0	709.3	46.5	538.3	518.1
1.0	30.0	13.0	14.0	218.0	19.0	1.0	226.7	29.5	187.5	178.4
1.0	30.0	14.0	789.0	98.0	18.0	2.0	673.1	37.3	530.0	510.1
1.0	30.0	15.0	653.0	87.0	18.0	2.0	453.3	32.8	356.1	342.2
1.0	30.0	16.0	349.0	60.0	17.0	2.0	185.1	22.8	142.7	134.6
1.0	30.0	17.0	-	-	16.0	2.0	-	16.0	-	-
1.0	30.0	18.0	-	-	15.0	3.0	-	15.0	-	-
1.0	30.0	19.0	-	-	13.0	3.0	-	13.0	-	-
1.0	30.0	20.0	-	-	12.0	3.0	-	12.0	-	-
1.0	30.0	21.0	-	-	11.0	3.0	-	11.0	-	-
1.0	30.0	22.0	-	-	10.0	3.0	-	10.0	-	-
1.0	30.0	23.0	-	-	9.0	2.0	-	9.0	-	-
1.0	31.0	-	-	-	8.0	2.0	-	8.0	-	-
1.0	31.0	1.0	-	-	8.0	2.0	-	8.0	-	-
1.0	31.0	2.0	-	-	8.0	2.0	-	8.0	-	-
1.0	31.0	3.0	-	-	7.0	2.0	-	7.0	-	-
1.0	31.0	4.0	-	-	7.0	2.0	-	7.0	-	-
1.0	31.0	5.0	-	-	7.0	1.0	-	7.0	-	-
1.0	31.0	6.0	-	-	7.0	1.0	-	7.0	-	-
1.0	31.0	7.0	156.0	56.0	9.0	1.0	112.4	10.2	93.9	87.0
1.0	31.0	8.0	845.0	54.0	11.0	1.0	500.1	27.3	399.8	384.5
1.0	31.0	9.0	936.0	65.0	13.0	1.0	723.7	39.1	563.7	542.5
1.0	31.0	10.0	621.0	175.0	14.0	1.0	717.2	41.1	558.5	537.5
1.0	31.0	11.0	997.0	75.0	14.0	1.0	968.1	48.9	724.9	697.0
1.0	31.0	12.0	995.0	77.0	15.0	1.0	971.5	51.2	718.7	691.0
1.0	31.0	13.0	971.0	76.0	15.0	1.0	890.1	48.7	665.8	640.5
1.0	31.0	14.0	921.0	71.0	15.0	1.0	732.4	43.4	558.8	537.9
1.0	31.0	15.0	827.0	60.0	14.0	1.0	514.7	34.6	399.4	384.1
1.0	31.0	16.0	618.0	40.0	13.0	1.0	249.1	23.1	185.2	176.2
1.0	31.0	17.0	-	-	12.0	1.0	-	12.0	-	-
1.0	31.0	18.0	-	-	12.0	1.0	-	12.0	-	-
1.0	31.0	19.0	-	-	12.0	1.0	-	12.0	-	-
1.0	31.0	20.0	-	-	12.0	1.0	-	12.0	-	-
1.0	31.0	21.0	-	-	12.0	2.0	-	12.0	-	-
1.0	31.0	22.0	-	-	12.0	2.0	-	12.0	-	-
1.0	31.0	23.0	-	-	11.0	3.0	-	11.0	-	-
2.0	1.0	-	-	-	9.0	3.0	-	9.0	-	-
2.0	1.0	1.0	-	-	8.0	3.0	-	8.0	-	-
2.0	1.0	2.0	-	-	8.0	2.0	-	8.0	-	-
2.0	1.0	3.0	-	-	8.0	2.0	-	8.0	-	-
2.0	1.0	4.0	-	-	7.0	2.0	-	7.0	-	-
2.0	1.0	5.0	-	-	7.0	2.0	-	7.0	-	-
2.0	1.0	6.0	-	-	7.0	2.0	-	7.0	-	-
2.0	1.0	7.0	214.0	55.0	8.0	2.0	133.1	9.8	110.0	102.7
2.0	1.0	8.0	748.0	74.0	10.0	1.0	476.4	25.6	385.1	370.4
2.0	1.0	9.0	855.0	89.0	11.0	1.0	701.1	36.3	554.1	533.4
2.0	1.0	10.0	909.0	97.0	12.0	1.0	857.5	43.6	658.9	633.9
2.0	1.0	11.0	929.0	102.0	13.0	1.0	941.3	47.9	708.7	681.5
2.0	1.0	12.0	933.0	99.0	14.0	2.0	944.2	44.2	724.8	696.9
2.0	1.0	13.0	909.0	96.0	14.0	2.0	864.2	42.0	669.8	644.3
2.0	1.0	14.0	858.0	87.0	14.0	1.0	712.9	41.7	549.0	528.5
2.0	1.0	15.0	750.0	75.0	13.0	1.0	492.2	32.8	386.3	371.5
2.0	1.0	16.0	528.0	48.0	12.0	1.0	231.7	21.4	175.9	167.1
2.0	1.0	17.0	-	-	11.0	1.0	-	11.0	-	-
2.0	1.0	18.0	-	-	11.0	1.0	-	11.0	-	-
2.0	1.0	19.0	-	-	11.0	1.0	-	11.0	-	-
2.0	1.0	20.0	-	-	11.0	1.0	-	11.0	-	-
2.0	1.0	21.0	-	-	10.0	1.0	-	10.0	-	-
2.0	1.0	22.0	-	-	10.0	1.0	-	10.0	-	-
2.0	1.0	23.0	-	-	10.0	1.0	-	10.0	-	-
2.0	2.0	-	-	-	10.0	1.0	-	10.0	-	-
2.0	2.0	1.0	-	-	10.0	1.0	-	10.0	-	-
2.0	2.0	2.0	-	-	10.0	1.0	-	10.0	-	-
2.0	2.0	3.0	-	-	10.0	1.0	-	10.0	-	-
2.0	2.0	4.0	-	-	10.0	1.0	-	10.0	-	-
2.0	2.0	5.0	-	-	10.0	1.0	-	10.0	-	-
2.0	2.0	6.0	-	-	11.0	1.0	-	11.0	-	-
2.0	2.0	7.0	97.0	59.0	12.0	1.0	94.2	12.6	79.5	72.9
2.0	2.0	8.0	712.0	78.0	14.0	1.0	465.1	28.9	370.7	356.4
2.0	2.0	9.0	831.0	92.0	15.0	1.0	689.2	39.7	535.9	515.8
2.0	2.0	10.0	890.0	99.0	16.0	1.0	851.6	47.0	642.9	618.5
2.0	2.0	11.0	918.0	102.0	16.0	1.0	933.5	50.4	693.7	667.2
2.0	2.0	12.0	924.0	100.0	17.0	2.0	939.4	46.8	711.4	684.1
2.0	2.0	13.0	908.0	95.0	17.0	2.0	864.3	44.8	660.3	635.3
2.0	2.0	14.0	864.0	85.0	16.0	2.0	716.8	39.4	558.8	537.9

2.0	2.0	15.0	768.0	72.0	15.0	1.0	500.1	34.9	388.3	373.4
2.0	2.0	16.0	559.0	47.0	14.0	1.0	241.5	23.7	181.1	172.1
2.0	2.0	17.0	-	-	13.0	1.0	-	13.0	-	-
2.0	2.0	18.0	-	-	13.0	1.0	-	13.0	-	-
2.0	2.0	19.0	-	-	13.0	2.0	-	13.0	-	-
2.0	2.0	20.0	-	-	13.0	2.0	-	13.0	-	-
2.0	2.0	21.0	-	-	12.0	2.0	-	12.0	-	-
2.0	2.0	22.0	-	-	12.0	2.0	-	12.0	-	-
2.0	2.0	23.0	-	-	12.0	2.0	-	12.0	-	-
2.0	3.0	-	-	-	12.0	2.0	-	12.0	-	-
2.0	3.0	1.0	-	-	12.0	2.0	-	12.0	-	-
2.0	3.0	2.0	-	-	13.0	2.0	-	13.0	-	-
2.0	3.0	3.0	-	-	13.0	2.0	-	13.0	-	-
2.0	3.0	4.0	-	-	13.0	2.0	-	13.0	-	-
2.0	3.0	5.0	-	-	14.0	1.0	-	14.0	-	-
2.0	3.0	6.0	-	-	14.0	1.0	-	14.0	-	-
2.0	3.0	7.0	294.0	53.0	15.0	1.0	154.9	18.0	121.4	113.8
2.0	3.0	8.0	69.0	144.0	16.0	2.0	185.0	20.3	158.3	149.8
2.0	3.0	9.0	135.0	228.0	17.0	2.0	339.9	26.2	284.4	272.7
2.0	3.0	10.0	402.0	253.0	17.0	1.0	612.5	38.3	484.0	465.9
2.0	3.0	11.0	345.0	301.0	18.0	1.0	643.4	41.9	500.2	481.4
2.0	3.0	12.0	11.0	227.0	18.0	1.0	233.1	28.3	193.8	184.6
2.0	3.0	13.0	75.0	284.0	17.0	1.0	359.0	29.1	297.4	285.3
2.0	3.0	14.0	-	98.0	17.0	1.0	93.6	20.4	80.8	74.1
2.0	3.0	15.0	-	80.0	17.0	1.0	76.4	17.8	66.8	60.4
2.0	3.0	16.0	396.0	58.0	16.0	1.0	201.1	21.3	155.6	147.3
2.0	3.0	17.0	-	-	16.0	1.0	-	16.0	-	-
2.0	3.0	18.0	-	-	17.0	2.0	-	17.0	-	-
2.0	3.0	19.0	-	-	17.0	2.0	-	17.0	-	-
2.0	3.0	20.0	-	-	17.0	3.0	-	17.0	-	-
2.0	3.0	21.0	-	-	17.0	3.0	-	17.0	-	-
2.0	3.0	22.0	-	-	17.0	3.0	-	17.0	-	-
2.0	3.0	23.0	-	-	17.0	3.0	-	17.0	-	-
2.0	4.0	-	-	-	17.0	3.0	-	17.0	-	-
2.0	4.0	1.0	-	-	17.0	3.0	-	17.0	-	-
2.0	4.0	2.0	-	-	17.0	3.0	-	17.0	-	-
2.0	4.0	3.0	-	-	16.0	3.0	-	16.0	-	-
2.0	4.0	4.0	-	-	14.0	4.0	-	14.0	-	-
2.0	4.0	5.0	-	-	12.0	3.0	-	12.0	-	-
2.0	4.0	6.0	-	-	10.0	3.0	-	10.0	-	-
2.0	4.0	7.0	-	48.0	10.0	4.0	46.6	9.3	42.3	36.4
2.0	4.0	8.0	477.0	109.0	10.0	3.0	376.1	18.6	316.8	304.1
2.0	4.0	9.0	870.0	91.0	10.0	3.0	717.9	29.1	587.9	565.8
2.0	4.0	10.0	940.0	94.0	11.0	3.0	884.7	35.7	707.6	680.4
2.0	4.0	11.0	970.0	94.0	12.0	3.0	974.5	39.5	766.2	736.4
2.0	4.0	12.0	969.0	94.0	13.0	3.0	976.9	40.8	763.1	733.4
2.0	4.0	13.0	953.0	89.0	14.0	2.0	899.0	43.1	693.0	666.5
2.0	4.0	14.0	908.0	82.0	13.0	2.0	744.0	37.4	585.8	563.8
2.0	4.0	15.0	815.0	69.0	12.0	2.0	525.1	29.4	419.0	403.1
2.0	4.0	16.0	605.0	47.0	11.0	2.0	258.3	19.4	197.6	188.2
2.0	4.0	17.0	-	-	10.0	2.0	-	10.0	-	-
2.0	4.0	18.0	-	-	9.0	2.0	-	9.0	-	-
2.0	4.0	19.0	-	-	8.0	2.0	-	8.0	-	-
2.0	4.0	20.0	-	-	8.0	2.0	-	8.0	-	-
2.0	4.0	21.0	-	-	7.0	2.0	-	7.0	-	-
2.0	4.0	22.0	-	-	7.0	2.0	-	7.0	-	-
2.0	4.0	23.0	-	-	6.0	2.0	-	6.0	-	-
2.0	5.0	-	-	-	6.0	2.0	-	6.0	-	-
2.0	5.0	1.0	-	-	5.0	2.0	-	5.0	-	-
2.0	5.0	2.0	-	-	5.0	2.0	-	5.0	-	-
2.0	5.0	3.0	-	-	5.0	2.0	-	5.0	-	-
2.0	5.0	4.0	-	-	4.0	2.0	-	4.0	-	-
2.0	5.0	5.0	-	-	4.0	2.0	-	4.0	-	-
2.0	5.0	6.0	-	-	4.0	2.0	-	4.0	-	-
2.0	5.0	7.0	281.0	56.0	5.0	2.0	154.5	7.4	127.7	120.0
2.0	5.0	8.0	568.0	94.0	7.0	3.0	410.6	17.0	347.5	333.9
2.0	5.0	9.0	717.0	109.0	8.0	2.0	635.3	27.3	525.3	505.6
2.0	5.0	10.0	618.0	182.0	10.0	2.0	727.9	33.0	590.4	568.2
2.0	5.0	11.0	880.0	110.0	11.0	2.0	921.2	39.9	723.1	695.3
2.0	5.0	12.0	687.0	186.0	12.0	2.0	840.4	39.3	661.7	636.6
2.0	5.0	13.0	573.0	202.0	12.0	2.0	714.7	35.4	573.2	551.6
2.0	5.0	14.0	721.0	112.0	13.0	2.0	653.2	34.0	523.7	504.1
2.0	5.0	15.0	570.0	100.0	12.0	2.0	430.4	26.2	350.7	337.0
2.0	5.0	16.0	379.0	61.0	11.0	2.0	198.8	17.1	157.6	149.2
2.0	5.0	17.0	-	-	10.0	1.0	-	10.0	-	-
2.0	5.0	18.0	-	-	11.0	1.0	-	11.0	-	-
2.0	5.0	19.0	-	-	11.0	1.0	-	11.0	-	-
2.0	5.0	20.0	-	-	10.0	1.0	-	10.0	-	-
2.0	5.0	21.0	-	-	10.0	2.0	-	10.0	-	-
2.0	5.0	22.0	-	-	10.0	2.0	-	10.0	-	-
2.0	5.0	23.0	-	-	10.0	2.0	-	10.0	-	-

2.0	6.0	-	-	-	10.0	2.0	-	10.0	-	-
2.0	6.0	1.0	-	-	9.0	2.0	-	9.0	-	-
2.0	6.0	2.0	-	-	9.0	2.0	-	9.0	-	-
2.0	6.0	3.0	-	-	9.0	2.0	-	9.0	-	-
2.0	6.0	4.0	-	-	9.0	2.0	-	9.0	-	-
2.0	6.0	5.0	-	-	9.0	2.0	-	9.0	-	-
2.0	6.0	6.0	-	-	10.0	2.0	-	10.0	-	-
2.0	6.0	7.0	-	59.0	10.0	3.0	58.3	9.5	52.9	46.8
2.0	6.0	8.0	-	28.0	11.0	3.0	26.5	9.8	24.0	18.5
2.0	6.0	9.0	1.0	164.0	11.0	3.0	161.0	13.6	143.4	135.3
2.0	6.0	10.0	3.0	186.0	13.0	3.0	184.0	16.7	161.5	153.0
2.0	6.0	11.0	-	163.0	14.0	3.0	157.7	17.1	138.2	130.3
2.0	6.0	12.0	34.0	285.0	14.0	3.0	326.2	21.7	279.9	268.3
2.0	6.0	13.0	-	142.0	15.0	2.0	136.9	18.6	119.1	111.6
2.0	6.0	14.0	-	69.0	15.0	2.0	65.6	15.4	57.9	51.7
2.0	6.0	15.0	-	12.0	15.0	2.0	11.4	13.3	10.1	4.8
2.0	6.0	16.0	-	43.0	15.0	2.0	40.8	14.0	36.3	30.5
2.0	6.0	17.0	-	-	15.0	2.0	-	15.0	-	-
2.0	6.0	18.0	-	-	16.0	2.0	-	16.0	-	-
2.0	6.0	19.0	-	-	16.0	2.0	-	16.0	-	-
2.0	6.0	20.0	-	-	15.0	2.0	-	15.0	-	-
2.0	6.0	21.0	-	-	15.0	2.0	-	15.0	-	-
2.0	6.0	22.0	-	-	14.0	2.0	-	14.0	-	-
2.0	6.0	23.0	-	-	13.0	2.0	-	13.0	-	-
2.0	7.0	-	-	-	12.0	2.0	-	12.0	-	-
2.0	7.0	1.0	-	-	11.0	3.0	-	11.0	-	-
2.0	7.0	2.0	-	-	10.0	3.0	-	10.0	-	-
2.0	7.0	3.0	-	-	9.0	4.0	-	9.0	-	-
2.0	7.0	4.0	-	-	9.0	3.0	-	9.0	-	-
2.0	7.0	5.0	-	-	8.0	3.0	-	8.0	-	-
2.0	7.0	6.0	-	-	8.0	3.0	-	8.0	-	-
2.0	7.0	7.0	-	41.0	8.0	3.0	39.0	6.9	35.8	30.0
2.0	7.0	8.0	-	67.0	8.0	3.0	63.6	7.8	58.1	51.9
2.0	7.0	9.0	-	87.0	9.0	3.0	82.7	9.4	75.0	68.5
2.0	7.0	10.0	-	96.0	9.0	3.0	91.4	9.8	82.8	76.1
2.0	7.0	11.0	-	161.0	10.0	3.0	155.7	12.6	139.2	131.2
2.0	7.0	12.0	-	59.0	11.0	3.0	56.1	11.1	50.5	44.5
2.0	7.0	13.0	-	39.0	10.0	3.0	37.1	9.1	33.6	27.9
2.0	7.0	14.0	12.0	191.0	10.0	3.0	196.6	13.6	175.0	166.2
2.0	7.0	15.0	-	46.0	9.0	3.0	43.6	8.9	39.7	33.8
2.0	7.0	16.0	-	14.0	8.0	3.0	13.3	6.4	12.2	6.9
2.0	7.0	17.0	-	-	7.0	3.0	-	7.0	-	-
2.0	7.0	18.0	-	-	6.0	3.0	-	6.0	-	-
2.0	7.0	19.0	-	-	6.0	3.0	-	6.0	-	-
2.0	7.0	20.0	-	-	5.0	3.0	-	5.0	-	-
2.0	7.0	21.0	-	-	5.0	2.0	-	5.0	-	-
2.0	7.0	22.0	-	-	5.0	2.0	-	5.0	-	-
2.0	7.0	23.0	-	-	5.0	2.0	-	5.0	-	-
2.0	8.0	-	-	-	5.0	2.0	-	5.0	-	-
2.0	8.0	1.0	-	-	5.0	2.0	-	5.0	-	-
2.0	8.0	2.0	-	-	5.0	2.0	-	5.0	-	-
2.0	8.0	3.0	-	-	5.0	2.0	-	5.0	-	-
2.0	8.0	4.0	-	-	5.0	2.0	-	5.0	-	-
2.0	8.0	5.0	-	-	4.0	2.0	-	4.0	-	-
2.0	8.0	6.0	-	-	4.0	2.0	-	4.0	-	-
2.0	8.0	7.0	-	52.0	5.0	2.0	50.5	4.0	46.8	40.9
2.0	8.0	8.0	460.0	116.0	6.0	2.0	377.2	15.8	322.5	309.7
2.0	8.0	9.0	381.0	206.0	7.0	2.0	496.4	22.0	422.3	406.3
2.0	8.0	10.0	573.0	202.0	8.0	1.0	711.9	34.0	574.7	553.2
2.0	8.0	11.0	619.0	214.0	9.0	1.0	811.0	39.4	638.4	614.2
2.0	8.0	12.0	904.0	106.0	9.0	1.0	940.6	44.0	723.1	695.3
2.0	8.0	13.0	884.0	104.0	10.0	1.0	872.4	43.5	671.3	645.8
2.0	8.0	14.0	250.0	238.0	10.0	1.0	444.3	29.3	366.2	352.0
2.0	8.0	15.0	468.0	123.0	10.0	1.0	399.5	25.0	328.8	315.8
2.0	8.0	16.0	-	61.0	9.0	1.0	59.4	11.4	53.4	47.3
2.0	8.0	17.0	-	-	9.0	1.0	-	9.0	-	-
2.0	8.0	18.0	-	-	9.0	1.0	-	9.0	-	-
2.0	8.0	19.0	-	-	9.0	1.0	-	9.0	-	-
2.0	8.0	20.0	-	-	9.0	1.0	-	9.0	-	-
2.0	8.0	21.0	-	-	8.0	1.0	-	8.0	-	-
2.0	8.0	22.0	-	-	8.0	1.0	-	8.0	-	-
2.0	8.0	23.0	-	-	8.0	1.0	-	8.0	-	-
2.0	9.0	-	-	-	8.0	1.0	-	8.0	-	-
2.0	9.0	1.0	-	-	7.0	1.0	-	7.0	-	-
2.0	9.0	2.0	-	-	7.0	1.0	-	7.0	-	-
2.0	9.0	3.0	-	-	7.0	1.0	-	7.0	-	-
2.0	9.0	4.0	-	-	7.0	1.0	-	7.0	-	-
2.0	9.0	5.0	-	-	7.0	1.0	-	7.0	-	-
2.0	9.0	6.0	-	-	7.0	2.0	-	7.0	-	-
2.0	9.0	7.0	-	41.0	7.0	2.0	38.9	5.7	35.9	30.1
2.0	9.0	8.0	316.0	140.0	8.0	2.0	321.6	16.0	276.5	265.0

2.0	9.0	9.0	223.0	235.0	9.0	2.0	409.4	21.1	350.6	336.9
2.0	9.0	10.0	358.0	275.0	10.0	2.0	604.0	28.3	501.5	482.7
2.0	9.0	11.0	14.0	243.0	10.0	2.0	251.8	18.6	219.2	209.3
2.0	9.0	12.0	3.0	187.0	10.0	2.0	184.5	14.7	163.4	154.9
2.0	9.0	13.0	4.0	192.0	11.0	2.0	190.7	15.6	168.2	159.6
2.0	9.0	14.0	-	70.0	11.0	2.0	66.5	11.7	59.7	53.5
2.0	9.0	15.0	-	58.0	11.0	3.0	55.1	10.7	49.7	43.6
2.0	9.0	16.0	-	43.0	11.0	3.0	40.8	10.2	36.9	31.1
2.0	9.0	17.0	-	-	11.0	3.0	-	11.0	-	-
2.0	9.0	18.0	-	-	12.0	3.0	-	12.0	-	-
2.0	9.0	19.0	-	-	12.0	3.0	-	12.0	-	-
2.0	9.0	20.0	-	-	13.0	3.0	-	13.0	-	-
2.0	9.0	21.0	-	-	14.0	3.0	-	14.0	-	-
2.0	9.0	22.0	-	-	14.0	3.0	-	14.0	-	-
2.0	9.0	23.0	-	-	15.0	3.0	-	15.0	-	-
2.0	10.0	-	-	-	16.0	2.0	-	16.0	-	-
2.0	10.0	1.0	-	-	16.0	2.0	-	16.0	-	-
2.0	10.0	2.0	-	-	16.0	3.0	-	16.0	-	-
2.0	10.0	3.0	-	-	16.0	3.0	-	16.0	-	-
2.0	10.0	4.0	-	-	15.0	3.0	-	15.0	-	-
2.0	10.0	5.0	-	-	13.0	3.0	-	13.0	-	-
2.0	10.0	6.0	-	-	12.0	3.0	-	12.0	-	-
2.0	10.0	7.0	530.0	53.0	12.0	3.0	230.8	16.4	178.4	169.5
2.0	10.0	8.0	768.0	76.0	12.0	2.0	498.6	26.3	403.2	387.8
2.0	10.0	9.0	871.0	89.0	13.0	2.0	725.7	35.2	577.7	556.0
2.0	10.0	10.0	922.0	96.0	14.0	2.0	883.5	41.6	686.2	660.0
2.0	10.0	11.0	946.0	99.0	15.0	2.0	971.3	45.6	740.4	711.8
2.0	10.0	12.0	947.0	99.0	16.0	2.0	975.7	47.0	738.3	709.8
2.0	10.0	13.0	924.0	97.0	16.0	2.0	896.2	44.9	684.9	658.7
2.0	10.0	14.0	878.0	90.0	15.0	2.0	747.1	39.4	583.2	561.3
2.0	10.0	15.0	788.0	76.0	14.0	2.0	527.1	31.4	417.9	402.0
2.0	10.0	16.0	593.0	53.0	13.0	2.0	266.2	21.6	203.5	194.0
2.0	10.0	17.0	-	-	11.0	2.0	-	11.0	-	-
2.0	10.0	18.0	-	-	10.0	2.0	-	10.0	-	-
2.0	10.0	19.0	-	-	9.0	2.0	-	9.0	-	-
2.0	10.0	20.0	-	-	8.0	2.0	-	8.0	-	-
2.0	10.0	21.0	-	-	8.0	1.0	-	8.0	-	-
2.0	10.0	22.0	-	-	7.0	1.0	-	7.0	-	-
2.0	10.0	23.0	-	-	6.0	1.0	-	6.0	-	-
2.0	11.0	-	-	-	6.0	1.0	-	6.0	-	-
2.0	11.0	1.0	-	-	6.0	1.0	-	6.0	-	-
2.0	11.0	2.0	-	-	6.0	1.0	-	6.0	-	-
2.0	11.0	3.0	-	-	6.0	1.0	-	6.0	-	-
2.0	11.0	4.0	-	-	5.0	1.0	-	5.0	-	-
2.0	11.0	5.0	-	-	5.0	1.0	-	5.0	-	-
2.0	11.0	6.0	-	-	5.0	1.0	-	5.0	-	-
2.0	11.0	7.0	125.0	70.0	7.0	2.0	114.6	8.2	98.5	91.4
2.0	11.0	8.0	804.0	72.0	9.0	1.0	514.6	25.9	416.9	401.0
2.0	11.0	9.0	912.0	81.0	10.0	1.0	743.2	37.0	586.3	564.3
2.0	11.0	10.0	672.0	173.0	11.0	-	770.8	46.4	584.3	562.3
2.0	11.0	11.0	977.0	90.0	12.0	-	991.3	54.8	719.7	692.0
2.0	11.0	12.0	978.0	89.0	13.0	-	994.7	57.2	712.8	685.4
2.0	11.0	13.0	956.0	87.0	13.0	-	914.0	54.6	663.0	637.8
2.0	11.0	14.0	907.0	81.0	13.0	1.0	755.3	42.4	580.5	558.7
2.0	11.0	15.0	813.0	71.0	12.0	1.0	536.8	33.5	421.1	405.2
2.0	11.0	16.0	617.0	50.0	11.0	1.0	271.8	22.1	206.9	197.3
2.0	11.0	17.0	-	-	10.0	1.0	-	10.0	-	-
2.0	11.0	18.0	-	-	10.0	1.0	-	10.0	-	-
2.0	11.0	19.0	-	-	10.0	1.0	-	10.0	-	-
2.0	11.0	20.0	-	-	10.0	1.0	-	10.0	-	-
2.0	11.0	21.0	-	-	9.0	1.0	-	9.0	-	-
2.0	11.0	22.0	-	-	9.0	1.0	-	9.0	-	-
2.0	11.0	23.0	-	-	9.0	1.0	-	9.0	-	-
2.0	12.0	-	-	-	9.0	1.0	-	9.0	-	-
2.0	12.0	1.0	-	-	9.0	1.0	-	9.0	-	-
2.0	12.0	2.0	-	-	9.0	1.0	-	9.0	-	-
2.0	12.0	3.0	-	-	9.0	1.0	-	9.0	-	-
2.0	12.0	4.0	-	-	8.0	1.0	-	8.0	-	-
2.0	12.0	5.0	-	-	8.0	1.0	-	8.0	-	-
2.0	12.0	6.0	-	-	9.0	1.0	-	9.0	-	-
2.0	12.0	7.0	127.0	71.0	11.0	1.0	116.3	12.4	98.1	91.1
2.0	12.0	8.0	740.0	80.0	13.0	1.0	492.3	29.0	393.6	378.5
2.0	12.0	9.0	847.0	94.0	15.0	1.0	717.7	40.7	555.9	535.1
2.0	12.0	10.0	903.0	102.0	16.0	1.0	878.2	48.0	660.1	635.0
2.0	12.0	11.0	928.0	105.0	17.0	-	966.0	59.1	684.8	658.6
2.0	12.0	12.0	934.0	103.0	17.0	-	972.6	59.9	686.6	660.4
2.0	12.0	13.0	911.0	100.0	17.0	-	892.5	57.4	637.8	613.7
2.0	12.0	14.0	862.0	93.0	17.0	-	742.2	52.0	542.8	522.5
2.0	12.0	15.0	755.0	83.0	16.0	-	520.8	42.5	391.4	376.4
2.0	12.0	16.0	542.0	59.0	15.0	1.0	256.8	25.4	194.4	185.1
2.0	12.0	17.0	-	-	13.0	1.0	-	13.0	-	-

2.0	12.0	18.0	-	-	13.0	1.0	-	13.0	-	-
2.0	12.0	19.0	-	-	12.0	1.0	-	12.0	-	-
2.0	12.0	20.0	-	-	12.0	1.0	-	12.0	-	-
2.0	12.0	21.0	-	-	11.0	1.0	-	11.0	-	-
2.0	12.0	22.0	-	-	11.0	1.0	-	11.0	-	-
2.0	12.0	23.0	-	-	10.0	1.0	-	10.0	-	-
2.0	13.0	-	-	-	9.0	1.0	-	9.0	-	-
2.0	13.0	1.0	-	-	9.0	1.0	-	9.0	-	-
2.0	13.0	2.0	-	-	8.0	1.0	-	8.0	-	-
2.0	13.0	3.0	-	-	8.0	2.0	-	8.0	-	-
2.0	13.0	4.0	-	-	8.0	2.0	-	8.0	-	-
2.0	13.0	5.0	-	-	8.0	2.0	-	8.0	-	-
2.0	13.0	6.0	-	-	8.0	2.0	-	8.0	-	-
2.0	13.0	7.0	554.0	51.0	10.0	2.0	238.4	15.2	185.3	176.2
2.0	13.0	8.0	763.0	75.0	12.0	2.0	498.8	26.4	403.8	388.4
2.0	13.0	9.0	852.0	92.0	14.0	2.0	720.7	36.0	571.7	550.3
2.0	13.0	10.0	899.0	100.0	15.0	2.0	874.5	42.3	677.1	651.3
2.0	13.0	11.0	919.0	103.0	16.0	2.0	957.6	46.2	728.0	700.0
2.0	13.0	12.0	619.0	225.0	16.0	1.0	831.5	47.8	627.0	603.3
2.0	13.0	13.0	872.0	110.0	16.0	1.0	878.4	48.6	658.4	633.4
2.0	13.0	14.0	720.0	121.0	16.0	1.0	673.8	42.4	518.6	499.1
2.0	13.0	15.0	693.0	95.0	15.0	1.0	500.9	34.7	392.1	377.1
2.0	13.0	16.0	177.0	80.0	14.0	1.0	149.9	20.5	121.9	114.4
2.0	13.0	17.0	-	-	13.0	1.0	-	13.0	-	-
2.0	13.0	18.0	-	-	13.0	1.0	-	13.0	-	-
2.0	13.0	19.0	-	-	12.0	1.0	-	12.0	-	-
2.0	13.0	20.0	-	-	12.0	1.0	-	12.0	-	-
2.0	13.0	21.0	-	-	13.0	1.0	-	13.0	-	-
2.0	13.0	22.0	-	-	13.0	1.0	-	13.0	-	-
2.0	13.0	23.0	-	-	13.0	1.0	-	13.0	-	-
2.0	14.0	-	-	-	13.0	1.0	-	13.0	-	-
2.0	14.0	1.0	-	-	13.0	1.0	-	13.0	-	-
2.0	14.0	2.0	-	-	13.0	1.0	-	13.0	-	-
2.0	14.0	3.0	-	-	13.0	1.0	-	13.0	-	-
2.0	14.0	4.0	-	-	13.0	1.0	-	13.0	-	-
2.0	14.0	5.0	-	-	13.0	1.0	-	13.0	-	-
2.0	14.0	6.0	-	-	14.0	1.0	-	14.0	-	-
2.0	14.0	7.0	61.0	74.0	15.0	1.0	95.3	15.7	81.2	74.5
2.0	14.0	8.0	451.0	127.0	16.0	1.0	388.2	28.2	314.4	301.8
2.0	14.0	9.0	654.0	138.0	17.0	1.0	634.0	39.3	495.4	476.8
2.0	14.0	10.0	521.0	232.0	18.0	2.0	707.4	40.0	554.4	533.6
2.0	14.0	11.0	507.0	266.0	18.0	2.0	769.5	42.1	597.6	575.1
2.0	14.0	12.0	379.0	317.0	18.0	2.0	699.3	40.4	548.0	527.4
2.0	14.0	13.0	321.0	300.0	18.0	2.0	606.6	37.4	482.1	464.0
2.0	14.0	14.0	342.0	234.0	18.0	1.0	508.5	37.4	402.6	387.2
2.0	14.0	15.0	10.0	147.0	17.0	1.0	149.9	23.5	127.4	119.7
2.0	14.0	16.0	177.0	82.0	16.0	1.0	152.1	20.0	124.2	116.5
2.0	14.0	17.0	-	-	16.0	1.0	-	16.0	-	-
2.0	14.0	18.0	-	-	16.0	2.0	-	16.0	-	-
2.0	14.0	19.0	-	-	16.0	2.0	-	16.0	-	-
2.0	14.0	20.0	-	-	17.0	2.0	-	17.0	-	-
2.0	14.0	21.0	-	-	17.0	2.0	-	17.0	-	-
2.0	14.0	22.0	-	-	17.0	2.0	-	17.0	-	-
2.0	14.0	23.0	-	-	17.0	2.0	-	17.0	-	-
2.0	15.0	-	-	-	17.0	2.0	-	17.0	-	-
2.0	15.0	1.0	-	-	17.0	2.0	-	17.0	-	-
2.0	15.0	2.0	-	-	17.0	2.0	-	17.0	-	-
2.0	15.0	3.0	-	-	17.0	2.0	-	17.0	-	-
2.0	15.0	4.0	-	-	17.0	1.0	-	17.0	-	-
2.0	15.0	5.0	-	-	17.0	1.0	-	17.0	-	-
2.0	15.0	6.0	-	-	17.0	1.0	-	17.0	-	-
2.0	15.0	7.0	-	58.0	18.0	2.0	56.1	17.5	49.1	43.0
2.0	15.0	8.0	635.0	99.0	19.0	2.0	460.7	31.3	365.7	351.5
2.0	15.0	9.0	551.0	173.0	19.0	2.0	595.2	37.0	470.9	453.2
2.0	15.0	10.0	807.0	129.0	20.0	2.0	838.6	45.5	638.7	614.6
2.0	15.0	11.0	397.0	313.0	20.0	2.0	710.5	42.9	549.6	529.0
2.0	15.0	12.0	290.0	343.0	20.0	2.0	647.0	40.6	506.6	487.6
2.0	15.0	13.0	810.0	129.0	20.0	2.0	849.8	46.0	645.8	621.3
2.0	15.0	14.0	754.0	119.0	20.0	1.0	699.1	46.8	526.0	506.3
2.0	15.0	15.0	250.0	169.0	19.0	1.0	325.6	32.8	260.8	249.7
2.0	15.0	16.0	-	49.0	18.0	2.0	46.5	18.8	40.5	34.6
2.0	15.0	17.0	-	-	18.0	2.0	-	18.0	-	-
2.0	15.0	18.0	-	-	18.0	2.0	-	18.0	-	-
2.0	15.0	19.0	-	-	18.0	2.0	-	18.0	-	-
2.0	15.0	20.0	-	-	18.0	2.0	-	18.0	-	-
2.0	15.0	21.0	-	-	18.0	2.0	-	18.0	-	-
2.0	15.0	22.0	-	-	18.0	2.0	-	18.0	-	-
2.0	15.0	23.0	-	-	18.0	2.0	-	18.0	-	-
2.0	16.0	-	-	-	18.0	2.0	-	18.0	-	-
2.0	16.0	1.0	-	-	18.0	2.0	-	18.0	-	-
2.0	16.0	2.0	-	-	18.0	2.0	-	18.0	-	-

2.0	16.0	3.0	-	-	18.0	2.0	-	18.0	-	-
2.0	16.0	4.0	-	-	18.0	2.0	-	18.0	-	-
2.0	16.0	5.0	-	-	18.0	2.0	-	18.0	-	-
2.0	16.0	6.0	-	-	17.0	2.0	-	17.0	-	-
2.0	16.0	7.0	-	53.0	17.0	2.0	50.8	16.3	44.7	38.8
2.0	16.0	8.0	112.0	168.0	17.0	1.0	239.0	23.5	201.1	191.7
2.0	16.0	9.0	18.0	206.0	17.0	1.0	215.6	24.0	182.9	173.9
2.0	16.0	10.0	11.0	225.0	18.0	1.0	229.9	25.4	193.9	184.6
2.0	16.0	11.0	9.0	226.0	18.0	1.0	229.2	25.4	193.3	184.0
2.0	16.0	12.0	116.0	356.0	18.0	1.0	478.5	34.2	386.9	372.0
2.0	16.0	13.0	315.0	307.0	18.0	2.0	610.0	36.6	486.8	468.6
2.0	16.0	14.0	209.0	260.0	18.0	2.0	431.4	31.9	351.5	337.7
2.0	16.0	15.0	472.0	134.0	17.0	2.0	418.9	29.8	338.0	324.7
2.0	16.0	16.0	196.0	84.0	16.0	1.0	160.9	22.3	129.7	121.9
2.0	16.0	17.0	-	-	15.0	1.0	-	15.0	-	-
2.0	16.0	18.0	-	-	14.0	2.0	-	14.0	-	-
2.0	16.0	19.0	-	-	13.0	3.0	-	13.0	-	-
2.0	16.0	20.0	-	-	12.0	3.0	-	12.0	-	-
2.0	16.0	21.0	-	-	11.0	3.0	-	11.0	-	-
2.0	16.0	22.0	-	-	10.0	3.0	-	10.0	-	-
2.0	16.0	23.0	-	-	9.0	3.0	-	9.0	-	-
2.0	17.0	-	-	-	9.0	3.0	-	9.0	-	-
2.0	17.0	1.0	-	-	8.0	3.0	-	8.0	-	-
2.0	17.0	2.0	-	-	8.0	3.0	-	8.0	-	-
2.0	17.0	3.0	-	-	7.0	3.0	-	7.0	-	-
2.0	17.0	4.0	-	-	7.0	3.0	-	7.0	-	-
2.0	17.0	5.0	-	-	6.0	3.0	-	6.0	-	-
2.0	17.0	6.0	-	-	6.0	3.0	-	6.0	-	-
2.0	17.0	7.0	-	38.0	6.0	3.0	36.0	4.8	33.3	27.6
2.0	17.0	8.0	15.0	147.0	7.0	2.0	152.5	9.6	137.9	130.0
2.0	17.0	9.0	56.0	239.0	8.0	2.0	286.3	15.4	252.4	241.6
2.0	17.0	10.0	193.0	322.0	9.0	2.0	509.4	24.0	432.2	415.8
2.0	17.0	11.0	277.0	358.0	9.0	2.0	651.3	29.2	539.2	519.0
2.0	17.0	12.0	241.0	356.0	10.0	2.0	605.3	29.5	500.6	481.8
2.0	17.0	13.0	120.0	326.0	10.0	2.0	452.9	24.7	383.0	368.3
2.0	17.0	14.0	29.0	227.0	10.0	2.0	253.7	17.9	221.4	211.4
2.0	17.0	15.0	32.0	164.0	10.0	2.0	185.3	14.8	163.5	155.0
2.0	17.0	16.0	81.0	88.0	9.0	1.0	121.7	12.1	105.6	98.4
2.0	17.0	17.0	-	-	8.0	1.0	-	8.0	-	-
2.0	17.0	18.0	-	-	7.0	1.0	-	7.0	-	-
2.0	17.0	19.0	-	-	7.0	1.0	-	7.0	-	-
2.0	17.0	20.0	-	-	6.0	1.0	-	6.0	-	-
2.0	17.0	21.0	-	-	5.0	1.0	-	5.0	-	-
2.0	17.0	22.0	-	-	5.0	1.0	-	5.0	-	-
2.0	17.0	23.0	-	-	5.0	1.0	-	5.0	-	-
2.0	18.0	-	-	-	5.0	1.0	-	5.0	-	-
2.0	18.0	1.0	-	-	4.0	1.0	-	4.0	-	-
2.0	18.0	2.0	-	-	4.0	1.0	-	4.0	-	-
2.0	18.0	3.0	-	-	4.0	1.0	-	4.0	-	-
2.0	18.0	4.0	-	-	4.0	1.0	-	4.0	-	-
2.0	18.0	5.0	-	-	4.0	1.0	-	4.0	-	-
2.0	18.0	6.0	-	-	4.0	1.0	-	4.0	-	-
2.0	18.0	7.0	-	42.0	5.0	1.0	39.8	3.3	37.1	31.3
2.0	18.0	8.0	202.0	169.0	6.0	1.0	288.8	14.2	252.3	241.5
2.0	18.0	9.0	861.0	99.0	7.0	1.0	743.8	32.8	599.9	577.3
2.0	18.0	10.0	639.0	196.0	9.0	-	776.9	44.8	594.2	571.8
2.0	18.0	11.0	674.0	211.0	10.0	-	871.7	49.1	652.6	627.9
2.0	18.0	12.0	944.0	103.0	11.0	-	994.0	54.6	722.5	694.7
2.0	18.0	13.0	923.0	99.0	11.0	-	912.8	52.8	669.1	643.6
2.0	18.0	14.0	874.0	93.0	12.0	-	760.4	48.2	567.9	546.6
2.0	18.0	15.0	784.0	80.0	11.0	-	539.2	38.7	413.7	398.0
2.0	18.0	16.0	600.0	58.0	10.0	-	279.5	26.2	210.9	201.2
2.0	18.0	17.0	108.0	11.0	9.0	1.0	32.3	9.4	23.1	17.6
2.0	18.0	18.0	-	-	9.0	1.0	-	9.0	-	-
2.0	18.0	19.0	-	-	9.0	1.0	-	9.0	-	-
2.0	18.0	20.0	-	-	8.0	1.0	-	8.0	-	-
2.0	18.0	21.0	-	-	8.0	1.0	-	8.0	-	-
2.0	18.0	22.0	-	-	8.0	1.0	-	8.0	-	-
2.0	18.0	23.0	-	-	8.0	1.0	-	8.0	-	-
2.0	19.0	-	-	-	8.0	1.0	-	8.0	-	-
2.0	19.0	1.0	-	-	8.0	1.0	-	8.0	-	-
2.0	19.0	2.0	-	-	8.0	1.0	-	8.0	-	-
2.0	19.0	3.0	-	-	8.0	1.0	-	8.0	-	-
2.0	19.0	4.0	-	-	9.0	1.0	-	9.0	-	-
2.0	19.0	5.0	-	-	9.0	1.0	-	9.0	-	-
2.0	19.0	6.0	-	-	10.0	1.0	-	10.0	-	-
2.0	19.0	7.0	416.0	62.0	12.0	1.0	210.2	17.0	165.9	157.3
2.0	19.0	8.0	-	30.0	14.0	1.0	28.4	13.8	25.3	19.7
2.0	19.0	9.0	497.0	198.0	15.0	1.0	587.2	33.7	472.9	455.1
2.0	19.0	10.0	668.0	191.0	16.0	1.0	797.8	44.8	610.4	587.4
2.0	19.0	11.0	889.0	121.0	16.0	1.0	969.0	51.2	717.6	690.0

2.0	19.0	12.0	617.0	238.0	17.0	1.0	850.8	49.4	636.3	612.2
2.0	19.0	13.0	213.0	330.0	16.0	1.0	537.5	37.9	426.3	410.2
2.0	19.0	14.0	594.0	170.0	16.0	1.0	640.4	39.5	501.2	482.4
2.0	19.0	15.0	159.0	183.0	15.0	1.0	283.7	27.1	234.6	224.3
2.0	19.0	16.0	-	72.0	14.0	1.0	69.8	15.9	61.5	55.2
2.0	19.0	17.0	-	5.0	13.0	1.0	4.7	10.7	4.3	-
2.0	19.0	18.0	-	-	13.0	1.0	-	13.0	-	-
2.0	19.0	19.0	-	-	13.0	1.0	-	13.0	-	-
2.0	19.0	20.0	-	-	13.0	1.0	-	13.0	-	-
2.0	19.0	21.0	-	-	12.0	1.0	-	12.0	-	-
2.0	19.0	22.0	-	-	12.0	1.0	-	12.0	-	-
2.0	19.0	23.0	-	-	12.0	1.0	-	12.0	-	-
2.0	20.0	-	-	-	12.0	1.0	-	12.0	-	-
2.0	20.0	1.0	-	-	12.0	1.0	-	12.0	-	-
2.0	20.0	2.0	-	-	12.0	1.0	-	12.0	-	-
2.0	20.0	3.0	-	-	12.0	1.0	-	12.0	-	-
2.0	20.0	4.0	-	-	12.0	1.0	-	12.0	-	-
2.0	20.0	5.0	-	-	12.0	1.0	-	12.0	-	-
2.0	20.0	6.0	-	-	12.0	1.0	-	12.0	-	-
2.0	20.0	7.0	488.0	57.0	13.0	1.0	229.2	18.8	178.1	169.2
2.0	20.0	8.0	500.0	127.0	14.0	1.0	419.5	28.2	340.0	326.6
2.0	20.0	9.0	348.0	237.0	15.0	1.0	513.1	33.6	414.0	398.3
2.0	20.0	10.0	517.0	244.0	16.0	1.0	722.9	42.0	561.2	540.2
2.0	20.0	11.0	365.0	333.0	17.0	1.0	706.0	43.5	544.4	524.0
2.0	20.0	12.0	650.0	226.0	17.0	1.0	870.3	48.6	653.5	628.7
2.0	20.0	13.0	455.0	274.0	17.0	1.0	706.3	44.4	541.8	521.5
2.0	20.0	14.0	815.0	109.0	17.0	1.0	737.1	44.4	561.8	540.7
2.0	20.0	15.0	-	91.0	16.0	1.0	86.9	21.8	74.5	68.0
2.0	20.0	16.0	534.0	66.0	15.0	1.0	266.0	22.8	205.6	196.0
2.0	20.0	17.0	-	14.0	14.0	1.0	13.3	13.6	11.8	6.5
2.0	20.0	18.0	-	-	14.0	1.0	-	14.0	-	-
2.0	20.0	19.0	-	-	14.0	1.0	-	14.0	-	-
2.0	20.0	20.0	-	-	14.0	1.0	-	14.0	-	-
2.0	20.0	21.0	-	-	14.0	1.0	-	14.0	-	-
2.0	20.0	22.0	-	-	13.0	1.0	-	13.0	-	-
2.0	20.0	23.0	-	-	13.0	1.0	-	13.0	-	-
2.0	21.0	-	-	-	13.0	1.0	-	13.0	-	-
2.0	21.0	1.0	-	-	13.0	1.0	-	13.0	-	-
2.0	21.0	2.0	-	-	14.0	1.0	-	14.0	-	-
2.0	21.0	3.0	-	-	14.0	1.0	-	14.0	-	-
2.0	21.0	4.0	-	-	14.0	1.0	-	14.0	-	-
2.0	21.0	5.0	-	-	14.0	1.0	-	14.0	-	-
2.0	21.0	6.0	-	-	14.0	1.0	-	14.0	-	-
2.0	21.0	7.0	-	39.0	15.0	2.0	37.0	13.8	32.9	27.2
2.0	21.0	8.0	-	70.0	16.0	2.0	66.5	16.0	58.6	52.3
2.0	21.0	9.0	-	117.0	16.0	2.0	112.1	17.6	98.0	90.9
2.0	21.0	10.0	-	121.0	16.0	2.0	115.8	17.9	101.1	94.0
2.0	21.0	11.0	-	137.0	17.0	2.0	131.5	19.5	114.0	106.6
2.0	21.0	12.0	8.0	221.0	17.0	2.0	222.9	22.4	190.7	181.5
2.0	21.0	13.0	9.0	220.0	18.0	2.0	222.6	23.8	189.2	180.0
2.0	21.0	14.0	26.0	228.0	18.0	2.0	243.9	24.5	206.4	196.8
2.0	21.0	15.0	-	27.0	17.0	2.0	25.6	16.7	22.5	17.0
2.0	21.0	16.0	-	67.0	17.0	2.0	64.5	16.9	56.6	50.4
2.0	21.0	17.0	-	4.0	17.0	2.0	3.8	15.2	3.3	-
2.0	21.0	18.0	-	-	17.0	2.0	-	17.0	-	-
2.0	21.0	19.0	-	-	17.0	2.0	-	17.0	-	-
2.0	21.0	20.0	-	-	17.0	2.0	-	17.0	-	-
2.0	21.0	21.0	-	-	17.0	3.0	-	17.0	-	-
2.0	21.0	22.0	-	-	18.0	3.0	-	18.0	-	-
2.0	21.0	23.0	-	-	18.0	3.0	-	18.0	-	-
2.0	22.0	-	-	-	18.0	3.0	-	18.0	-	-
2.0	22.0	1.0	-	-	19.0	3.0	-	19.0	-	-
2.0	22.0	2.0	-	-	19.0	3.0	-	19.0	-	-
2.0	22.0	3.0	-	-	19.0	3.0	-	19.0	-	-
2.0	22.0	4.0	-	-	19.0	4.0	-	19.0	-	-
2.0	22.0	5.0	-	-	18.0	4.0	-	18.0	-	-
2.0	22.0	6.0	-	-	18.0	4.0	-	18.0	-	-
2.0	22.0	7.0	22.0	83.0	17.0	4.0	91.3	17.6	78.9	72.3
2.0	22.0	8.0	105.0	180.0	17.0	4.0	247.9	21.8	210.7	201.0
2.0	22.0	9.0	80.0	260.0	17.0	4.0	326.1	24.3	276.0	264.5
2.0	22.0	10.0	199.0	336.0	18.0	5.0	530.5	29.2	439.0	422.5
2.0	22.0	11.0	114.0	369.0	17.0	5.0	490.1	27.8	408.6	393.1
2.0	22.0	12.0	35.0	315.0	17.0	5.0	357.0	24.7	302.1	289.9
2.0	22.0	13.0	13.0	239.0	16.0	5.0	245.5	20.8	211.5	201.7
2.0	22.0	14.0	-	117.0	16.0	5.0	112.0	17.6	98.0	90.9
2.0	22.0	15.0	-	65.0	15.0	5.0	61.7	15.1	54.6	48.5
2.0	22.0	16.0	-	81.0	15.0	4.0	78.9	15.4	69.6	63.2
2.0	22.0	17.0	-	6.0	14.0	4.0	5.7	12.5	5.1	-
2.0	22.0	18.0	-	-	13.0	4.0	-	13.0	-	-
2.0	22.0	19.0	-	-	12.0	4.0	-	12.0	-	-
2.0	22.0	20.0	-	-	10.0	4.0	-	10.0	-	-

2.0	22.0	21.0	-	-	9.0	3.0	-	9.0	-	-
2.0	22.0	22.0	-	-	8.0	3.0	-	8.0	-	-
2.0	22.0	23.0	-	-	8.0	3.0	-	8.0	-	-
2.0	23.0	-	-	-	7.0	3.0	-	7.0	-	-
2.0	23.0	1.0	-	-	7.0	2.0	-	7.0	-	-
2.0	23.0	2.0	-	-	7.0	2.0	-	7.0	-	-
2.0	23.0	3.0	-	-	6.0	2.0	-	6.0	-	-
2.0	23.0	4.0	-	-	6.0	1.0	-	6.0	-	-
2.0	23.0	5.0	-	-	6.0	1.0	-	6.0	-	-
2.0	23.0	6.0	-	-	7.0	1.0	-	7.0	-	-
2.0	23.0	7.0	618.0	60.0	9.0	1.0	278.2	16.6	217.6	207.7
2.0	23.0	8.0	816.0	82.0	10.0	1.0	550.7	29.1	441.9	425.2
2.0	23.0	9.0	910.0	93.0	11.0	-	782.4	45.4	592.8	570.5
2.0	23.0	10.0	777.0	151.0	12.0	-	854.4	50.4	634.6	610.6
2.0	23.0	11.0	978.0	102.0	13.0	-	1,031.7	57.5	738.3	709.8
2.0	23.0	12.0	980.0	101.0	14.0	-	1,035.2	59.6	732.3	704.0
2.0	23.0	13.0	962.0	97.0	14.0	-	953.2	57.0	683.0	657.0
2.0	23.0	14.0	920.0	90.0	14.0	-	794.0	51.4	583.3	561.4
2.0	23.0	15.0	837.0	78.0	13.0	1.0	572.2	35.9	445.6	428.8
2.0	23.0	16.0	660.0	58.0	12.0	1.0	303.2	24.5	230.7	220.4
2.0	23.0	17.0	165.0	15.0	11.0	1.0	45.5	12.1	31.4	25.8
2.0	23.0	18.0	-	-	11.0	1.0	-	11.0	-	-
2.0	23.0	19.0	-	-	11.0	1.0	-	11.0	-	-
2.0	23.0	20.0	-	-	11.0	1.0	-	11.0	-	-
2.0	23.0	21.0	-	-	11.0	2.0	-	11.0	-	-
2.0	23.0	22.0	-	-	11.0	2.0	-	11.0	-	-
2.0	23.0	23.0	-	-	11.0	2.0	-	11.0	-	-
2.0	24.0	-	-	-	11.0	2.0	-	11.0	-	-
2.0	24.0	1.0	-	-	11.0	1.0	-	11.0	-	-
2.0	24.0	2.0	-	-	11.0	1.0	-	11.0	-	-
2.0	24.0	3.0	-	-	12.0	1.0	-	12.0	-	-
2.0	24.0	4.0	-	-	12.0	1.0	-	12.0	-	-
2.0	24.0	5.0	-	-	12.0	1.0	-	12.0	-	-
2.0	24.0	6.0	77.0	11.0	14.0	-	24.5	11.3	17.7	12.3
2.0	24.0	7.0	587.0	59.0	15.0	-	268.0	24.7	202.4	192.9
2.0	24.0	8.0	774.0	82.0	17.0	-	529.1	39.8	403.2	387.9
2.0	24.0	9.0	665.0	155.0	18.0	-	673.6	48.0	504.2	485.3
2.0	24.0	10.0	466.0	272.0	18.0	-	712.5	50.4	529.5	509.7
2.0	24.0	11.0	608.0	249.0	19.0	-	855.1	56.3	616.0	592.8
2.0	24.0	12.0	906.0	119.0	19.0	-	987.5	61.4	691.2	664.8
2.0	24.0	13.0	881.0	117.0	19.0	-	912.2	59.9	643.4	619.0
2.0	24.0	14.0	828.0	111.0	18.0	1.0	753.9	47.0	567.2	545.9
2.0	24.0	15.0	739.0	95.0	17.0	1.0	537.0	38.3	414.0	398.3
2.0	24.0	16.0	443.0	80.0	16.0	1.0	248.3	26.2	191.3	182.1
2.0	24.0	17.0	99.0	16.0	15.0	1.0	35.0	15.3	25.5	19.9
2.0	24.0	18.0	-	-	15.0	1.0	-	15.0	-	-
2.0	24.0	19.0	-	-	14.0	1.0	-	14.0	-	-
2.0	24.0	20.0	-	-	14.0	1.0	-	14.0	-	-
2.0	24.0	21.0	-	-	14.0	1.0	-	14.0	-	-
2.0	24.0	22.0	-	-	14.0	-	-	14.0	-	-
2.0	24.0	23.0	-	-	14.0	-	-	14.0	-	-
2.0	25.0	-	-	-	13.0	-	-	13.0	-	-
2.0	25.0	1.0	-	-	13.0	1.0	-	13.0	-	-
2.0	25.0	2.0	-	-	12.0	1.0	-	12.0	-	-
2.0	25.0	3.0	-	-	12.0	1.0	-	12.0	-	-
2.0	25.0	4.0	-	-	12.0	1.0	-	12.0	-	-
2.0	25.0	5.0	-	-	12.0	1.0	-	12.0	-	-
2.0	25.0	6.0	-	8.0	12.0	1.0	7.6	9.5	6.9	1.6
2.0	25.0	7.0	142.0	92.0	12.0	2.0	144.5	14.2	122.1	114.6
2.0	25.0	8.0	228.0	181.0	13.0	2.0	323.6	21.6	273.8	262.4
2.0	25.0	9.0	-	152.0	14.0	2.0	146.7	17.9	128.1	120.4
2.0	25.0	10.0	1.0	171.0	15.0	1.0	166.1	19.5	144.0	135.9
2.0	25.0	11.0	20.0	284.0	16.0	1.0	298.2	25.5	251.5	240.7
2.0	25.0	12.0	148.0	381.0	16.0	-	546.6	39.7	429.9	413.6
2.0	25.0	13.0	842.0	131.0	17.0	-	894.8	54.7	649.7	625.0
2.0	25.0	14.0	804.0	117.0	17.0	-	743.5	52.1	544.7	524.3
2.0	25.0	15.0	724.0	97.0	17.0	-	531.3	43.8	398.5	383.3
2.0	25.0	16.0	550.0	69.0	16.0	-	276.8	31.7	205.6	196.0
2.0	25.0	17.0	115.0	17.0	14.0	-	38.5	16.8	27.5	21.9
2.0	25.0	18.0	-	-	14.0	1.0	-	14.0	-	-
2.0	25.0	19.0	-	-	13.0	1.0	-	13.0	-	-
2.0	25.0	20.0	-	-	13.0	1.0	-	13.0	-	-
2.0	25.0	21.0	-	-	12.0	1.0	-	12.0	-	-
2.0	25.0	22.0	-	-	12.0	1.0	-	12.0	-	-
2.0	25.0	23.0	-	-	11.0	1.0	-	11.0	-	-
2.0	26.0	-	-	-	11.0	1.0	-	11.0	-	-
2.0	26.0	1.0	-	-	11.0	1.0	-	11.0	-	-
2.0	26.0	2.0	-	-	11.0	1.0	-	11.0	-	-
2.0	26.0	3.0	-	-	11.0	1.0	-	11.0	-	-
2.0	26.0	4.0	-	-	11.0	1.0	-	11.0	-	-
2.0	26.0	5.0	-	-	11.0	1.0	-	11.0	-	-

2.0	26.0	6.0	-	10.0	12.0	1.0	9.5	9.6	8.6	3.3
2.0	26.0	7.0	171.0	92.0	13.0	1.0	158.1	16.1	131.8	124.0
2.0	26.0	8.0	107.0	188.0	14.0	1.0	257.5	21.9	218.8	208.9
2.0	26.0	9.0	46.0	251.0	14.0	1.0	290.4	23.8	246.5	235.9
2.0	26.0	10.0	3.0	186.0	15.0	1.0	182.8	21.2	157.2	148.8
2.0	26.0	11.0	5.0	195.0	16.0	1.0	193.7	21.8	166.1	157.5
2.0	26.0	12.0	19.0	280.0	17.0	1.0	293.1	26.5	246.0	235.3
2.0	26.0	13.0	6.0	202.0	17.0	1.0	201.5	23.9	171.1	162.4
2.0	26.0	14.0	-	82.0	17.0	2.0	78.0	18.2	68.0	61.6
2.0	26.0	15.0	-	75.0	16.0	2.0	71.3	16.3	62.7	56.4
2.0	26.0	16.0	-	68.0	16.0	2.0	65.2	16.1	57.4	51.2
2.0	26.0	17.0	-	6.0	16.0	2.0	5.7	14.2	5.0	-
2.0	26.0	18.0	-	-	16.0	2.0	-	16.0	-	-
2.0	26.0	19.0	-	-	16.0	3.0	-	16.0	-	-
2.0	26.0	20.0	-	-	17.0	3.0	-	17.0	-	-
2.0	26.0	21.0	-	-	17.0	3.0	-	17.0	-	-
2.0	26.0	22.0	-	-	17.0	3.0	-	17.0	-	-
2.0	26.0	23.0	-	-	18.0	3.0	-	18.0	-	-
2.0	27.0	-	-	-	18.0	3.0	-	18.0	-	-
2.0	27.0	1.0	-	-	18.0	3.0	-	18.0	-	-
2.0	27.0	2.0	-	-	18.0	2.0	-	18.0	-	-
2.0	27.0	3.0	-	-	17.0	2.0	-	17.0	-	-
2.0	27.0	4.0	-	-	16.0	1.0	-	16.0	-	-
2.0	27.0	5.0	-	-	15.0	1.0	-	15.0	-	-
2.0	27.0	6.0	-	2.0	15.0	1.0	1.9	12.2	1.7	-
2.0	27.0	7.0	-	45.0	15.0	2.0	42.7	14.0	37.9	32.1
2.0	27.0	8.0	56.0	182.0	16.0	1.0	216.3	21.6	184.7	175.6
2.0	27.0	9.0	40.0	249.0	17.0	1.0	283.6	26.3	238.0	227.6
2.0	27.0	10.0	117.0	345.0	18.0	1.0	458.8	33.8	371.5	357.1
2.0	27.0	11.0	203.0	385.0	18.0	1.0	602.3	39.7	473.8	456.0
2.0	27.0	12.0	281.0	373.0	18.0	1.0	674.6	42.8	522.2	502.7
2.0	27.0	13.0	62.0	325.0	18.0	1.0	389.0	33.9	315.0	302.3
2.0	27.0	14.0	33.0	245.0	18.0	1.0	274.2	28.1	228.2	218.0
2.0	27.0	15.0	121.0	197.0	17.0	-	276.4	30.0	226.2	216.0
2.0	27.0	16.0	36.0	98.0	16.0	-	111.6	22.0	94.2	87.2
2.0	27.0	17.0	-	12.0	15.0	-	11.4	13.1	10.1	4.9
2.0	27.0	18.0	-	-	15.0	1.0	-	15.0	-	-
2.0	27.0	19.0	-	-	14.0	1.0	-	14.0	-	-
2.0	27.0	20.0	-	-	14.0	2.0	-	14.0	-	-
2.0	27.0	21.0	-	-	13.0	2.0	-	13.0	-	-
2.0	27.0	22.0	-	-	13.0	1.0	-	13.0	-	-
2.0	27.0	23.0	-	-	12.0	1.0	-	12.0	-	-
2.0	28.0	-	-	-	12.0	1.0	-	12.0	-	-
2.0	28.0	1.0	-	-	12.0	1.0	-	12.0	-	-
2.0	28.0	2.0	-	-	12.0	1.0	-	12.0	-	-
2.0	28.0	3.0	-	-	11.0	1.0	-	11.0	-	-
2.0	28.0	4.0	-	-	11.0	1.0	-	11.0	-	-
2.0	28.0	5.0	-	-	11.0	2.0	-	11.0	-	-
2.0	28.0	6.0	-	9.0	12.0	2.0	8.5	9.9	7.7	2.5
2.0	28.0	7.0	16.0	93.0	12.0	2.0	96.4	12.7	85.5	78.7
2.0	28.0	8.0	-	127.0	13.0	2.0	122.6	15.0	108.5	101.2
2.0	28.0	9.0	17.0	222.0	13.0	2.0	230.1	18.5	200.2	190.8
2.0	28.0	10.0	22.0	271.0	14.0	1.0	285.6	23.5	243.0	232.5
2.0	28.0	11.0	16.0	272.0	15.0	1.0	281.9	24.7	238.5	228.1
2.0	28.0	12.0	20.0	287.0	16.0	1.0	301.1	26.4	252.8	241.9
2.0	28.0	13.0	36.0	301.0	17.0	1.0	339.8	28.8	281.9	270.3
2.0	28.0	14.0	79.0	276.0	17.0	1.0	342.3	29.2	283.2	271.5
2.0	28.0	15.0	-	105.0	16.0	1.0	100.6	19.5	87.2	80.4
2.0	28.0	16.0	-	64.0	15.0	1.0	61.1	15.2	54.0	47.9
2.0	28.0	17.0	-	7.0	14.0	1.0	6.6	11.8	5.9	0.7
2.0	28.0	18.0	-	-	13.0	1.0	-	13.0	-	-
2.0	28.0	19.0	-	-	13.0	1.0	-	13.0	-	-
2.0	28.0	20.0	-	-	13.0	1.0	-	13.0	-	-
2.0	28.0	21.0	-	-	13.0	1.0	-	13.0	-	-
2.0	28.0	22.0	-	-	13.0	1.0	-	13.0	-	-
2.0	28.0	23.0	-	-	13.0	1.0	-	13.0	-	-
3.0	1.0	-	-	-	13.0	1.0	-	13.0	-	-
3.0	1.0	1.0	-	-	13.0	1.0	-	13.0	-	-
3.0	1.0	2.0	-	-	13.0	1.0	-	13.0	-	-
3.0	1.0	3.0	-	-	12.0	1.0	-	12.0	-	-
3.0	1.0	4.0	-	-	12.0	1.0	-	12.0	-	-
3.0	1.0	5.0	-	-	12.0	1.0	-	12.0	-	-
3.0	1.0	6.0	65.0	18.0	12.0	1.0	28.9	10.1	22.5	17.0
3.0	1.0	7.0	489.0	79.0	14.0	-	261.5	23.4	202.9	193.4
3.0	1.0	8.0	691.0	106.0	15.0	-	519.1	37.4	402.2	386.9
3.0	1.0	9.0	788.0	124.0	17.0	-	738.5	49.2	549.3	528.7
3.0	1.0	10.0	18.0	265.0	18.0	-	275.7	35.5	221.5	211.5
3.0	1.0	11.0	206.0	390.0	19.0	-	610.7	44.8	468.0	450.4
3.0	1.0	12.0	103.0	383.0	19.0	-	494.1	43.3	381.6	366.9
3.0	1.0	13.0	103.0	350.0	20.0	-	451.9	41.7	351.7	338.0
3.0	1.0	14.0	789.0	127.0	20.0	-	747.7	51.9	548.6	528.0

3.0	1.0	15.0	679.0	115.0	19.0	-	527.7	45.5	393.1	378.1
3.0	1.0	16.0	497.0	84.0	18.0	-	274.5	33.5	204.1	194.6
3.0	1.0	17.0	102.0	22.0	17.0	-	41.7	19.9	30.6	24.9
3.0	1.0	18.0	-	-	16.0	-	-	16.0	-	-
3.0	1.0	19.0	-	-	15.0	1.0	-	15.0	-	-
3.0	1.0	20.0	-	-	15.0	1.0	-	15.0	-	-
3.0	1.0	21.0	-	-	14.0	1.0	-	14.0	-	-
3.0	1.0	22.0	-	-	14.0	1.0	-	14.0	-	-
3.0	1.0	23.0	-	-	13.0	1.0	-	13.0	-	-
3.0	2.0	-	-	-	13.0	1.0	-	13.0	-	-
3.0	2.0	1.0	-	-	13.0	1.0	-	13.0	-	-
3.0	2.0	2.0	-	-	13.0	-	-	13.0	-	-
3.0	2.0	3.0	-	-	13.0	-	-	13.0	-	-
3.0	2.0	4.0	-	-	13.0	-	-	13.0	-	-
3.0	2.0	5.0	-	-	13.0	-	-	13.0	-	-
3.0	2.0	6.0	132.0	20.0	14.0	1.0	42.6	13.0	30.7	25.1
3.0	2.0	7.0	577.0	71.0	15.0	1.0	285.3	23.1	220.1	210.1
3.0	2.0	8.0	765.0	95.0	17.0	1.0	551.0	36.0	429.7	413.4
3.0	2.0	9.0	859.0	107.0	18.0	2.0	775.5	41.6	600.0	577.4
3.0	2.0	10.0	912.0	112.0	19.0	2.0	934.5	48.0	703.4	676.5
3.0	2.0	11.0	425.0	335.0	19.0	2.0	780.1	44.3	599.3	576.8
3.0	2.0	12.0	938.0	113.0	20.0	2.0	1,022.9	51.3	757.1	727.7
3.0	2.0	13.0	919.0	109.0	19.0	2.0	940.5	49.1	703.8	676.9
3.0	2.0	14.0	875.0	101.0	19.0	2.0	785.8	44.5	599.4	576.8
3.0	2.0	15.0	790.0	88.0	18.0	1.0	562.2	40.2	429.5	413.2
3.0	2.0	16.0	618.0	66.0	17.0	1.0	299.6	29.1	224.8	214.7
3.0	2.0	17.0	181.0	22.0	16.0	1.0	54.3	17.5	37.6	31.8
3.0	2.0	18.0	-	-	15.0	2.0	-	15.0	-	-
3.0	2.0	19.0	-	-	15.0	2.0	-	15.0	-	-
3.0	2.0	20.0	-	-	15.0	2.0	-	15.0	-	-
3.0	2.0	21.0	-	-	15.0	2.0	-	15.0	-	-
3.0	2.0	22.0	-	-	15.0	2.0	-	15.0	-	-
3.0	2.0	23.0	-	-	15.0	2.0	-	15.0	-	-
3.0	3.0	-	-	-	15.0	2.0	-	15.0	-	-
3.0	3.0	1.0	-	-	15.0	2.0	-	15.0	-	-
3.0	3.0	2.0	-	-	15.0	2.0	-	15.0	-	-
3.0	3.0	3.0	-	-	15.0	2.0	-	15.0	-	-
3.0	3.0	4.0	-	-	15.0	2.0	-	15.0	-	-
3.0	3.0	5.0	-	-	15.0	2.0	-	15.0	-	-
3.0	3.0	6.0	110.0	22.0	16.0	2.0	41.8	15.3	30.9	25.2
3.0	3.0	7.0	66.0	104.0	18.0	2.0	127.8	20.0	107.8	100.6
3.0	3.0	8.0	201.0	205.0	19.0	2.0	329.6	27.7	271.8	260.4
3.0	3.0	9.0	209.0	293.0	19.0	3.0	466.3	31.1	381.7	367.0
3.0	3.0	10.0	210.0	357.0	20.0	3.0	563.9	35.2	453.5	436.4
3.0	3.0	11.0	762.0	187.0	20.0	3.0	948.1	45.4	723.9	696.1
3.0	3.0	12.0	740.0	199.0	20.0	3.0	940.8	46.5	714.5	687.1
3.0	3.0	13.0	299.0	344.0	19.0	3.0	639.6	37.8	507.8	488.7
3.0	3.0	14.0	262.0	284.0	19.0	3.0	506.1	33.2	409.9	394.3
3.0	3.0	15.0	-	131.0	19.0	3.0	126.3	22.5	108.0	100.7
3.0	3.0	16.0	319.0	112.0	18.0	3.0	234.6	23.1	187.6	178.5
3.0	3.0	17.0	16.0	20.0	18.0	3.0	21.6	17.5	18.0	12.6
3.0	3.0	18.0	-	-	18.0	4.0	-	18.0	-	-
3.0	3.0	19.0	-	-	19.0	4.0	-	19.0	-	-
3.0	3.0	20.0	-	-	19.0	4.0	-	19.0	-	-
3.0	3.0	21.0	-	-	19.0	4.0	-	19.0	-	-
3.0	3.0	22.0	-	-	19.0	5.0	-	19.0	-	-
3.0	3.0	23.0	-	-	19.0	5.0	-	19.0	-	-
3.0	4.0	-	-	-	19.0	5.0	-	19.0	-	-
3.0	4.0	1.0	-	-	19.0	5.0	-	19.0	-	-
3.0	4.0	2.0	-	-	20.0	4.0	-	20.0	-	-
3.0	4.0	3.0	-	-	19.0	4.0	-	19.0	-	-
3.0	4.0	4.0	-	-	19.0	3.0	-	19.0	-	-
3.0	4.0	5.0	-	-	18.0	3.0	-	18.0	-	-
3.0	4.0	6.0	13.0	17.0	16.0	3.0	18.1	14.6	15.3	10.0
3.0	4.0	7.0	-	60.0	15.0	3.0	57.1	14.6	50.6	44.5
3.0	4.0	8.0	58.0	194.0	15.0	3.0	229.5	19.6	197.9	188.5
3.0	4.0	9.0	151.0	294.0	15.0	3.0	423.5	25.6	356.1	342.2
3.0	4.0	10.0	80.0	349.0	15.0	4.0	429.6	25.4	362.3	348.2
3.0	4.0	11.0	840.0	161.0	15.0	4.0	990.9	39.1	781.6	751.1
3.0	4.0	12.0	866.0	152.0	14.0	4.0	1,006.7	40.1	790.3	759.3
3.0	4.0	13.0	610.0	237.0	14.0	4.0	814.4	35.5	653.5	628.7
3.0	4.0	14.0	869.0	112.0	14.0	4.0	795.0	34.5	637.8	613.7
3.0	4.0	15.0	802.0	92.0	13.0	3.0	574.6	29.7	462.5	445.1
3.0	4.0	16.0	642.0	68.0	12.0	3.0	310.8	20.8	242.5	232.0
3.0	4.0	17.0	223.0	23.0	11.0	2.0	60.6	12.1	41.9	36.0
3.0	4.0	18.0	-	-	11.0	2.0	-	11.0	-	-
3.0	4.0	19.0	-	-	10.0	2.0	-	10.0	-	-
3.0	4.0	20.0	-	-	9.0	2.0	-	9.0	-	-
3.0	4.0	21.0	-	-	8.0	2.0	-	8.0	-	-
3.0	4.0	22.0	-	-	7.0	2.0	-	7.0	-	-
3.0	4.0	23.0	-	-	7.0	2.0	-	7.0	-	-

3.0	5.0	-	-	-	6.0	2.0	-	6.0	-	-
3.0	5.0	1.0	-	-	6.0	2.0	-	6.0	-	-
3.0	5.0	2.0	-	-	5.0	2.0	-	5.0	-	-
3.0	5.0	3.0	-	-	5.0	2.0	-	5.0	-	-
3.0	5.0	4.0	-	-	5.0	2.0	-	5.0	-	-
3.0	5.0	5.0	-	-	5.0	2.0	-	5.0	-	-
3.0	5.0	6.0	-	15.0	5.0	2.0	14.2	3.2	13.2	7.9
3.0	5.0	7.0	18.0	101.0	6.0	1.0	104.7	7.0	95.2	88.2
3.0	5.0	8.0	195.0	204.0	8.0	1.0	325.3	18.1	280.7	269.1
3.0	5.0	9.0	383.0	261.0	9.0	-	573.0	34.3	461.3	443.9
3.0	5.0	10.0	582.0	245.0	11.0	-	795.1	46.0	604.8	582.0
3.0	5.0	11.0	995.0	100.0	12.0	-	1,067.4	57.3	764.6	734.9
3.0	5.0	12.0	995.0	99.0	13.0	1.0	1,066.7	52.8	783.6	753.0
3.0	5.0	13.0	651.0	222.0	13.0	1.0	836.3	45.8	637.0	612.9
3.0	5.0	14.0	685.0	158.0	14.0	1.0	707.3	41.4	548.5	528.0
3.0	5.0	15.0	861.0	64.0	13.0	1.0	576.4	35.5	450.2	433.3
3.0	5.0	16.0	692.0	62.0	12.0	1.0	322.6	25.2	245.7	235.1
3.0	5.0	17.0	267.0	23.0	11.0	1.0	66.4	13.1	44.5	38.5
3.0	5.0	18.0	-	-	10.0	1.0	-	10.0	-	-
3.0	5.0	19.0	-	-	10.0	1.0	-	10.0	-	-
3.0	5.0	20.0	-	-	10.0	1.0	-	10.0	-	-
3.0	5.0	21.0	-	-	9.0	1.0	-	9.0	-	-
3.0	5.0	22.0	-	-	9.0	-	-	9.0	-	-
3.0	5.0	23.0	-	-	9.0	-	-	9.0	-	-
3.0	6.0	-	-	-	9.0	-	-	9.0	-	-
3.0	6.0	1.0	-	-	8.0	-	-	8.0	-	-
3.0	6.0	2.0	-	-	8.0	-	-	8.0	-	-
3.0	6.0	3.0	-	-	9.0	1.0	-	9.0	-	-
3.0	6.0	4.0	-	-	9.0	1.0	-	9.0	-	-
3.0	6.0	5.0	-	-	9.0	1.0	-	9.0	-	-
3.0	6.0	6.0	-	15.0	9.0	1.0	14.2	6.9	13.0	7.7
3.0	6.0	7.0	7.0	100.0	11.0	1.0	99.6	11.9	89.1	82.2
3.0	6.0	8.0	688.0	122.0	13.0	1.0	541.7	30.6	435.2	418.8
3.0	6.0	9.0	773.0	144.0	14.0	1.0	759.6	41.4	588.9	566.8
3.0	6.0	10.0	823.0	155.0	15.0	1.0	914.9	48.4	687.2	661.0
3.0	6.0	11.0	854.0	155.0	16.0	1.0	1,000.9	52.7	735.3	707.0
3.0	6.0	12.0	864.0	148.0	17.0	1.0	1,003.1	54.1	731.4	703.2
3.0	6.0	13.0	6.0	203.0	17.0	1.0	202.0	28.6	167.8	159.2
3.0	6.0	14.0	-	131.0	17.0	1.0	125.5	20.4	108.4	101.1
3.0	6.0	15.0	80.0	204.0	16.0	1.0	252.7	23.6	213.7	203.9
3.0	6.0	16.0	-	15.0	15.0	2.0	14.2	14.4	12.6	7.3
3.0	6.0	17.0	123.0	26.0	14.0	2.0	47.7	13.2	35.8	30.0
3.0	6.0	18.0	-	-	14.0	2.0	-	14.0	-	-
3.0	6.0	19.0	-	-	14.0	2.0	-	14.0	-	-
3.0	6.0	20.0	-	-	14.0	2.0	-	14.0	-	-
3.0	6.0	21.0	-	-	15.0	2.0	-	15.0	-	-
3.0	6.0	22.0	-	-	15.0	3.0	-	15.0	-	-
3.0	6.0	23.0	-	-	15.0	3.0	-	15.0	-	-
3.0	7.0	-	-	-	16.0	3.0	-	16.0	-	-
3.0	7.0	1.0	-	-	16.0	3.0	-	16.0	-	-
3.0	7.0	2.0	-	-	17.0	4.0	-	17.0	-	-
3.0	7.0	3.0	-	-	18.0	4.0	-	18.0	-	-
3.0	7.0	4.0	-	-	18.0	4.0	-	18.0	-	-
3.0	7.0	5.0	-	-	19.0	3.0	-	19.0	-	-
3.0	7.0	6.0	69.0	28.0	19.0	2.0	40.1	18.3	31.2	25.5
3.0	7.0	7.0	487.0	89.0	19.0	2.0	275.5	25.6	213.5	203.7
3.0	7.0	8.0	262.0	207.0	19.0	1.0	374.1	31.8	302.0	289.8
3.0	7.0	9.0	385.0	265.0	19.0	1.0	580.0	39.4	455.2	438.1
3.0	7.0	10.0	373.0	329.0	20.0	1.0	690.0	45.1	527.6	507.9
3.0	7.0	11.0	835.0	153.0	20.0	2.0	981.9	49.9	732.6	704.3
3.0	7.0	12.0	510.0	310.0	19.0	3.0	838.3	43.0	648.2	623.7
3.0	7.0	13.0	329.0	346.0	19.0	3.0	668.7	38.2	529.8	509.9
3.0	7.0	14.0	268.0	291.0	18.0	3.0	517.9	32.7	420.7	404.7
3.0	7.0	15.0	730.0	105.0	17.0	3.0	549.1	32.0	437.8	421.3
3.0	7.0	16.0	63.0	111.0	16.0	4.0	133.7	19.3	113.5	106.1
3.0	7.0	17.0	153.0	28.0	14.0	4.0	53.7	14.0	39.4	33.5
3.0	7.0	18.0	-	-	12.0	5.0	-	12.0	-	-
3.0	7.0	19.0	-	-	11.0	5.0	-	11.0	-	-
3.0	7.0	20.0	-	-	9.0	5.0	-	9.0	-	-
3.0	7.0	21.0	-	-	8.0	5.0	-	8.0	-	-
3.0	7.0	22.0	-	-	7.0	5.0	-	7.0	-	-
3.0	7.0	23.0	-	-	5.0	5.0	-	5.0	-	-
3.0	8.0	-	-	-	5.0	5.0	-	5.0	-	-
3.0	8.0	1.0	-	-	4.0	5.0	-	4.0	-	-
3.0	8.0	2.0	-	-	4.0	5.0	-	4.0	-	-
3.0	8.0	3.0	-	-	4.0	4.0	-	4.0	-	-
3.0	8.0	4.0	-	-	4.0	4.0	-	4.0	-	-
3.0	8.0	5.0	-	-	4.0	4.0	-	4.0	-	-
3.0	8.0	6.0	63.0	27.0	4.0	4.0	38.0	3.2	31.7	26.0
3.0	8.0	7.0	295.0	103.0	4.0	3.0	216.9	8.1	185.7	176.6
3.0	8.0	8.0	799.0	103.0	6.0	3.0	589.7	21.2	494.8	476.2

3.0	8.0	9.0	886.0	116.0	7.0	3.0	817.2	29.6	671.5	645.9
3.0	8.0	10.0	929.0	124.0	8.0	2.0	973.7	38.9	768.1	738.2
3.0	8.0	11.0	947.0	128.0	9.0	2.0	1,056.8	42.8	818.1	785.9
3.0	8.0	12.0	951.0	125.0	10.0	2.0	1,057.0	44.1	813.0	781.0
3.0	8.0	13.0	933.0	120.0	10.0	2.0	971.8	41.7	755.9	726.6
3.0	8.0	14.0	892.0	110.0	11.0	2.0	813.5	37.8	642.1	617.8
3.0	8.0	15.0	810.0	96.0	10.0	2.0	585.3	29.6	471.6	453.9
3.0	8.0	16.0	646.0	72.0	9.0	2.0	316.9	19.5	249.3	238.5
3.0	8.0	17.0	237.0	27.0	8.0	2.0	64.9	9.2	45.6	39.6
3.0	8.0	18.0	-	-	8.0	1.0	-	8.0	-	-
3.0	8.0	19.0	-	-	8.0	1.0	-	8.0	-	-
3.0	8.0	20.0	-	-	8.0	1.0	-	8.0	-	-
3.0	8.0	21.0	-	-	8.0	-	-	8.0	-	-
3.0	8.0	22.0	-	-	8.0	-	-	8.0	-	-
3.0	8.0	23.0	-	-	7.0	-	-	7.0	-	-
3.0	9.0	-	-	-	7.0	-	-	7.0	-	-
3.0	9.0	1.0	-	-	6.0	-	-	6.0	-	-
3.0	9.0	2.0	-	-	6.0	-	-	6.0	-	-
3.0	9.0	3.0	-	-	5.0	1.0	-	5.0	-	-
3.0	9.0	4.0	-	-	5.0	1.0	-	5.0	-	-
3.0	9.0	5.0	-	-	5.0	1.0	-	5.0	-	-
3.0	9.0	6.0	271.0	29.0	7.0	1.0	71.9	7.2	50.5	44.4
3.0	9.0	7.0	291.0	105.0	9.0	1.0	218.0	14.8	181.5	172.5
3.0	9.0	8.0	829.0	89.0	11.0	1.0	593.0	31.2	474.5	456.7
3.0	9.0	9.0	639.0	179.0	12.0	1.0	698.1	37.9	551.5	530.9
3.0	9.0	10.0	945.0	108.0	13.0	1.0	972.7	48.0	732.1	703.9
3.0	9.0	11.0	961.0	112.0	14.0	1.0	1,054.7	52.8	774.5	744.3
3.0	9.0	12.0	957.0	114.0	14.0	1.0	1,052.3	53.2	771.4	741.3
3.0	9.0	13.0	623.0	238.0	15.0	1.0	830.0	47.3	627.1	603.5
3.0	9.0	14.0	894.0	104.0	14.0	1.0	809.1	44.6	617.0	593.8
3.0	9.0	15.0	358.0	187.0	14.0	1.0	408.4	31.5	329.2	316.2
3.0	9.0	16.0	103.0	115.0	13.0	1.0	155.4	19.0	130.9	123.2
3.0	9.0	17.0	4.0	25.0	11.0	1.0	24.3	10.1	21.7	16.2
3.0	9.0	18.0	-	-	11.0	1.0	-	11.0	-	-
3.0	9.0	19.0	-	-	11.0	1.0	-	11.0	-	-
3.0	9.0	20.0	-	-	11.0	1.0	-	11.0	-	-
3.0	9.0	21.0	-	-	10.0	1.0	-	10.0	-	-
3.0	9.0	22.0	-	-	10.0	1.0	-	10.0	-	-
3.0	9.0	23.0	-	-	10.0	1.0	-	10.0	-	-
3.0	10.0	-	-	-	10.0	1.0	-	10.0	-	-
3.0	10.0	1.0	-	-	9.0	1.0	-	9.0	-	-
3.0	10.0	2.0	-	-	9.0	1.0	-	9.0	-	-
3.0	10.0	3.0	-	-	9.0	1.0	-	9.0	-	-
3.0	10.0	4.0	-	-	9.0	1.0	-	9.0	-	-
3.0	10.0	5.0	-	-	9.0	1.0	-	9.0	-	-
3.0	10.0	6.0	95.0	30.0	11.0	1.0	45.3	9.9	35.7	29.9
3.0	10.0	7.0	642.0	72.0	12.0	1.0	320.4	21.4	250.8	240.0
3.0	10.0	8.0	797.0	93.0	14.0	1.0	580.2	34.3	457.6	440.4
3.0	10.0	9.0	499.0	235.0	15.0	1.0	646.4	38.9	508.4	489.3
3.0	10.0	10.0	509.0	281.0	16.0	1.0	772.3	44.3	593.0	570.7
3.0	10.0	11.0	46.0	360.0	17.0	1.0	412.5	34.3	333.4	320.2
3.0	10.0	12.0	45.0	360.0	17.0	1.0	411.5	32.0	336.2	323.0
3.0	10.0	13.0	271.0	362.0	18.0	1.0	633.8	40.4	496.5	477.9
3.0	10.0	14.0	3.0	184.0	17.0	1.0	180.2	25.4	151.9	143.7
3.0	10.0	15.0	175.0	221.0	17.0	-	331.3	31.2	269.1	257.8
3.0	10.0	16.0	546.0	85.0	16.0	-	294.1	30.3	221.9	211.9
3.0	10.0	17.0	158.0	30.0	15.0	-	55.4	18.8	39.7	33.9
3.0	10.0	18.0	-	-	14.0	-	-	14.0	-	-
3.0	10.0	19.0	-	-	14.0	1.0	-	14.0	-	-
3.0	10.0	20.0	-	-	13.0	1.0	-	13.0	-	-
3.0	10.0	21.0	-	-	13.0	1.0	-	13.0	-	-
3.0	10.0	22.0	-	-	13.0	1.0	-	13.0	-	-
3.0	10.0	23.0	-	-	13.0	1.0	-	13.0	-	-
3.0	11.0	-	-	-	13.0	1.0	-	13.0	-	-
3.0	11.0	1.0	-	-	13.0	1.0	-	13.0	-	-
3.0	11.0	2.0	-	-	12.0	1.0	-	12.0	-	-
3.0	11.0	3.0	-	-	12.0	1.0	-	12.0	-	-
3.0	11.0	4.0	-	-	12.0	-	-	12.0	-	-
3.0	11.0	5.0	-	-	12.0	-	-	12.0	-	-
3.0	11.0	6.0	-	13.0	12.0	1.0	12.3	9.9	11.1	5.8
3.0	11.0	7.0	-	59.0	13.0	2.0	56.0	12.4	50.1	44.1
3.0	11.0	8.0	-	93.0	13.0	2.0	88.6	13.7	78.8	72.2
3.0	11.0	9.0	-	49.0	14.0	2.0	46.6	13.6	41.5	35.6
3.0	11.0	10.0	2.0	172.0	15.0	2.0	167.5	18.2	146.0	137.9
3.0	11.0	11.0	-	102.0	15.0	2.0	97.4	16.6	85.5	78.8
3.0	11.0	12.0	128.0	412.0	15.0	2.0	558.8	30.5	460.0	442.7
3.0	11.0	13.0	123.0	376.0	15.0	2.0	505.7	30.9	415.3	399.5
3.0	11.0	14.0	178.0	308.0	15.0	2.0	458.1	29.3	378.5	363.9
3.0	11.0	15.0	2.0	159.0	15.0	2.0	155.0	19.8	134.1	126.2
3.0	11.0	16.0	69.0	116.0	14.0	2.0	140.5	16.9	120.5	113.0
3.0	11.0	17.0	146.0	31.0	13.0	2.0	54.4	13.1	40.5	34.7

3.0	11.0	18.0	-	-	13.0	2.0	-	13.0	-	-
3.0	11.0	19.0	-	-	12.0	1.0	-	12.0	-	-
3.0	11.0	20.0	-	-	12.0	1.0	-	12.0	-	-
3.0	11.0	21.0	-	-	11.0	1.0	-	11.0	-	-
3.0	11.0	22.0	-	-	11.0	1.0	-	11.0	-	-
3.0	11.0	23.0	-	-	10.0	1.0	-	10.0	-	-
3.0	12.0	-	-	-	10.0	1.0	-	10.0	-	-
3.0	12.0	1.0	-	-	10.0	1.0	-	10.0	-	-
3.0	12.0	2.0	-	-	10.0	1.0	-	10.0	-	-
3.0	12.0	3.0	-	-	9.0	1.0	-	9.0	-	-
3.0	12.0	4.0	-	-	9.0	1.0	-	9.0	-	-
3.0	12.0	5.0	-	-	9.0	1.0	-	9.0	-	-
3.0	12.0	6.0	233.0	35.0	10.0	1.0	71.3	10.1	51.4	45.3
3.0	12.0	7.0	596.0	84.0	12.0	1.0	318.4	21.5	251.1	240.3
3.0	12.0	8.0	758.0	109.0	14.0	1.0	578.6	34.2	457.3	440.1
3.0	12.0	9.0	871.0	110.0	15.0	1.0	806.4	44.1	617.0	593.8
3.0	12.0	10.0	912.0	119.0	16.0	1.0	960.0	50.9	711.5	684.2
3.0	12.0	11.0	931.0	122.0	17.0	1.0	1,041.0	55.1	755.2	725.9
3.0	12.0	12.0	932.0	122.0	18.0	1.0	1,040.4	56.3	749.5	720.5
3.0	12.0	13.0	915.0	117.0	18.0	1.0	956.2	53.8	697.7	671.0
3.0	12.0	14.0	874.0	108.0	18.0	1.0	799.8	48.7	597.2	574.7
3.0	12.0	15.0	803.0	92.0	17.0	1.0	578.1	39.9	443.0	426.3
3.0	12.0	16.0	653.0	70.0	16.0	1.0	317.5	28.9	238.9	228.4
3.0	12.0	17.0	265.0	29.0	14.0	1.0	68.7	16.1	46.2	40.2
3.0	12.0	18.0	-	-	13.0	2.0	-	13.0	-	-
3.0	12.0	19.0	-	-	13.0	1.0	-	13.0	-	-
3.0	12.0	20.0	-	-	12.0	1.0	-	12.0	-	-
3.0	12.0	21.0	-	-	12.0	1.0	-	12.0	-	-
3.0	12.0	22.0	-	-	12.0	1.0	-	12.0	-	-
3.0	12.0	23.0	-	-	12.0	1.0	-	12.0	-	-
3.0	13.0	-	-	-	11.0	2.0	-	11.0	-	-
3.0	13.0	1.0	-	-	11.0	1.0	-	11.0	-	-
3.0	13.0	2.0	-	-	11.0	1.0	-	11.0	-	-
3.0	13.0	3.0	-	-	11.0	1.0	-	11.0	-	-
3.0	13.0	4.0	-	-	11.0	1.0	-	11.0	-	-
3.0	13.0	5.0	-	-	11.0	-	-	11.0	-	-
3.0	13.0	6.0	51.0	33.0	13.0	-	40.5	11.7	33.6	27.8
3.0	13.0	7.0	468.0	90.0	14.0	-	275.4	24.2	216.4	206.5
3.0	13.0	8.0	501.0	172.0	15.0	1.0	488.9	31.9	392.9	377.9
3.0	13.0	9.0	530.0	225.0	16.0	1.0	662.7	39.9	518.7	499.3
3.0	13.0	10.0	568.0	269.0	17.0	1.0	815.4	46.7	618.4	595.1
3.0	13.0	11.0	607.0	287.0	17.0	2.0	912.0	45.6	695.9	669.3
3.0	13.0	12.0	467.0	335.0	17.0	2.0	825.3	43.6	636.5	612.4
3.0	13.0	13.0	551.0	272.0	18.0	2.0	799.7	43.4	616.7	593.4
3.0	13.0	14.0	579.0	204.0	17.0	2.0	673.2	38.8	529.6	509.7
3.0	13.0	15.0	549.0	148.0	17.0	2.0	485.8	32.8	387.4	372.5
3.0	13.0	16.0	234.0	114.0	16.0	1.0	204.6	24.3	164.5	155.9
3.0	13.0	17.0	44.0	30.0	15.0	1.0	36.1	15.1	29.6	23.9
3.0	13.0	18.0	-	-	15.0	1.0	-	15.0	-	-
3.0	13.0	19.0	-	-	14.0	2.0	-	14.0	-	-
3.0	13.0	20.0	-	-	14.0	1.0	-	14.0	-	-
3.0	13.0	21.0	-	-	14.0	1.0	-	14.0	-	-
3.0	13.0	22.0	-	-	14.0	1.0	-	14.0	-	-
3.0	13.0	23.0	-	-	15.0	2.0	-	15.0	-	-
3.0	14.0	-	-	-	15.0	2.0	-	15.0	-	-
3.0	14.0	1.0	-	-	16.0	2.0	-	16.0	-	-
3.0	14.0	2.0	-	-	16.0	1.0	-	16.0	-	-
3.0	14.0	3.0	-	-	16.0	1.0	-	16.0	-	-
3.0	14.0	4.0	-	-	15.0	1.0	-	15.0	-	-
3.0	14.0	5.0	-	-	15.0	1.0	-	15.0	-	-
3.0	14.0	6.0	-	2.0	16.0	2.0	1.9	13.9	1.7	-
3.0	14.0	7.0	-	79.0	16.0	1.0	75.4	16.0	66.4	60.1
3.0	14.0	8.0	-	111.0	17.0	-	106.1	19.7	91.9	85.0
3.0	14.0	9.0	3.0	186.0	17.0	-	181.9	23.9	154.5	146.2
3.0	14.0	10.0	148.0	386.0	18.0	-	539.3	40.4	422.7	406.7
3.0	14.0	11.0	106.0	415.0	19.0	-	529.2	43.9	407.3	391.8
3.0	14.0	12.0	2.0	159.0	20.0	1.0	154.8	26.8	129.7	122.0
3.0	14.0	13.0	6.0	197.0	21.0	1.0	195.7	26.7	164.0	155.5
3.0	14.0	14.0	624.0	209.0	21.0	2.0	716.0	41.4	555.9	535.0
3.0	14.0	15.0	-	117.0	20.0	2.0	112.0	24.8	94.7	87.8
3.0	14.0	16.0	-	89.0	19.0	1.0	85.4	20.3	73.7	67.2
3.0	14.0	17.0	69.0	36.0	18.0	1.0	45.5	17.6	36.1	30.3
3.0	14.0	18.0	-	-	18.0	2.0	-	18.0	-	-
3.0	14.0	19.0	-	-	18.0	2.0	-	18.0	-	-
3.0	14.0	20.0	-	-	18.0	2.0	-	18.0	-	-
3.0	14.0	21.0	-	-	18.0	1.0	-	18.0	-	-
3.0	14.0	22.0	-	-	18.0	1.0	-	18.0	-	-
3.0	14.0	23.0	-	-	18.0	1.0	-	18.0	-	-
3.0	15.0	-	-	-	18.0	1.0	-	18.0	-	-
3.0	15.0	1.0	-	-	18.0	1.0	-	18.0	-	-
3.0	15.0	2.0	-	-	18.0	2.0	-	18.0	-	-

3.0	15.0	3.0	-	-	18.0	2.0	-	18.0	-	-
3.0	15.0	4.0	-	-	18.0	2.0	-	18.0	-	-
3.0	15.0	5.0	-	-	18.0	2.0	-	18.0	-	-
3.0	15.0	6.0	230.0	39.0	19.0	3.0	74.3	19.3	52.1	46.0
3.0	15.0	7.0	553.0	92.0	20.0	3.0	314.1	27.1	243.1	232.5
3.0	15.0	8.0	-	159.0	20.0	3.0	153.4	23.5	130.5	122.8
3.0	15.0	9.0	22.0	255.0	21.0	3.0	266.0	27.1	222.5	212.5
3.0	15.0	10.0	49.0	347.0	22.0	4.0	397.3	31.1	326.1	313.1
3.0	15.0	11.0	168.0	421.0	22.0	4.0	606.9	36.6	484.8	466.6
3.0	15.0	12.0	303.0	405.0	22.0	4.0	731.3	40.2	573.8	552.2
3.0	15.0	13.0	5.0	188.0	22.0	4.0	185.9	27.2	155.4	147.1
3.0	15.0	14.0	3.0	183.0	22.0	3.0	178.9	25.8	150.6	142.3
3.0	15.0	15.0	25.0	191.0	21.0	3.0	200.3	25.4	168.6	159.9
3.0	15.0	16.0	274.0	143.0	20.0	3.0	249.0	25.8	199.2	189.8
3.0	15.0	17.0	30.0	35.0	20.0	2.0	38.1	20.2	31.3	25.7
3.0	15.0	18.0	-	-	19.0	2.0	-	19.0	-	-
3.0	15.0	19.0	-	-	19.0	2.0	-	19.0	-	-
3.0	15.0	20.0	-	-	19.0	1.0	-	19.0	-	-
3.0	15.0	21.0	-	-	18.0	1.0	-	18.0	-	-
3.0	15.0	22.0	-	-	18.0	1.0	-	18.0	-	-
3.0	15.0	23.0	-	-	17.0	2.0	-	17.0	-	-
3.0	16.0	-	-	-	16.0	2.0	-	16.0	-	-
3.0	16.0	1.0	-	-	15.0	3.0	-	15.0	-	-
3.0	16.0	2.0	-	-	14.0	2.0	-	14.0	-	-
3.0	16.0	3.0	-	-	13.0	2.0	-	13.0	-	-
3.0	16.0	4.0	-	-	13.0	2.0	-	13.0	-	-
3.0	16.0	5.0	-	-	13.0	2.0	-	13.0	-	-
3.0	16.0	6.0	354.0	37.0	13.0	2.0	89.9	13.7	60.5	54.3
3.0	16.0	7.0	708.0	71.0	14.0	3.0	353.3	22.2	276.9	265.4
3.0	16.0	8.0	853.0	86.0	16.0	2.0	617.2	34.3	487.5	469.2
3.0	16.0	9.0	920.0	97.0	17.0	2.0	833.7	42.6	642.9	618.5
3.0	16.0	10.0	949.0	105.0	18.0	2.0	985.1	48.6	739.3	710.8
3.0	16.0	11.0	960.0	110.0	19.0	1.0	1,061.9	57.6	759.7	730.2
3.0	16.0	12.0	957.0	110.0	20.0	1.0	1,056.1	58.7	750.9	721.8
3.0	16.0	13.0	935.0	108.0	20.0	1.0	967.6	56.1	697.5	670.8
3.0	16.0	14.0	890.0	102.0	20.0	1.0	803.3	50.7	593.4	571.1
3.0	16.0	15.0	807.0	92.0	20.0	1.0	581.1	42.8	438.7	422.1
3.0	16.0	16.0	649.0	72.0	19.0	-	317.9	36.6	230.6	220.4
3.0	16.0	17.0	279.0	32.0	17.0	-	71.3	21.9	46.6	40.6
3.0	16.0	18.0	-	-	16.0	1.0	-	16.0	-	-
3.0	16.0	19.0	-	-	16.0	1.0	-	16.0	-	-
3.0	16.0	20.0	-	-	15.0	1.0	-	15.0	-	-
3.0	16.0	21.0	-	-	15.0	1.0	-	15.0	-	-
3.0	16.0	22.0	-	-	14.0	2.0	-	14.0	-	-
3.0	16.0	23.0	-	-	14.0	2.0	-	14.0	-	-
3.0	17.0	-	-	-	14.0	2.0	-	14.0	-	-
3.0	17.0	1.0	-	-	14.0	2.0	-	14.0	-	-
3.0	17.0	2.0	-	-	14.0	2.0	-	14.0	-	-
3.0	17.0	3.0	-	-	14.0	2.0	-	14.0	-	-
3.0	17.0	4.0	-	-	14.0	2.0	-	14.0	-	-
3.0	17.0	5.0	-	-	14.0	2.0	-	14.0	-	-
3.0	17.0	6.0	288.0	42.0	15.0	3.0	85.4	15.4	59.6	53.4
3.0	17.0	7.0	388.0	109.0	17.0	3.0	267.9	22.8	214.8	205.0
3.0	17.0	8.0	398.0	198.0	18.0	3.0	456.7	29.6	372.3	357.9
3.0	17.0	9.0	591.0	210.0	19.0	3.0	698.5	37.7	553.0	532.2
3.0	17.0	10.0	458.0	316.0	20.0	3.0	766.9	41.2	598.3	575.8
3.0	17.0	11.0	391.0	380.0	20.0	3.0	791.7	42.1	615.2	592.0
3.0	17.0	12.0	115.0	421.0	20.0	3.0	554.2	36.0	444.1	427.3
3.0	17.0	13.0	8.0	223.0	20.0	3.0	223.2	26.3	187.4	178.3
3.0	17.0	14.0	8.0	213.0	20.0	3.0	212.5	24.8	179.7	170.7
3.0	17.0	15.0	-	100.0	19.0	3.0	95.3	20.5	82.2	75.5
3.0	17.0	16.0	-	55.0	18.0	3.0	52.2	17.9	45.6	39.6
3.0	17.0	17.0	-	11.0	18.0	3.0	10.4	16.5	9.1	3.9
3.0	17.0	18.0	-	-	17.0	3.0	-	17.0	-	-
3.0	17.0	19.0	-	-	17.0	2.0	-	17.0	-	-
3.0	17.0	20.0	-	-	18.0	2.0	-	18.0	-	-
3.0	17.0	21.0	-	-	18.0	3.0	-	18.0	-	-
3.0	17.0	22.0	-	-	18.0	3.0	-	18.0	-	-
3.0	17.0	23.0	-	-	18.0	3.0	-	18.0	-	-
3.0	18.0	-	-	-	18.0	3.0	-	18.0	-	-
3.0	18.0	1.0	-	-	17.0	3.0	-	17.0	-	-
3.0	18.0	2.0	-	-	17.0	4.0	-	17.0	-	-
3.0	18.0	3.0	-	-	17.0	4.0	-	17.0	-	-
3.0	18.0	4.0	-	-	17.0	3.0	-	17.0	-	-
3.0	18.0	5.0	-	-	18.0	3.0	-	18.0	-	-
3.0	18.0	6.0	-	3.0	18.0	3.0	2.8	16.1	2.5	-
3.0	18.0	7.0	-	17.0	19.0	3.0	16.1	17.5	14.1	8.7
3.0	18.0	8.0	-	94.0	20.0	4.0	89.5	20.6	77.2	70.6
3.0	18.0	9.0	9.0	219.0	20.0	4.0	219.3	24.1	186.0	176.9
3.0	18.0	10.0	170.0	397.0	21.0	4.0	570.7	34.2	461.2	443.8
3.0	18.0	11.0	252.0	421.0	21.0	4.0	699.4	38.3	553.9	533.1

3.0	18.0	12.0	250.0	420.0	21.0	4.0	695.3	38.6	549.9	529.3
3.0	18.0	13.0	290.0	379.0	21.0	4.0	667.8	37.9	529.7	509.9
3.0	18.0	14.0	130.0	318.0	20.0	4.0	429.8	31.1	352.2	338.5
3.0	18.0	15.0	11.0	178.0	20.0	4.0	178.7	24.1	151.5	143.2
3.0	18.0	16.0	375.0	126.0	19.0	4.0	270.6	24.7	214.7	204.9
3.0	18.0	17.0	68.0	42.0	19.0	4.0	50.6	19.4	40.3	34.5
3.0	18.0	18.0	-	-	19.0	4.0	-	19.0	-	-
3.0	18.0	19.0	-	-	19.0	4.0	-	19.0	-	-
3.0	18.0	20.0	-	-	19.0	4.0	-	19.0	-	-
3.0	18.0	21.0	-	-	19.0	4.0	-	19.0	-	-
3.0	18.0	22.0	-	-	19.0	4.0	-	19.0	-	-
3.0	18.0	23.0	-	-	19.0	4.0	-	19.0	-	-
3.0	19.0	-	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	1.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	2.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	3.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	4.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	5.0	-	-	20.0	4.0	-	20.0	-	-
3.0	19.0	6.0	20.0	42.0	20.0	4.0	43.8	19.4	36.9	31.1
3.0	19.0	7.0	-	30.0	20.0	4.0	28.4	19.2	24.7	19.1
3.0	19.0	8.0	-	64.0	21.0	4.0	60.8	21.0	52.4	46.3
3.0	19.0	9.0	-	15.0	21.0	4.0	14.2	19.9	12.3	7.0
3.0	19.0	10.0	-	35.0	21.0	4.0	33.3	20.2	28.8	23.1
3.0	19.0	11.0	-	59.0	20.0	4.0	56.2	19.8	48.6	42.6
3.0	19.0	12.0	23.0	323.0	20.0	4.0	338.6	27.0	283.4	271.7
3.0	19.0	13.0	481.0	306.0	20.0	4.0	772.5	38.5	611.0	588.0
3.0	19.0	14.0	-	105.0	19.0	4.0	100.1	22.2	85.7	78.9
3.0	19.0	15.0	248.0	220.0	19.0	3.0	376.6	27.9	310.3	297.8
3.0	19.0	16.0	304.0	124.0	18.0	3.0	239.3	24.1	191.4	182.2
3.0	19.0	17.0	105.0	38.0	17.0	2.0	51.9	17.6	39.9	34.1
3.0	19.0	18.0	-	-	17.0	2.0	-	17.0	-	-
3.0	19.0	19.0	-	-	16.0	3.0	-	16.0	-	-
3.0	19.0	20.0	-	-	14.0	4.0	-	14.0	-	-
3.0	19.0	21.0	-	-	12.0	4.0	-	12.0	-	-
3.0	19.0	22.0	-	-	11.0	4.0	-	11.0	-	-
3.0	19.0	23.0	-	-	10.0	4.0	-	10.0	-	-
3.0	20.0	-	-	-	10.0	4.0	-	10.0	-	-
3.0	20.0	1.0	-	-	10.0	3.0	-	10.0	-	-
3.0	20.0	2.0	-	-	9.0	3.0	-	9.0	-	-
3.0	20.0	3.0	-	-	9.0	3.0	-	9.0	-	-
3.0	20.0	4.0	-	-	9.0	3.0	-	9.0	-	-
3.0	20.0	5.0	-	-	9.0	3.0	-	9.0	-	-
3.0	20.0	6.0	372.0	44.0	9.0	3.0	102.2	9.7	71.5	65.0
3.0	20.0	7.0	710.0	81.0	10.0	3.0	370.9	18.7	297.4	285.3
3.0	20.0	8.0	852.0	99.0	11.0	3.0	637.6	28.0	520.3	500.8
3.0	20.0	9.0	926.0	110.0	13.0	3.0	859.3	36.7	683.1	657.1
3.0	20.0	10.0	963.0	116.0	14.0	2.0	1,015.9	45.8	773.7	743.6
3.0	20.0	11.0	977.0	119.0	16.0	2.0	1,093.1	50.4	813.2	781.2
3.0	20.0	12.0	973.0	119.0	17.0	2.0	1,085.0	51.4	802.9	771.3
3.0	20.0	13.0	951.0	116.0	17.0	2.0	992.9	48.9	744.1	715.3
3.0	20.0	14.0	909.0	108.0	18.0	2.0	825.5	44.8	628.9	605.2
3.0	20.0	15.0	833.0	95.0	17.0	2.0	599.7	36.8	466.9	449.3
3.0	20.0	16.0	684.0	74.0	16.0	2.0	332.1	26.9	252.3	241.5
3.0	20.0	17.0	318.0	35.0	14.0	2.0	76.7	15.8	50.9	44.8
3.0	20.0	18.0	-	-	13.0	2.0	-	13.0	-	-
3.0	20.0	19.0	-	-	13.0	2.0	-	13.0	-	-
3.0	20.0	20.0	-	-	12.0	2.0	-	12.0	-	-
3.0	20.0	21.0	-	-	11.0	2.0	-	11.0	-	-
3.0	20.0	22.0	-	-	11.0	2.0	-	11.0	-	-
3.0	20.0	23.0	-	-	10.0	2.0	-	10.0	-	-
3.0	21.0	-	-	-	10.0	2.0	-	10.0	-	-
3.0	21.0	1.0	-	-	10.0	2.0	-	10.0	-	-
3.0	21.0	2.0	-	-	10.0	2.0	-	10.0	-	-
3.0	21.0	3.0	-	-	9.0	2.0	-	9.0	-	-
3.0	21.0	4.0	-	-	9.0	2.0	-	9.0	-	-
3.0	21.0	5.0	-	-	9.0	2.0	-	9.0	-	-
3.0	21.0	6.0	154.0	45.0	11.0	2.0	69.0	10.8	53.5	47.4
3.0	21.0	7.0	708.0	81.0	13.0	2.0	371.7	22.7	292.9	281.0
3.0	21.0	8.0	847.0	98.0	15.0	2.0	635.2	33.9	503.8	484.9
3.0	21.0	9.0	916.0	109.0	16.0	2.0	851.9	42.2	658.6	633.5
3.0	21.0	10.0	949.0	117.0	17.0	2.0	1,005.5	48.3	755.9	726.6
3.0	21.0	11.0	959.0	122.0	18.0	1.0	1,079.6	57.3	773.6	743.5
3.0	21.0	12.0	952.0	124.0	18.0	1.0	1,070.5	57.4	766.7	736.9
3.0	21.0	13.0	931.0	121.0	18.0	1.0	980.5	54.7	712.2	684.8
3.0	21.0	14.0	883.0	115.0	18.0	1.0	817.0	49.3	608.1	585.2
3.0	21.0	15.0	797.0	104.0	17.0	1.0	587.8	40.3	449.9	432.9
3.0	21.0	16.0	634.0	83.0	16.0	1.0	323.0	29.1	243.9	233.3
3.0	21.0	17.0	269.0	38.0	15.0	1.0	72.4	17.3	49.3	43.3
3.0	21.0	18.0	-	-	14.0	1.0	-	14.0	-	-
3.0	21.0	19.0	-	-	14.0	1.0	-	14.0	-	-
3.0	21.0	20.0	-	-	14.0	1.0	-	14.0	-	-

3.0	21.0	21.0	-	-	14.0	1.0	-	14.0	-	-
3.0	21.0	22.0	-	-	14.0	1.0	-	14.0	-	-
3.0	21.0	23.0	-	-	14.0	1.0	-	14.0	-	-
3.0	22.0	-	-	-	14.0	1.0	-	14.0	-	-
3.0	22.0	1.0	-	-	13.0	1.0	-	13.0	-	-
3.0	22.0	2.0	-	-	13.0	1.0	-	13.0	-	-
3.0	22.0	3.0	-	-	13.0	1.0	-	13.0	-	-
3.0	22.0	4.0	-	-	13.0	1.0	-	13.0	-	-
3.0	22.0	5.0	-	-	13.0	1.0	-	13.0	-	-
3.0	22.0	6.0	343.0	40.0	15.0	1.0	95.6	15.7	65.2	58.9
3.0	22.0	7.0	582.0	101.0	16.0	1.0	343.2	26.6	268.2	256.9
3.0	22.0	8.0	730.0	128.0	18.0	1.0	597.0	38.8	463.0	445.6
3.0	22.0	9.0	463.0	268.0	19.0	1.0	661.1	43.3	509.1	490.0
3.0	22.0	10.0	254.0	396.0	20.0	1.0	656.2	44.5	503.7	484.8
3.0	22.0	11.0	186.0	440.0	20.0	1.0	643.6	44.0	495.2	476.7
3.0	22.0	12.0	485.0	336.0	21.0	-	845.5	57.3	605.8	583.0
3.0	22.0	13.0	582.0	273.0	21.0	-	829.9	58.2	591.5	569.3
3.0	22.0	14.0	798.0	137.0	21.0	-	774.3	56.3	555.2	534.4
3.0	22.0	15.0	348.0	206.0	21.0	-	420.3	43.9	318.9	306.2
3.0	22.0	16.0	184.0	128.0	20.0	-	195.9	31.3	153.8	145.5
3.0	22.0	17.0	48.0	38.0	18.0	-	43.3	19.8	35.0	29.3
3.0	22.0	18.0	-	-	17.0	-	-	17.0	-	-
3.0	22.0	19.0	-	-	16.0	1.0	-	16.0	-	-
3.0	22.0	20.0	-	-	16.0	1.0	-	16.0	-	-
3.0	22.0	21.0	-	-	15.0	1.0	-	15.0	-	-
3.0	22.0	22.0	-	-	14.0	2.0	-	14.0	-	-
3.0	22.0	23.0	-	-	13.0	2.0	-	13.0	-	-
3.0	23.0	-	-	-	13.0	2.0	-	13.0	-	-
3.0	23.0	1.0	-	-	12.0	3.0	-	12.0	-	-
3.0	23.0	2.0	-	-	12.0	3.0	-	12.0	-	-
3.0	23.0	3.0	-	-	11.0	3.0	-	11.0	-	-
3.0	23.0	4.0	-	-	11.0	3.0	-	11.0	-	-
3.0	23.0	5.0	-	-	10.0	3.0	-	10.0	-	-
3.0	23.0	6.0	178.0	48.0	10.0	3.0	76.3	10.0	58.8	52.6
3.0	23.0	7.0	577.0	88.0	11.0	4.0	329.3	17.8	267.6	256.3
3.0	23.0	8.0	764.0	125.0	13.0	3.0	616.4	29.2	501.2	482.4
3.0	23.0	9.0	639.0	204.0	15.0	3.0	739.6	35.4	592.3	570.0
3.0	23.0	10.0	615.0	275.0	16.0	3.0	872.2	40.2	683.9	657.8
3.0	23.0	11.0	915.0	145.0	17.0	3.0	1,062.3	46.4	807.1	775.3
3.0	23.0	12.0	608.0	302.0	18.0	3.0	930.8	44.7	713.8	686.3
3.0	23.0	13.0	889.0	139.0	18.0	3.0	968.1	45.2	739.7	711.1
3.0	23.0	14.0	836.0	132.0	18.0	3.0	798.6	41.0	620.8	597.4
3.0	23.0	15.0	742.0	119.0	17.0	3.0	571.8	33.5	453.1	436.0
3.0	23.0	16.0	580.0	92.0	16.0	3.0	311.9	24.8	241.7	231.1
3.0	23.0	17.0	239.0	40.0	14.0	2.0	69.6	15.4	49.0	43.0
3.0	23.0	18.0	-	-	13.0	2.0	-	13.0	-	-
3.0	23.0	19.0	-	-	12.0	2.0	-	12.0	-	-
3.0	23.0	20.0	-	-	11.0	3.0	-	11.0	-	-
3.0	23.0	21.0	-	-	11.0	3.0	-	11.0	-	-
3.0	23.0	22.0	-	-	10.0	2.0	-	10.0	-	-
3.0	23.0	23.0	-	-	9.0	2.0	-	9.0	-	-
3.0	24.0	-	-	-	9.0	2.0	-	9.0	-	-
3.0	24.0	1.0	-	-	8.0	2.0	-	8.0	-	-
3.0	24.0	2.0	-	-	8.0	2.0	-	8.0	-	-
3.0	24.0	3.0	-	-	8.0	2.0	-	8.0	-	-
3.0	24.0	4.0	-	-	7.0	3.0	-	7.0	-	-
3.0	24.0	5.0	-	-	7.0	3.0	-	7.0	-	-
3.0	24.0	6.0	357.0	52.0	8.0	3.0	110.2	9.0	79.7	73.0
3.0	24.0	7.0	668.0	93.0	10.0	3.0	372.4	18.8	300.9	288.7
3.0	24.0	8.0	813.0	115.0	11.0	3.0	636.8	27.9	520.7	501.2
3.0	24.0	9.0	711.0	175.0	12.0	3.0	768.4	33.3	621.6	598.2
3.0	24.0	10.0	621.0	272.0	12.0	3.0	877.0	36.6	700.3	673.5
3.0	24.0	11.0	947.0	137.0	13.0	3.0	1,086.5	43.3	839.1	805.8
3.0	24.0	12.0	945.0	135.0	14.0	3.0	1,077.1	44.7	825.9	793.3
3.0	24.0	13.0	925.0	131.0	14.0	3.0	986.5	42.3	765.0	735.2
3.0	24.0	14.0	883.0	122.0	14.0	3.0	824.6	37.9	651.1	626.4
3.0	24.0	15.0	799.0	109.0	13.0	3.0	593.8	30.3	477.5	459.6
3.0	24.0	16.0	643.0	86.0	12.0	3.0	328.6	21.4	257.5	246.5
3.0	24.0	17.0	286.0	41.0	10.0	2.0	75.6	11.7	52.7	46.6
3.0	24.0	18.0	-	-	9.0	2.0	-	9.0	-	-
3.0	24.0	19.0	-	-	9.0	2.0	-	9.0	-	-
3.0	24.0	20.0	-	-	8.0	2.0	-	8.0	-	-
3.0	24.0	21.0	-	-	7.0	2.0	-	7.0	-	-
3.0	24.0	22.0	-	-	7.0	2.0	-	7.0	-	-
3.0	24.0	23.0	-	-	7.0	2.0	-	7.0	-	-
3.0	25.0	-	-	-	6.0	2.0	-	6.0	-	-
3.0	25.0	1.0	-	-	6.0	2.0	-	6.0	-	-
3.0	25.0	2.0	-	-	6.0	2.0	-	6.0	-	-
3.0	25.0	3.0	-	-	5.0	2.0	-	5.0	-	-
3.0	25.0	4.0	-	-	5.0	2.0	-	5.0	-	-
3.0	25.0	5.0	-	-	6.0	2.0	-	6.0	-	-

3.0	25.0	6.0	184.0	51.0	7.0	2.0	80.8	7.1	63.4	57.1
3.0	25.0	7.0	660.0	96.0	9.0	2.0	373.6	18.8	302.4	290.1
3.0	25.0	8.0	792.0	122.0	11.0	2.0	633.6	30.0	513.3	494.1
3.0	25.0	9.0	856.0	140.0	12.0	2.0	846.9	38.3	668.3	642.8
3.0	25.0	10.0	897.0	148.0	13.0	1.0	1,001.4	49.7	747.6	718.7
3.0	25.0	11.0	917.0	150.0	14.0	1.0	1,071.1	53.4	784.0	753.4
3.0	25.0	12.0	917.0	149.0	14.0	1.0	1,064.6	53.6	778.6	748.2
3.0	25.0	13.0	906.0	139.0	14.0	1.0	984.1	51.2	728.6	700.6
3.0	25.0	14.0	869.0	126.0	14.0	1.0	818.0	45.7	620.6	597.2
3.0	25.0	15.0	796.0	109.0	13.0	1.0	591.9	36.7	461.4	444.1
3.0	25.0	16.0	648.0	85.0	12.0	1.0	329.2	25.5	252.8	242.0
3.0	25.0	17.0	299.0	41.0	11.0	1.0	76.4	13.5	52.5	46.4
3.0	25.0	18.0	-	-	10.0	1.0	-	10.0	-	-
3.0	25.0	19.0	-	-	10.0	1.0	-	10.0	-	-
3.0	25.0	20.0	-	-	10.0	1.0	-	10.0	-	-
3.0	25.0	21.0	-	-	10.0	1.0	-	10.0	-	-
3.0	25.0	22.0	-	-	10.0	1.0	-	10.0	-	-
3.0	25.0	23.0	-	-	10.0	1.0	-	10.0	-	-
3.0	26.0	-	-	-	11.0	1.0	-	11.0	-	-
3.0	26.0	1.0	-	-	11.0	1.0	-	11.0	-	-
3.0	26.0	2.0	-	-	11.0	1.0	-	11.0	-	-
3.0	26.0	3.0	-	-	10.0	1.0	-	10.0	-	-
3.0	26.0	4.0	-	-	10.0	1.0	-	10.0	-	-
3.0	26.0	5.0	-	-	11.0	1.0	-	11.0	-	-
3.0	26.0	6.0	180.0	53.0	13.0	1.0	82.5	13.2	63.4	57.1
3.0	26.0	7.0	673.0	88.0	14.0	1.0	372.2	25.5	291.6	279.6
3.0	26.0	8.0	805.0	108.0	15.0	1.0	627.6	37.1	490.9	472.5
3.0	26.0	9.0	877.0	119.0	16.0	1.0	843.1	46.4	638.2	614.0
3.0	26.0	10.0	522.0	309.0	17.0	1.0	822.9	47.9	620.4	597.0
3.0	26.0	11.0	930.0	129.0	18.0	1.0	1,063.0	56.0	767.5	737.7
3.0	26.0	12.0	936.0	124.0	18.0	1.0	1,057.8	57.0	759.5	730.0
3.0	26.0	13.0	917.0	120.0	18.0	1.0	968.2	54.3	704.9	677.9
3.0	26.0	14.0	877.0	112.0	17.0	1.0	809.3	48.1	606.3	583.5
3.0	26.0	15.0	800.0	100.0	17.0	1.0	584.7	40.1	447.8	430.9
3.0	26.0	16.0	655.0	79.0	16.0	1.0	325.3	29.2	245.0	234.4
3.0	26.0	17.0	312.0	39.0	14.0	1.0	76.5	16.5	51.1	45.1
3.0	26.0	18.0	-	-	13.0	1.0	-	13.0	-	-
3.0	26.0	19.0	-	-	13.0	1.0	-	13.0	-	-
3.0	26.0	20.0	-	-	13.0	1.0	-	13.0	-	-
3.0	26.0	21.0	-	-	13.0	1.0	-	13.0	-	-
3.0	26.0	22.0	-	-	13.0	1.0	-	13.0	-	-
3.0	26.0	23.0	-	-	13.0	1.0	-	13.0	-	-
3.0	27.0	-	-	-	13.0	1.0	-	13.0	-	-
3.0	27.0	1.0	-	-	13.0	1.0	-	13.0	-	-
3.0	27.0	2.0	-	-	13.0	1.0	-	13.0	-	-
3.0	27.0	3.0	-	-	13.0	1.0	-	13.0	-	-
3.0	27.0	4.0	-	-	13.0	1.0	-	13.0	-	-
3.0	27.0	5.0	-	-	14.0	1.0	-	14.0	-	-
3.0	27.0	6.0	319.0	59.0	16.0	1.0	113.1	17.4	81.2	74.6
3.0	27.0	7.0	416.0	123.0	18.0	2.0	301.1	25.7	240.0	229.5
3.0	27.0	8.0	494.0	201.0	19.0	2.0	526.7	34.4	419.8	403.9
3.0	27.0	9.0	577.0	233.0	19.0	2.0	719.9	40.9	561.1	540.1
3.0	27.0	10.0	600.0	284.0	20.0	2.0	870.0	46.9	659.2	634.2
3.0	27.0	11.0	593.0	314.0	20.0	2.0	933.3	49.2	698.8	672.1
3.0	27.0	12.0	859.0	166.0	20.0	2.0	1,034.0	52.2	761.9	732.3
3.0	27.0	13.0	828.0	165.0	20.0	2.0	940.4	50.1	700.5	673.7
3.0	27.0	14.0	775.0	156.0	19.0	2.0	778.3	44.3	595.2	572.8
3.0	27.0	15.0	684.0	138.0	19.0	2.0	556.2	37.3	433.2	416.9
3.0	27.0	16.0	525.0	105.0	18.0	2.0	301.9	27.8	232.0	221.7
3.0	27.0	17.0	199.0	47.0	17.0	1.0	70.3	19.1	50.9	44.8
3.0	27.0	18.0	-	-	17.0	1.0	-	17.0	-	-
3.0	27.0	19.0	-	-	16.0	2.0	-	16.0	-	-
3.0	27.0	20.0	-	-	16.0	1.0	-	16.0	-	-
3.0	27.0	21.0	-	-	16.0	1.0	-	16.0	-	-
3.0	27.0	22.0	-	-	16.0	1.0	-	16.0	-	-
3.0	27.0	23.0	-	-	16.0	2.0	-	16.0	-	-
3.0	28.0	-	-	-	16.0	2.0	-	16.0	-	-
3.0	28.0	1.0	-	-	16.0	1.0	-	16.0	-	-
3.0	28.0	2.0	-	-	16.0	1.0	-	16.0	-	-
3.0	28.0	3.0	-	-	16.0	1.0	-	16.0	-	-
3.0	28.0	4.0	-	-	16.0	1.0	-	16.0	-	-
3.0	28.0	5.0	-	-	16.0	1.0	-	16.0	-	-
3.0	28.0	6.0	18.0	57.0	17.0	1.0	57.9	16.4	49.9	43.9
3.0	28.0	7.0	160.0	156.0	18.0	1.0	222.4	24.0	183.6	174.6
3.0	28.0	8.0	449.0	208.0	19.0	1.0	506.0	36.0	400.4	385.1
3.0	28.0	9.0	250.0	343.0	20.0	1.0	562.1	40.5	439.6	423.0
3.0	28.0	10.0	477.0	319.0	20.0	1.0	791.9	48.2	596.0	573.5
3.0	28.0	11.0	154.0	451.0	21.0	1.0	622.2	45.0	476.2	458.4
3.0	28.0	12.0	442.0	368.0	21.0	1.0	835.8	50.8	620.5	597.1
3.0	28.0	13.0	460.0	322.0	21.0	1.0	768.6	49.9	573.3	551.7
3.0	28.0	14.0	400.0	298.0	20.0	1.0	622.8	44.0	477.8	459.8

3.0	28.0	15.0	650.0	144.0	20.0	1.0	541.9	40.6	415.4	399.6
3.0	28.0	16.0	519.0	103.0	19.0	1.0	297.4	30.9	225.1	215.0
3.0	28.0	17.0	217.0	46.0	18.0	1.0	71.1	20.1	50.5	44.4
3.0	28.0	18.0	-	-	17.0	1.0	-	17.0	-	-
3.0	28.0	19.0	-	-	17.0	1.0	-	17.0	-	-
3.0	28.0	20.0	-	-	17.0	1.0	-	17.0	-	-
3.0	28.0	21.0	-	-	17.0	1.0	-	17.0	-	-
3.0	28.0	22.0	-	-	17.0	1.0	-	17.0	-	-
3.0	28.0	23.0	-	-	17.0	1.0	-	17.0	-	-
3.0	29.0	-	-	-	17.0	1.0	-	17.0	-	-
3.0	29.0	1.0	-	-	17.0	1.0	-	17.0	-	-
3.0	29.0	2.0	-	-	16.0	1.0	-	16.0	-	-
3.0	29.0	3.0	-	-	16.0	1.0	-	16.0	-	-
3.0	29.0	4.0	-	-	16.0	1.0	-	16.0	-	-
3.0	29.0	5.0	-	-	16.0	-	-	16.0	-	-
3.0	29.0	6.0	260.0	66.0	18.0	-	111.2	19.7	82.0	75.3
3.0	29.0	7.0	83.0	157.0	19.0	1.0	188.4	24.1	157.2	148.8
3.0	29.0	8.0	48.0	239.0	19.0	1.0	267.3	27.5	222.6	212.6
3.0	29.0	9.0	128.0	350.0	20.0	1.0	462.8	35.8	370.8	356.5
3.0	29.0	10.0	325.0	393.0	21.0	1.0	718.9	46.3	546.5	526.0
3.0	29.0	11.0	351.0	421.0	21.0	1.0	796.0	50.1	593.3	571.0
3.0	29.0	12.0	268.0	437.0	20.0	1.0	728.1	47.5	550.3	529.7
3.0	29.0	13.0	52.0	366.0	20.0	1.0	415.9	37.0	331.6	318.4
3.0	29.0	14.0	18.0	251.0	20.0	1.0	257.1	29.7	212.4	202.7
3.0	29.0	15.0	273.0	228.0	20.0	1.0	396.5	33.5	317.7	305.1
3.0	29.0	16.0	480.0	97.0	19.0	1.0	276.9	29.2	211.3	201.6
3.0	29.0	17.0	-	36.0	18.0	1.0	34.1	18.6	29.7	24.1
3.0	29.0	18.0	-	-	17.0	-	-	17.0	-	-
3.0	29.0	19.0	-	-	17.0	-	-	17.0	-	-
3.0	29.0	20.0	-	-	17.0	-	-	17.0	-	-
3.0	29.0	21.0	-	-	17.0	-	-	17.0	-	-
3.0	29.0	22.0	-	-	17.0	-	-	17.0	-	-
3.0	29.0	23.0	-	-	17.0	1.0	-	17.0	-	-
3.0	30.0	-	-	-	16.0	1.0	-	16.0	-	-
3.0	30.0	1.0	-	-	16.0	1.0	-	16.0	-	-
3.0	30.0	2.0	-	-	16.0	1.0	-	16.0	-	-
3.0	30.0	3.0	-	-	15.0	1.0	-	15.0	-	-
3.0	30.0	4.0	-	-	15.0	1.0	-	15.0	-	-
3.0	30.0	5.0	-	-	15.0	2.0	-	15.0	-	-
3.0	30.0	6.0	298.0	64.0	16.0	2.0	116.3	17.4	85.2	78.4
3.0	30.0	7.0	561.0	114.0	18.0	2.0	357.1	27.5	280.5	268.9
3.0	30.0	8.0	689.0	145.0	19.0	1.0	598.9	39.9	463.2	445.8
3.0	30.0	9.0	784.0	150.0	20.0	1.0	805.0	48.8	602.0	579.3
3.0	30.0	10.0	814.0	164.0	21.0	1.0	945.5	55.1	685.6	659.4
3.0	30.0	11.0	823.0	173.0	21.0	1.0	1,013.0	57.8	724.0	696.2
3.0	30.0	12.0	439.0	372.0	22.0	2.0	836.6	49.0	627.2	603.5
3.0	30.0	13.0	788.0	171.0	22.0	2.0	910.1	50.4	676.8	651.0
3.0	30.0	14.0	391.0	293.0	21.0	2.0	609.9	41.3	474.4	456.6
3.0	30.0	15.0	632.0	146.0	21.0	2.0	532.7	37.8	414.1	398.3
3.0	30.0	16.0	338.0	129.0	20.0	1.0	253.9	30.3	196.6	187.3
3.0	30.0	17.0	127.0	48.0	18.0	1.0	61.6	19.5	46.9	41.0
3.0	30.0	18.0	-	-	18.0	1.0	-	18.0	-	-
3.0	30.0	19.0	-	-	18.0	1.0	-	18.0	-	-
3.0	30.0	20.0	-	-	18.0	1.0	-	18.0	-	-
3.0	30.0	21.0	-	-	17.0	1.0	-	17.0	-	-
3.0	30.0	22.0	-	-	17.0	2.0	-	17.0	-	-
3.0	30.0	23.0	-	-	17.0	2.0	-	17.0	-	-
3.0	31.0	-	-	-	16.0	3.0	-	16.0	-	-
3.0	31.0	1.0	-	-	16.0	3.0	-	16.0	-	-
3.0	31.0	2.0	-	-	15.0	3.0	-	15.0	-	-
3.0	31.0	3.0	-	-	15.0	3.0	-	15.0	-	-
3.0	31.0	4.0	-	-	15.0	3.0	-	15.0	-	-
3.0	31.0	5.0	-	-	15.0	3.0	-	15.0	-	-
3.0	31.0	6.0	-	4.0	15.0	3.0	3.8	13.1	3.4	-
3.0	31.0	7.0	-	63.0	16.0	3.0	59.8	15.7	52.8	46.7
3.0	31.0	8.0	-	136.0	17.0	3.0	130.1	18.9	113.1	105.7
3.0	31.0	9.0	-	49.0	17.0	3.0	46.6	16.8	40.9	35.0
3.0	31.0	10.0	1.0	153.0	18.0	2.0	147.7	20.7	127.3	119.6
3.0	31.0	11.0	10.0	234.0	19.0	2.0	236.2	24.9	199.7	190.3
3.0	31.0	12.0	-	105.0	19.0	2.0	100.4	21.1	86.4	79.6
3.0	31.0	13.0	-	127.0	19.0	2.0	121.5	21.1	104.5	97.3
3.0	31.0	14.0	-	69.0	19.0	2.0	65.6	19.5	56.9	50.7
3.0	31.0	15.0	-	155.0	19.0	2.0	148.6	21.8	127.5	119.8
3.0	31.0	16.0	-	91.0	18.0	2.0	86.7	19.2	75.3	68.7
3.0	31.0	17.0	-	24.0	17.0	2.0	22.7	15.9	20.0	14.6
3.0	31.0	18.0	-	-	20.0	2.0	-	20.0	-	-
3.0	31.0	19.0	-	-	20.0	2.0	-	20.0	-	-
3.0	31.0	20.0	-	-	20.0	1.0	-	20.0	-	-
3.0	31.0	21.0	-	-	20.0	1.0	-	20.0	-	-
3.0	31.0	22.0	-	-	19.0	1.0	-	19.0	-	-
3.0	31.0	23.0	-	-	19.0	1.0	-	19.0	-	-

4.0	1.0	-	-	-	19.0	1.0	-	19.0	-	-
4.0	1.0	1.0	-	-	19.0	1.0	-	19.0	-	-
4.0	1.0	2.0	-	-	19.0	-	-	19.0	-	-
4.0	1.0	3.0	-	-	19.0	-	-	19.0	-	-
4.0	1.0	4.0	-	-	18.0	1.0	-	18.0	-	-
4.0	1.0	5.0	-	-	17.0	2.0	-	17.0	-	-
4.0	1.0	6.0	14.0	63.0	16.0	3.0	62.4	15.7	54.2	48.1
4.0	1.0	7.0	-	114.0	16.0	3.0	108.9	17.3	95.4	88.4
4.0	1.0	8.0	3.0	176.0	16.0	3.0	171.0	19.2	148.4	140.2
4.0	1.0	9.0	393.0	315.0	16.0	3.0	649.9	32.5	528.8	509.0
4.0	1.0	10.0	294.0	406.0	17.0	3.0	703.4	36.5	562.1	541.0
4.0	1.0	11.0	11.0	236.0	18.0	2.0	239.2	26.6	200.6	191.1
4.0	1.0	12.0	7.0	189.0	18.0	2.0	188.9	22.9	161.2	152.7
4.0	1.0	13.0	7.0	200.0	19.0	2.0	199.0	24.0	169.0	160.3
4.0	1.0	14.0	4.0	187.0	19.0	1.0	182.9	24.5	154.8	146.5
4.0	1.0	15.0	-	127.0	19.0	1.0	121.3	22.2	103.9	96.7
4.0	1.0	16.0	-	43.0	19.0	1.0	40.8	18.7	35.5	29.7
4.0	1.0	17.0	-	29.0	18.0	1.0	27.5	16.6	24.2	18.6
4.0	1.0	18.0	-	-	18.0	1.0	-	18.0	-	-
4.0	1.0	19.0	-	-	18.0	1.0	-	18.0	-	-
4.0	1.0	20.0	-	-	18.0	1.0	-	18.0	-	-
4.0	1.0	21.0	-	-	19.0	1.0	-	19.0	-	-
4.0	1.0	22.0	-	-	19.0	1.0	-	19.0	-	-
4.0	1.0	23.0	-	-	19.0	1.0	-	19.0	-	-
4.0	2.0	-	-	-	20.0	1.0	-	20.0	-	-
4.0	2.0	1.0	-	-	20.0	2.0	-	20.0	-	-
4.0	2.0	2.0	-	-	21.0	2.0	-	21.0	-	-
4.0	2.0	3.0	-	-	21.0	1.0	-	21.0	-	-
4.0	2.0	4.0	-	-	20.0	1.0	-	20.0	-	-
4.0	2.0	5.0	-	-	20.0	1.0	-	20.0	-	-
4.0	2.0	6.0	-	3.0	21.0	2.0	2.8	18.9	2.5	-
4.0	2.0	7.0	-	15.0	21.0	2.0	14.2	19.3	12.3	7.0
4.0	2.0	8.0	-	41.0	21.0	3.0	38.9	20.3	33.6	27.9
4.0	2.0	9.0	-	44.0	21.0	2.0	41.8	20.4	36.1	30.4
4.0	2.0	10.0	15.0	275.0	22.0	2.0	280.7	28.8	232.9	222.6
4.0	2.0	11.0	18.0	308.0	21.0	2.0	317.5	30.0	262.0	250.9
4.0	2.0	12.0	-	34.0	21.0	2.0	32.4	21.4	27.8	22.2
4.0	2.0	13.0	11.0	242.0	21.0	2.0	243.9	26.6	204.5	195.0
4.0	2.0	14.0	-	67.0	21.0	3.0	63.7	21.8	54.7	48.5
4.0	2.0	15.0	-	108.0	22.0	4.0	102.9	23.2	87.7	80.9
4.0	2.0	16.0	-	78.0	21.0	4.0	74.2	21.5	63.7	57.4
4.0	2.0	17.0	73.0	54.0	21.0	4.0	60.1	21.1	48.1	42.0
4.0	2.0	18.0	-	-	21.0	4.0	-	21.0	-	-
4.0	2.0	19.0	-	-	20.0	4.0	-	20.0	-	-
4.0	2.0	20.0	-	-	20.0	3.0	-	20.0	-	-
4.0	2.0	21.0	-	-	19.0	3.0	-	19.0	-	-
4.0	2.0	22.0	-	-	18.0	3.0	-	18.0	-	-
4.0	2.0	23.0	-	-	17.0	2.0	-	17.0	-	-
4.0	3.0	-	-	-	16.0	2.0	-	16.0	-	-
4.0	3.0	1.0	-	-	15.0	2.0	-	15.0	-	-
4.0	3.0	2.0	-	-	15.0	2.0	-	15.0	-	-
4.0	3.0	3.0	-	-	15.0	2.0	-	15.0	-	-
4.0	3.0	4.0	-	-	14.0	2.0	-	14.0	-	-
4.0	3.0	5.0	-	-	14.0	2.0	-	14.0	-	-
4.0	3.0	6.0	395.0	63.0	15.0	2.0	135.3	17.0	96.6	89.6
4.0	3.0	7.0	663.0	99.0	16.0	2.0	389.8	26.5	306.6	294.3
4.0	3.0	8.0	798.0	117.0	17.0	2.0	643.5	36.2	506.8	487.8
4.0	3.0	9.0	873.0	126.0	18.0	2.0	856.9	44.3	656.0	631.1
4.0	3.0	10.0	915.0	130.0	19.0	1.0	1,001.3	55.2	725.7	697.8
4.0	3.0	11.0	933.0	132.0	20.0	1.0	1,073.9	58.9	762.7	733.0
4.0	3.0	12.0	937.0	127.0	20.0	2.0	1,064.3	53.6	778.5	748.2
4.0	3.0	13.0	914.0	124.0	20.0	1.0	970.0	56.2	698.9	672.2
4.0	3.0	14.0	869.0	118.0	20.0	1.0	807.9	50.8	596.6	574.1
4.0	3.0	15.0	789.0	106.0	20.0	1.0	582.2	42.9	439.7	423.1
4.0	3.0	16.0	647.0	84.0	19.0	1.0	325.0	32.1	241.5	231.0
4.0	3.0	17.0	340.0	44.0	18.0	1.0	82.9	20.8	54.4	48.2
4.0	3.0	18.0	-	-	17.0	1.0	-	17.0	-	-
4.0	3.0	19.0	-	-	16.0	1.0	-	16.0	-	-
4.0	3.0	20.0	-	-	16.0	1.0	-	16.0	-	-
4.0	3.0	21.0	-	-	15.0	1.0	-	15.0	-	-
4.0	3.0	22.0	-	-	14.0	1.0	-	14.0	-	-
4.0	3.0	23.0	-	-	14.0	1.0	-	14.0	-	-
4.0	4.0	-	-	-	13.0	1.0	-	13.0	-	-
4.0	4.0	1.0	-	-	13.0	1.0	-	13.0	-	-
4.0	4.0	2.0	-	-	13.0	1.0	-	13.0	-	-
4.0	4.0	3.0	-	-	13.0	1.0	-	13.0	-	-
4.0	4.0	4.0	-	-	13.0	1.0	-	13.0	-	-
4.0	4.0	5.0	-	-	13.0	1.0	-	13.0	-	-
4.0	4.0	6.0	408.0	63.0	15.0	2.0	138.5	17.1	98.7	91.6
4.0	4.0	7.0	648.0	102.0	17.0	2.0	387.6	27.5	304.0	291.7
4.0	4.0	8.0	763.0	128.0	18.0	3.0	634.4	34.8	503.4	484.6

4.0	4.0	9.0	548.0	257.0	19.0	2.0	725.6	41.5	564.1	543.0
4.0	4.0	10.0	498.0	334.0	20.0	2.0	828.3	45.8	631.5	607.6
4.0	4.0	11.0	432.0	386.0	21.0	2.0	847.3	47.6	639.8	615.6
4.0	4.0	12.0	508.0	361.0	21.0	2.0	892.4	49.0	669.1	643.7
4.0	4.0	13.0	839.0	156.0	21.0	2.0	940.5	50.5	699.1	672.3
4.0	4.0	14.0	794.0	143.0	20.0	2.0	775.3	45.1	590.1	567.9
4.0	4.0	15.0	711.0	126.0	20.0	2.0	557.0	38.2	431.3	415.0
4.0	4.0	16.0	198.0	140.0	19.0	1.0	210.2	27.9	167.6	159.0
4.0	4.0	17.0	246.0	49.0	18.0	1.0	75.9	19.7	53.3	47.2
4.0	4.0	18.0	-	-	17.0	1.0	-	17.0	-	-
4.0	4.0	19.0	-	-	17.0	1.0	-	17.0	-	-
4.0	4.0	20.0	-	-	17.0	1.0	-	17.0	-	-
4.0	4.0	21.0	-	-	17.0	1.0	-	17.0	-	-
4.0	4.0	22.0	-	-	17.0	1.0	-	17.0	-	-
4.0	4.0	23.0	-	-	17.0	1.0	-	17.0	-	-
4.0	5.0	-	-	-	18.0	2.0	-	18.0	-	-
4.0	5.0	1.0	-	-	18.0	1.0	-	18.0	-	-
4.0	5.0	2.0	-	-	18.0	1.0	-	18.0	-	-
4.0	5.0	3.0	-	-	19.0	1.0	-	19.0	-	-
4.0	5.0	4.0	-	-	19.0	1.0	-	19.0	-	-
4.0	5.0	5.0	-	-	19.0	1.0	-	19.0	-	-
4.0	5.0	6.0	-	11.0	20.0	1.0	10.4	17.7	9.1	3.8
4.0	5.0	7.0	-	89.0	21.0	2.0	84.7	21.6	72.7	66.2
4.0	5.0	8.0	106.0	272.0	22.0	2.0	337.6	30.7	276.4	264.9
4.0	5.0	9.0	22.0	281.0	23.0	2.0	290.3	31.5	237.8	227.4
4.0	5.0	10.0	27.0	339.0	23.0	3.0	364.4	32.2	297.4	285.3
4.0	5.0	11.0	204.0	448.0	23.0	3.0	666.6	40.5	522.3	502.7
4.0	5.0	12.0	19.0	316.0	23.0	3.0	326.0	32.5	265.8	254.6
4.0	5.0	13.0	101.0	408.0	23.0	3.0	502.3	36.0	402.4	387.0
4.0	5.0	14.0	29.0	282.0	23.0	3.0	301.9	31.3	247.5	236.8
4.0	5.0	15.0	175.0	247.0	22.0	2.0	350.8	32.1	284.0	272.3
4.0	5.0	16.0	11.0	126.0	22.0	2.0	124.4	25.5	104.5	97.3
4.0	5.0	17.0	95.0	56.0	21.0	2.0	64.1	21.5	50.3	44.3
4.0	5.0	18.0	-	-	21.0	2.0	-	21.0	-	-
4.0	5.0	19.0	-	-	21.0	2.0	-	21.0	-	-
4.0	5.0	20.0	-	-	20.0	2.0	-	20.0	-	-
4.0	5.0	21.0	-	-	20.0	2.0	-	20.0	-	-
4.0	5.0	22.0	-	-	20.0	2.0	-	20.0	-	-
4.0	5.0	23.0	-	-	19.0	2.0	-	19.0	-	-
4.0	6.0	-	-	-	18.0	3.0	-	18.0	-	-
4.0	6.0	1.0	-	-	16.0	4.0	-	16.0	-	-
4.0	6.0	2.0	-	-	15.0	4.0	-	15.0	-	-
4.0	6.0	3.0	-	-	13.0	4.0	-	13.0	-	-
4.0	6.0	4.0	-	-	12.0	4.0	-	12.0	-	-
4.0	6.0	5.0	-	-	11.0	4.0	-	11.0	-	-
4.0	6.0	6.0	481.0	59.0	11.0	4.0	151.2	13.0	107.7	100.5
4.0	6.0	7.0	722.0	89.0	11.0	4.0	408.7	20.0	331.0	317.9
4.0	6.0	8.0	838.0	106.0	12.0	4.0	661.7	28.1	542.1	521.8
4.0	6.0	9.0	897.0	117.0	13.0	4.0	865.9	34.8	695.6	669.0
4.0	6.0	10.0	935.0	121.0	13.0	4.0	1,013.0	38.9	799.7	768.3
4.0	6.0	11.0	952.0	121.0	14.0	4.0	1,082.7	41.9	842.1	808.7
4.0	6.0	12.0	952.0	120.0	15.0	4.0	1,072.2	42.8	830.1	797.3
4.0	6.0	13.0	932.0	117.0	15.0	4.0	978.7	40.6	765.8	736.0
4.0	6.0	14.0	892.0	110.0	15.0	4.0	812.9	36.4	646.6	622.1
4.0	6.0	15.0	822.0	98.0	14.0	4.0	592.2	29.6	477.6	459.6
4.0	6.0	16.0	689.0	79.0	13.0	3.0	334.1	22.5	258.9	247.9
4.0	6.0	17.0	394.0	44.0	12.0	3.0	88.5	13.7	58.3	52.1
4.0	6.0	18.0	-	-	11.0	3.0	-	11.0	-	-
4.0	6.0	19.0	-	-	11.0	3.0	-	11.0	-	-
4.0	6.0	20.0	-	-	10.0	3.0	-	10.0	-	-
4.0	6.0	21.0	-	-	10.0	3.0	-	10.0	-	-
4.0	6.0	22.0	-	-	9.0	3.0	-	9.0	-	-
4.0	6.0	23.0	-	-	9.0	3.0	-	9.0	-	-
4.0	7.0	-	-	-	8.0	3.0	-	8.0	-	-
4.0	7.0	1.0	-	-	8.0	3.0	-	8.0	-	-
4.0	7.0	2.0	-	-	7.0	3.0	-	7.0	-	-
4.0	7.0	3.0	-	-	7.0	3.0	-	7.0	-	-
4.0	7.0	4.0	-	-	7.0	3.0	-	7.0	-	-
4.0	7.0	5.0	-	-	7.0	3.0	-	7.0	-	-
4.0	7.0	6.0	208.0	73.0	7.0	3.0	111.2	8.0	89.5	82.6
4.0	7.0	7.0	755.0	88.0	8.0	4.0	423.3	17.3	347.1	333.6
4.0	7.0	8.0	864.0	106.0	9.0	3.0	679.8	27.3	559.1	538.1
4.0	7.0	9.0	919.0	120.0	10.0	3.0	888.1	34.7	713.9	686.5
4.0	7.0	10.0	941.0	132.0	10.0	3.0	1,030.5	39.1	812.9	780.9
4.0	7.0	11.0	946.0	139.0	11.0	3.0	1,095.4	42.1	851.1	817.2
4.0	7.0	12.0	938.0	140.0	12.0	3.0	1,078.8	42.9	835.0	801.9
4.0	7.0	13.0	914.0	137.0	13.0	3.0	982.6	41.3	766.0	736.2
4.0	7.0	14.0	873.0	126.0	13.0	3.0	818.0	36.7	649.5	624.9
4.0	7.0	15.0	815.0	105.0	13.0	3.0	594.9	30.3	478.1	460.1
4.0	7.0	16.0	682.0	83.0	12.0	2.0	335.3	23.1	259.5	248.4
4.0	7.0	17.0	383.0	45.0	11.0	2.0	88.0	13.1	58.6	52.4

4.0	7.0	18.0	-	-	10.0	2.0	-	10.0	-	-
4.0	7.0	19.0	-	-	10.0	2.0	-	10.0	-	-
4.0	7.0	20.0	-	-	9.0	2.0	-	9.0	-	-
4.0	7.0	21.0	-	-	9.0	2.0	-	9.0	-	-
4.0	7.0	22.0	-	-	8.0	2.0	-	8.0	-	-
4.0	7.0	23.0	-	-	8.0	1.0	-	8.0	-	-
4.0	8.0	-	-	-	8.0	1.0	-	8.0	-	-
4.0	8.0	1.0	-	-	8.0	1.0	-	8.0	-	-
4.0	8.0	2.0	-	-	8.0	1.0	-	8.0	-	-
4.0	8.0	3.0	-	-	8.0	1.0	-	8.0	-	-
4.0	8.0	4.0	-	-	8.0	1.0	-	8.0	-	-
4.0	8.0	5.0	-	-	9.0	-	-	9.0	-	-
4.0	8.0	6.0	539.0	58.0	11.0	-	163.3	15.2	114.2	106.8
4.0	8.0	7.0	760.0	86.0	13.0	-	424.9	30.9	327.1	314.1
4.0	8.0	8.0	854.0	106.0	14.0	1.0	674.5	38.0	526.6	506.9
4.0	8.0	9.0	898.0	123.0	15.0	2.0	874.7	42.1	677.6	651.7
4.0	8.0	10.0	913.0	138.0	16.0	2.0	1,010.8	47.6	762.9	733.3
4.0	8.0	11.0	914.0	148.0	17.0	2.0	1,072.7	50.8	796.6	765.4
4.0	8.0	12.0	939.0	130.0	17.0	3.0	1,069.5	47.3	809.1	777.3
4.0	8.0	13.0	915.0	128.0	17.0	3.0	974.0	44.8	745.7	716.8
4.0	8.0	14.0	880.0	118.0	17.0	3.0	814.7	40.5	634.8	610.8
4.0	8.0	15.0	820.0	101.0	17.0	3.0	593.3	34.2	467.8	450.3
4.0	8.0	16.0	691.0	80.0	16.0	2.0	335.2	27.0	254.2	243.4
4.0	8.0	17.0	386.0	45.0	15.0	2.0	88.2	17.2	57.5	51.3
4.0	8.0	18.0	-	-	14.0	2.0	-	14.0	-	-
4.0	8.0	19.0	-	-	14.0	3.0	-	14.0	-	-
4.0	8.0	20.0	-	-	15.0	3.0	-	15.0	-	-
4.0	8.0	21.0	-	-	15.0	3.0	-	15.0	-	-
4.0	8.0	22.0	-	-	15.0	3.0	-	15.0	-	-
4.0	8.0	23.0	-	-	14.0	2.0	-	14.0	-	-
4.0	9.0	-	-	-	14.0	2.0	-	14.0	-	-
4.0	9.0	1.0	-	-	14.0	2.0	-	14.0	-	-
4.0	9.0	2.0	-	-	14.0	2.0	-	14.0	-	-
4.0	9.0	3.0	-	-	14.0	2.0	-	14.0	-	-
4.0	9.0	4.0	-	-	14.0	2.0	-	14.0	-	-
4.0	9.0	5.0	-	-	15.0	1.0	-	15.0	-	-
4.0	9.0	6.0	262.0	72.0	17.0	1.0	122.6	18.8	92.2	85.3
4.0	9.0	7.0	660.0	108.0	18.0	2.0	404.4	28.9	316.2	303.6
4.0	9.0	8.0	786.0	126.0	19.0	2.0	651.6	38.4	508.2	489.1
4.0	9.0	9.0	877.0	124.0	20.0	2.0	859.2	46.3	651.2	626.5
4.0	9.0	10.0	418.0	366.0	20.0	2.0	785.3	45.1	600.8	578.2
4.0	9.0	11.0	426.0	385.0	21.0	2.0	839.2	47.2	635.0	611.0
4.0	9.0	12.0	499.0	371.0	21.0	3.0	891.9	45.8	679.8	653.9
4.0	9.0	13.0	640.0	270.0	20.0	3.0	877.1	44.7	672.2	646.6
4.0	9.0	14.0	578.0	231.0	20.0	3.0	694.6	39.9	543.4	523.0
4.0	9.0	15.0	471.0	195.0	19.0	3.0	480.5	32.7	384.4	369.6
4.0	9.0	16.0	250.0	149.0	19.0	2.0	239.0	26.5	190.9	181.7
4.0	9.0	17.0	235.0	56.0	18.0	2.0	80.3	19.5	57.8	51.6
4.0	9.0	18.0	-	-	18.0	2.0	-	18.0	-	-
4.0	9.0	19.0	-	-	18.0	2.0	-	18.0	-	-
4.0	9.0	20.0	-	-	18.0	3.0	-	18.0	-	-
4.0	9.0	21.0	-	-	18.0	3.0	-	18.0	-	-
4.0	9.0	22.0	-	-	18.0	3.0	-	18.0	-	-
4.0	9.0	23.0	-	-	18.0	3.0	-	18.0	-	-
4.0	10.0	-	-	-	18.0	2.0	-	18.0	-	-
4.0	10.0	1.0	-	-	19.0	2.0	-	19.0	-	-
4.0	10.0	2.0	-	-	18.0	2.0	-	18.0	-	-
4.0	10.0	3.0	-	-	18.0	2.0	-	18.0	-	-
4.0	10.0	4.0	-	-	18.0	2.0	-	18.0	-	-
4.0	10.0	5.0	-	-	18.0	2.0	-	18.0	-	-
4.0	10.0	6.0	249.0	90.0	19.0	2.0	136.6	21.1	104.0	96.9
4.0	10.0	7.0	483.0	150.0	20.0	2.0	367.0	29.9	289.1	277.3
4.0	10.0	8.0	614.0	186.0	21.0	3.0	601.4	36.8	474.0	456.2
4.0	10.0	9.0	127.0	373.0	22.0	3.0	483.6	35.5	388.3	373.4
4.0	10.0	10.0	42.0	379.0	22.0	3.0	418.7	33.3	339.9	326.5
4.0	10.0	11.0	27.0	362.0	22.0	3.0	389.3	32.3	317.6	304.9
4.0	10.0	12.0	102.0	455.0	22.0	3.0	559.3	36.8	446.5	429.7
4.0	10.0	13.0	27.0	333.0	22.0	3.0	356.0	31.9	291.0	279.1
4.0	10.0	14.0	297.0	339.0	22.0	3.0	579.3	37.2	460.3	443.0
4.0	10.0	15.0	579.0	158.0	21.0	2.0	509.1	37.0	397.6	382.4
4.0	10.0	16.0	282.0	136.0	21.0	2.0	237.5	28.6	186.6	177.5
4.0	10.0	17.0	79.0	59.0	20.0	2.0	64.6	21.0	51.6	45.6
4.0	10.0	18.0	-	-	20.0	2.0	-	20.0	-	-
4.0	10.0	19.0	-	-	20.0	2.0	-	20.0	-	-
4.0	10.0	20.0	-	-	20.0	2.0	-	20.0	-	-
4.0	10.0	21.0	-	-	20.0	2.0	-	20.0	-	-
4.0	10.0	22.0	-	-	20.0	2.0	-	20.0	-	-
4.0	10.0	23.0	-	-	20.0	2.0	-	20.0	-	-
4.0	11.0	-	-	-	19.0	1.0	-	19.0	-	-
4.0	11.0	1.0	-	-	18.0	1.0	-	18.0	-	-
4.0	11.0	2.0	-	-	18.0	1.0	-	18.0	-	-

4.0	11.0	3.0	-	-	17.0	1.0	-	17.0	-	-
4.0	11.0	4.0	-	-	16.0	1.0	-	16.0	-	-
4.0	11.0	5.0	-	-	16.0	2.0	-	16.0	-	-
4.0	11.0	6.0	-	60.0	16.0	2.0	56.9	15.5	50.2	44.2
4.0	11.0	7.0	326.0	164.0	17.0	2.0	308.8	24.7	251.8	240.9
4.0	11.0	8.0	714.0	143.0	18.0	2.0	624.6	36.3	492.9	474.4
4.0	11.0	9.0	805.0	147.0	19.0	1.0	829.1	48.8	620.5	597.1
4.0	11.0	10.0	849.0	151.0	20.0	1.0	971.3	55.1	704.5	677.5
4.0	11.0	11.0	867.0	153.0	21.0	1.0	1,031.0	58.4	734.2	705.9
4.0	11.0	12.0	873.0	147.0	21.0	1.0	1,021.0	58.4	727.1	699.1
4.0	11.0	13.0	855.0	140.0	22.0	1.0	936.2	56.8	672.3	646.7
4.0	11.0	14.0	815.0	130.0	22.0	1.0	775.3	51.5	570.5	549.0
4.0	11.0	15.0	736.0	117.0	21.0	-	559.4	48.7	410.1	394.5
4.0	11.0	16.0	584.0	96.0	20.0	-	311.5	37.1	227.0	216.8
4.0	11.0	17.0	292.0	52.0	19.0	-	82.7	24.3	55.7	49.5
4.0	11.0	18.0	-	-	18.0	-	-	18.0	-	-
4.0	11.0	19.0	-	-	18.0	1.0	-	18.0	-	-
4.0	11.0	20.0	-	-	17.0	1.0	-	17.0	-	-
4.0	11.0	21.0	-	-	17.0	1.0	-	17.0	-	-
4.0	11.0	22.0	-	-	16.0	1.0	-	16.0	-	-
4.0	11.0	23.0	-	-	16.0	2.0	-	16.0	-	-
4.0	12.0	-	-	-	16.0	2.0	-	16.0	-	-
4.0	12.0	1.0	-	-	15.0	2.0	-	15.0	-	-
4.0	12.0	2.0	-	-	15.0	2.0	-	15.0	-	-
4.0	12.0	3.0	-	-	15.0	2.0	-	15.0	-	-
4.0	12.0	4.0	-	-	14.0	2.0	-	14.0	-	-
4.0	12.0	5.0	-	-	14.0	2.0	-	14.0	-	-
4.0	12.0	6.0	277.0	87.0	15.0	2.0	140.3	17.1	107.6	100.3
4.0	12.0	7.0	244.0	178.0	17.0	3.0	286.6	23.5	236.7	226.3
4.0	12.0	8.0	569.0	204.0	18.0	2.0	588.7	35.1	468.2	450.6
4.0	12.0	9.0	539.0	272.0	19.0	2.0	736.0	41.6	572.1	550.6
4.0	12.0	10.0	392.0	388.0	20.0	3.0	775.7	41.6	604.3	581.5
4.0	12.0	11.0	270.0	462.0	20.0	3.0	754.0	41.1	588.8	566.6
4.0	12.0	12.0	689.0	258.0	21.0	2.0	965.2	50.6	717.4	689.8
4.0	12.0	13.0	545.0	314.0	21.0	2.0	832.1	47.7	627.6	603.9
4.0	12.0	14.0	-	21.0	20.0	3.0	20.0	21.8	17.1	11.7
4.0	12.0	15.0	264.0	243.0	20.0	3.0	401.1	29.3	328.2	315.2
4.0	12.0	16.0	188.0	148.0	19.0	3.0	212.6	24.5	172.8	164.1
4.0	12.0	17.0	4.0	51.0	19.0	2.0	48.4	19.4	41.8	35.9
4.0	12.0	18.0	-	-	19.0	2.0	-	19.0	-	-
4.0	12.0	19.0	-	-	19.0	2.0	-	19.0	-	-
4.0	12.0	20.0	-	-	19.0	2.0	-	19.0	-	-
4.0	12.0	21.0	-	-	20.0	2.0	-	20.0	-	-
4.0	12.0	22.0	-	-	20.0	3.0	-	20.0	-	-
4.0	12.0	23.0	-	-	20.0	3.0	-	20.0	-	-
4.0	13.0	-	-	-	20.0	3.0	-	20.0	-	-
4.0	13.0	1.0	-	-	20.0	3.0	-	20.0	-	-
4.0	13.0	2.0	-	-	20.0	3.0	-	20.0	-	-
4.0	13.0	3.0	-	-	20.0	3.0	-	20.0	-	-
4.0	13.0	4.0	-	-	20.0	3.0	-	20.0	-	-
4.0	13.0	5.0	-	-	20.0	3.0	-	20.0	-	-
4.0	13.0	6.0	-	48.0	21.0	3.0	45.6	20.4	39.3	33.5
4.0	13.0	7.0	-	7.0	21.0	2.0	6.6	19.3	5.8	0.5
4.0	13.0	8.0	-	14.0	21.0	2.0	13.3	19.3	11.5	6.2
4.0	13.0	9.0	-	35.0	21.0	2.0	33.3	20.0	28.8	23.2
4.0	13.0	10.0	-	54.0	21.0	1.0	51.5	20.5	44.4	38.5
4.0	13.0	11.0	-	54.0	21.0	1.0	51.5	20.7	44.4	38.5
4.0	13.0	12.0	38.0	394.0	21.0	1.0	431.9	34.4	348.8	335.2
4.0	13.0	13.0	-	88.0	21.0	1.0	83.9	24.6	71.0	64.6
4.0	13.0	14.0	-	40.0	21.0	1.0	38.0	20.4	32.8	27.1
4.0	13.0	15.0	-	35.0	21.0	2.0	33.2	20.1	28.7	23.1
4.0	13.0	16.0	-	52.0	21.0	2.0	49.4	20.6	42.6	36.7
4.0	13.0	17.0	-	14.0	20.0	2.0	13.3	18.5	11.5	6.2
4.0	13.0	18.0	-	-	20.0	1.0	-	20.0	-	-
4.0	13.0	19.0	-	-	20.0	2.0	-	20.0	-	-
4.0	13.0	20.0	-	-	20.0	3.0	-	20.0	-	-
4.0	13.0	21.0	-	-	20.0	2.0	-	20.0	-	-
4.0	13.0	22.0	-	-	20.0	2.0	-	20.0	-	-
4.0	13.0	23.0	-	-	19.0	2.0	-	19.0	-	-
4.0	14.0	-	-	-	19.0	2.0	-	19.0	-	-
4.0	14.0	1.0	-	-	19.0	1.0	-	19.0	-	-
4.0	14.0	2.0	-	-	18.0	1.0	-	18.0	-	-
4.0	14.0	3.0	-	-	17.0	2.0	-	17.0	-	-
4.0	14.0	4.0	-	-	16.0	2.0	-	16.0	-	-
4.0	14.0	5.0	-	-	16.0	3.0	-	16.0	-	-
4.0	14.0	6.0	443.0	74.0	16.0	3.0	163.9	18.6	118.4	111.0
4.0	14.0	7.0	685.0	103.0	16.0	3.0	415.5	26.1	329.7	316.6
4.0	14.0	8.0	810.0	119.0	16.0	3.0	664.9	33.7	531.1	511.2
4.0	14.0	9.0	880.0	128.0	17.0	3.0	869.3	40.9	677.7	651.9
4.0	14.0	10.0	917.0	133.0	18.0	3.0	1,011.8	46.1	769.8	739.9
4.0	14.0	11.0	930.0	136.0	19.0	3.0	1,076.9	49.1	806.7	775.0

4.0	14.0	12.0	929.0	133.0	19.0	3.0	1,061.5	49.0	795.9	764.7
4.0	14.0	13.0	909.0	127.0	19.0	3.0	965.4	46.5	732.7	704.4
4.0	14.0	14.0	867.0	119.0	19.0	3.0	802.8	42.1	620.5	597.1
4.0	14.0	15.0	789.0	107.0	19.0	2.0	578.6	38.0	447.7	430.8
4.0	14.0	16.0	644.0	88.0	18.0	2.0	324.1	28.6	244.8	234.2
4.0	14.0	17.0	352.0	50.0	17.0	2.0	87.1	19.1	57.9	51.7
4.0	14.0	18.0	-	-	15.0	2.0	-	15.0	-	-
4.0	14.0	19.0	-	-	15.0	2.0	-	15.0	-	-
4.0	14.0	20.0	-	-	14.0	2.0	-	14.0	-	-
4.0	14.0	21.0	-	-	13.0	1.0	-	13.0	-	-
4.0	14.0	22.0	-	-	13.0	1.0	-	13.0	-	-
4.0	14.0	23.0	-	-	12.0	1.0	-	12.0	-	-
4.0	15.0	-	-	-	12.0	1.0	-	12.0	-	-
4.0	15.0	1.0	-	-	11.0	1.0	-	11.0	-	-
4.0	15.0	2.0	-	-	11.0	1.0	-	11.0	-	-
4.0	15.0	3.0	-	-	11.0	1.0	-	11.0	-	-
4.0	15.0	4.0	-	-	10.0	1.0	-	10.0	-	-
4.0	15.0	5.0	-	-	11.0	1.0	-	11.0	-	-
4.0	15.0	6.0	465.0	76.0	12.0	2.0	171.2	15.1	125.6	117.9
4.0	15.0	7.0	688.0	110.0	13.0	2.0	424.8	24.8	339.7	326.3
4.0	15.0	8.0	810.0	125.0	14.0	2.0	671.8	34.3	535.3	515.2
4.0	15.0	9.0	877.0	134.0	15.0	2.0	877.8	42.2	679.9	653.9
4.0	15.0	10.0	912.0	137.0	17.0	1.0	1,011.3	53.8	738.8	710.2
4.0	15.0	11.0	928.0	137.0	18.0	1.0	1,075.9	57.2	771.3	741.3
4.0	15.0	12.0	930.0	131.0	18.0	1.0	1,060.2	57.1	760.7	731.2
4.0	15.0	13.0	536.0	314.0	19.0	1.0	822.3	50.8	610.2	587.2
4.0	15.0	14.0	866.0	120.0	20.0	1.0	802.5	49.9	595.4	573.0
4.0	15.0	15.0	792.0	108.0	19.0	1.0	580.9	41.9	440.8	424.1
4.0	15.0	16.0	669.0	85.0	18.0	1.0	329.8	31.3	245.4	234.8
4.0	15.0	17.0	403.0	49.0	17.0	1.0	92.8	20.2	59.9	53.7
4.0	15.0	18.0	-	-	16.0	1.0	-	16.0	-	-
4.0	15.0	19.0	-	-	15.0	1.0	-	15.0	-	-
4.0	15.0	20.0	-	-	15.0	2.0	-	15.0	-	-
4.0	15.0	21.0	-	-	14.0	2.0	-	14.0	-	-
4.0	15.0	22.0	-	-	14.0	1.0	-	14.0	-	-
4.0	15.0	23.0	-	-	13.0	1.0	-	13.0	-	-
4.0	16.0	-	-	-	13.0	1.0	-	13.0	-	-
4.0	16.0	1.0	-	-	12.0	1.0	-	12.0	-	-
4.0	16.0	2.0	-	-	12.0	1.0	-	12.0	-	-
4.0	16.0	3.0	-	-	12.0	2.0	-	12.0	-	-
4.0	16.0	4.0	-	-	12.0	2.0	-	12.0	-	-
4.0	16.0	5.0	-	6.0	12.0	2.0	5.7	9.7	5.1	-
4.0	16.0	6.0	135.0	91.0	14.0	2.0	115.3	15.3	94.4	87.4
4.0	16.0	7.0	367.0	165.0	15.0	2.0	330.0	23.6	270.2	258.9
4.0	16.0	8.0	772.0	136.0	16.0	2.0	659.4	35.4	522.6	503.0
4.0	16.0	9.0	562.0	269.0	18.0	1.0	752.8	45.6	573.2	551.7
4.0	16.0	10.0	572.0	326.0	19.0	1.0	890.1	51.3	658.9	633.9
4.0	16.0	11.0	535.0	374.0	20.0	1.0	935.0	54.3	681.4	655.4
4.0	16.0	12.0	443.0	389.0	20.0	1.0	851.3	52.0	628.2	604.4
4.0	16.0	13.0	563.0	311.0	21.0	-	843.3	58.6	599.6	577.0
4.0	16.0	14.0	469.0	276.0	21.0	-	651.8	52.3	478.2	460.3
4.0	16.0	15.0	445.0	206.0	20.0	1.0	473.1	38.5	368.0	353.8
4.0	16.0	16.0	553.0	112.0	19.0	1.0	314.3	31.0	237.3	226.9
4.0	16.0	17.0	273.0	60.0	18.0	-	87.2	23.4	60.7	54.5
4.0	16.0	18.0	-	-	18.0	-	-	18.0	-	-
4.0	16.0	19.0	-	-	17.0	-	-	17.0	-	-
4.0	16.0	20.0	-	-	17.0	1.0	-	17.0	-	-
4.0	16.0	21.0	-	-	17.0	1.0	-	17.0	-	-
4.0	16.0	22.0	-	-	17.0	1.0	-	17.0	-	-
4.0	16.0	23.0	-	-	17.0	2.0	-	17.0	-	-
4.0	17.0	-	-	-	16.0	2.0	-	16.0	-	-
4.0	17.0	1.0	-	-	16.0	2.0	-	16.0	-	-
4.0	17.0	2.0	-	-	16.0	2.0	-	16.0	-	-
4.0	17.0	3.0	-	-	16.0	2.0	-	16.0	-	-
4.0	17.0	4.0	-	-	16.0	3.0	-	16.0	-	-
4.0	17.0	5.0	-	-	16.0	3.0	-	16.0	-	-
4.0	17.0	6.0	207.0	89.0	16.0	4.0	129.6	17.5	102.0	94.9
4.0	17.0	7.0	150.0	194.0	17.0	4.0	258.0	22.2	216.6	206.8
4.0	17.0	8.0	139.0	296.0	18.0	4.0	387.3	26.8	323.1	310.3
4.0	17.0	9.0	68.0	361.0	19.0	4.0	414.2	28.9	343.5	330.0
4.0	17.0	10.0	169.0	450.0	20.0	3.0	618.6	36.4	494.6	476.1
4.0	17.0	11.0	181.0	469.0	20.0	3.0	661.2	38.2	524.0	504.4
4.0	17.0	12.0	292.0	454.0	21.0	3.0	761.0	41.9	591.9	569.6
4.0	17.0	13.0	755.0	199.0	21.0	2.0	906.2	49.0	678.8	652.9
4.0	17.0	14.0	695.0	190.0	21.0	2.0	742.3	45.0	565.5	544.3
4.0	17.0	15.0	399.0	218.0	20.0	1.0	457.5	38.5	356.3	342.5
4.0	17.0	16.0	237.0	161.0	19.0	1.0	243.7	28.5	193.6	184.3
4.0	17.0	17.0	103.0	65.0	19.0	2.0	72.2	20.3	57.2	51.0
4.0	17.0	18.0	-	-	18.0	2.0	-	18.0	-	-
4.0	17.0	19.0	-	-	18.0	2.0	-	18.0	-	-
4.0	17.0	20.0	-	-	17.0	1.0	-	17.0	-	-

4.0	17.0	21.0	-	-	17.0	1.0	-	17.0	-	-
4.0	17.0	22.0	-	-	17.0	1.0	-	17.0	-	-
4.0	17.0	23.0	-	-	17.0	1.0	-	17.0	-	-
4.0	18.0	-	-	-	17.0	2.0	-	17.0	-	-
4.0	18.0	1.0	-	-	16.0	2.0	-	16.0	-	-
4.0	18.0	2.0	-	-	16.0	2.0	-	16.0	-	-
4.0	18.0	3.0	-	-	16.0	2.0	-	16.0	-	-
4.0	18.0	4.0	-	-	16.0	2.0	-	16.0	-	-
4.0	18.0	5.0	-	7.0	16.0	3.0	6.6	14.2	5.9	0.7
4.0	18.0	6.0	66.0	99.0	17.0	3.0	107.8	18.1	90.4	83.5
4.0	18.0	7.0	295.0	180.0	18.0	3.0	312.8	25.1	255.9	245.0
4.0	18.0	8.0	349.0	277.0	19.0	3.0	512.7	32.3	415.1	399.4
4.0	18.0	9.0	70.0	364.0	20.0	3.0	418.7	31.5	342.9	329.5
4.0	18.0	10.0	28.0	354.0	21.0	3.0	378.2	31.0	310.5	298.0
4.0	18.0	11.0	185.0	482.0	21.0	3.0	678.2	38.9	535.8	515.7
4.0	18.0	12.0	211.0	472.0	21.0	3.0	690.6	40.2	541.9	521.6
4.0	18.0	13.0	255.0	421.0	21.0	2.0	666.3	42.0	517.9	498.5
4.0	18.0	14.0	361.0	320.0	20.0	2.0	605.7	39.2	476.2	458.3
4.0	18.0	15.0	328.0	236.0	20.0	2.0	429.3	33.8	342.9	329.4
4.0	18.0	16.0	173.0	154.0	19.0	2.0	211.8	25.5	171.9	163.1
4.0	18.0	17.0	-	47.0	19.0	2.0	44.3	19.2	38.5	32.7
4.0	18.0	18.0	-	-	18.0	2.0	-	18.0	-	-
4.0	18.0	19.0	-	-	18.0	1.0	-	18.0	-	-
4.0	18.0	20.0	-	-	18.0	1.0	-	18.0	-	-
4.0	18.0	21.0	-	-	18.0	1.0	-	18.0	-	-
4.0	18.0	22.0	-	-	18.0	2.0	-	18.0	-	-
4.0	18.0	23.0	-	-	17.0	1.0	-	17.0	-	-
4.0	19.0	-	-	-	17.0	1.0	-	17.0	-	-
4.0	19.0	1.0	-	-	17.0	1.0	-	17.0	-	-
4.0	19.0	2.0	-	-	17.0	1.0	-	17.0	-	-
4.0	19.0	3.0	-	-	17.0	1.0	-	17.0	-	-
4.0	19.0	4.0	-	-	18.0	1.0	-	18.0	-	-
4.0	19.0	5.0	-	1.0	18.0	2.0	0.9	15.8	0.8	-
4.0	19.0	6.0	-	27.0	18.0	2.0	25.6	16.6	22.5	17.0
4.0	19.0	7.0	-	135.0	19.0	2.0	128.6	21.0	110.7	103.4
4.0	19.0	8.0	48.0	272.0	20.0	2.0	298.0	27.7	248.1	237.4
4.0	19.0	9.0	20.0	289.0	21.0	2.0	295.5	29.4	244.5	233.9
4.0	19.0	10.0	17.0	303.0	21.0	3.0	309.2	28.7	256.7	245.7
4.0	19.0	11.0	56.0	436.0	21.0	3.0	492.3	33.7	399.0	383.8
4.0	19.0	12.0	45.0	414.0	21.0	3.0	457.8	33.4	371.5	357.2
4.0	19.0	13.0	15.0	284.0	22.0	3.0	287.8	29.7	237.8	227.3
4.0	19.0	14.0	21.0	273.0	21.0	3.0	279.2	27.9	232.6	222.3
4.0	19.0	15.0	57.0	243.0	21.0	3.0	269.9	27.6	224.4	214.3
4.0	19.0	16.0	160.0	155.0	21.0	3.0	207.9	25.9	168.8	160.1
4.0	19.0	17.0	56.0	64.0	20.0	3.0	65.9	20.7	54.0	47.9
4.0	19.0	18.0	-	-	20.0	3.0	-	20.0	-	-
4.0	19.0	19.0	-	-	20.0	3.0	-	20.0	-	-
4.0	19.0	20.0	-	-	20.0	3.0	-	20.0	-	-
4.0	19.0	21.0	-	-	20.0	2.0	-	20.0	-	-
4.0	19.0	22.0	-	-	20.0	2.0	-	20.0	-	-
4.0	19.0	23.0	-	-	19.0	2.0	-	19.0	-	-
4.0	20.0	-	-	-	19.0	2.0	-	19.0	-	-
4.0	20.0	1.0	-	-	18.0	2.0	-	18.0	-	-
4.0	20.0	2.0	-	-	17.0	2.0	-	17.0	-	-
4.0	20.0	3.0	-	-	16.0	2.0	-	16.0	-	-
4.0	20.0	4.0	-	-	16.0	2.0	-	16.0	-	-
4.0	20.0	5.0	79.0	15.0	16.0	2.0	12.2	14.1	10.9	5.6
4.0	20.0	6.0	526.0	69.0	17.0	2.0	182.6	20.6	129.2	121.5
4.0	20.0	7.0	721.0	96.0	18.0	2.0	430.0	30.0	335.4	322.1
4.0	20.0	8.0	818.0	113.0	18.0	2.0	668.5	38.1	522.8	503.2
4.0	20.0	9.0	881.0	119.0	19.0	2.0	863.8	45.6	657.5	632.5
4.0	20.0	10.0	908.0	127.0	20.0	2.0	998.0	51.0	740.1	711.5
4.0	20.0	11.0	276.0	470.0	21.0	2.0	764.6	46.0	582.3	560.4
4.0	20.0	12.0	173.0	468.0	21.0	2.0	648.0	41.8	504.4	485.5
4.0	20.0	13.0	857.0	149.0	21.0	2.0	942.9	49.6	704.1	677.1
4.0	20.0	14.0	801.0	147.0	21.0	2.0	777.2	46.1	588.3	566.1
4.0	20.0	15.0	10.0	193.0	21.0	2.0	190.5	28.4	158.2	149.8
4.0	20.0	16.0	206.0	153.0	20.0	2.0	224.1	25.7	180.8	171.8
4.0	20.0	17.0	299.0	61.0	19.0	2.0	90.6	20.7	63.1	56.8
4.0	20.0	18.0	-	-	18.0	2.0	-	18.0	-	-
4.0	20.0	19.0	-	-	17.0	2.0	-	17.0	-	-
4.0	20.0	20.0	-	-	16.0	2.0	-	16.0	-	-
4.0	20.0	21.0	-	-	15.0	2.0	-	15.0	-	-
4.0	20.0	22.0	-	-	15.0	2.0	-	15.0	-	-
4.0	20.0	23.0	-	-	14.0	2.0	-	14.0	-	-
4.0	21.0	-	-	-	14.0	2.0	-	14.0	-	-
4.0	21.0	1.0	-	-	13.0	1.0	-	13.0	-	-
4.0	21.0	2.0	-	-	13.0	1.0	-	13.0	-	-
4.0	21.0	3.0	-	-	13.0	1.0	-	13.0	-	-
4.0	21.0	4.0	-	-	13.0	1.0	-	13.0	-	-
4.0	21.0	5.0	95.0	16.0	14.0	1.0	13.1	11.5	11.8	6.4

4.0	21.0	6.0	522.0	71.0	16.0	1.0	184.4	20.2	131.3	123.5
4.0	21.0	7.0	706.0	102.0	18.0	1.0	429.9	32.2	332.2	319.1
4.0	21.0	8.0	803.0	120.0	20.0	2.0	666.2	39.9	516.2	496.9
4.0	21.0	9.0	855.0	133.0	21.0	2.0	860.6	47.4	649.0	624.4
4.0	21.0	10.0	872.0	147.0	22.0	3.0	983.8	49.2	736.5	708.1
4.0	21.0	11.0	871.0	156.0	22.0	3.0	1,036.3	50.9	769.2	739.2
4.0	21.0	12.0	882.0	144.0	23.0	3.0	1,023.3	51.7	756.3	726.9
4.0	21.0	13.0	846.0	147.0	22.0	3.0	930.3	48.4	699.2	672.4
4.0	21.0	14.0	783.0	148.0	22.0	3.0	763.7	43.8	585.0	563.0
4.0	21.0	15.0	293.0	246.0	21.0	3.0	417.6	33.3	334.7	321.5
4.0	21.0	16.0	531.0	104.0	20.0	2.0	297.1	29.0	226.1	216.0
4.0	21.0	17.0	-	4.0	19.0	2.0	3.8	18.4	3.3	-
4.0	21.0	18.0	-	-	19.0	1.0	-	19.0	-	-
4.0	21.0	19.0	-	-	18.0	1.0	-	18.0	-	-
4.0	21.0	20.0	-	-	17.0	1.0	-	17.0	-	-
4.0	21.0	21.0	-	-	17.0	1.0	-	17.0	-	-
4.0	21.0	22.0	-	-	16.0	1.0	-	16.0	-	-
4.0	21.0	23.0	-	-	16.0	-	-	16.0	-	-
4.0	22.0	-	-	-	16.0	-	-	16.0	-	-
4.0	22.0	1.0	-	-	16.0	-	-	16.0	-	-
4.0	22.0	2.0	-	-	15.0	1.0	-	15.0	-	-
4.0	22.0	3.0	-	-	15.0	1.0	-	15.0	-	-
4.0	22.0	4.0	-	-	15.0	1.0	-	15.0	-	-
4.0	22.0	5.0	85.0	17.0	16.0	-	13.8	12.2	12.3	7.0
4.0	22.0	6.0	501.0	74.0	17.0	-	183.4	22.6	130.2	122.4
4.0	22.0	7.0	694.0	103.0	19.0	-	426.2	37.0	321.9	309.1
4.0	22.0	8.0	792.0	122.0	20.0	-	661.3	48.7	490.0	471.6
4.0	22.0	9.0	854.0	129.0	21.0	-	851.8	57.7	607.5	584.6
4.0	22.0	10.0	879.0	139.0	22.0	-	982.4	63.9	678.0	652.1
4.0	22.0	11.0	884.0	145.0	23.0	1.0	1,038.2	60.5	730.7	702.5
4.0	22.0	12.0	901.0	130.0	23.0	1.0	1,027.6	60.5	723.5	695.6
4.0	22.0	13.0	877.0	129.0	23.0	1.0	934.3	57.7	667.6	642.2
4.0	22.0	14.0	832.0	123.0	22.0	2.0	775.5	47.0	584.2	562.2
4.0	22.0	15.0	755.0	112.0	22.0	2.0	560.2	40.3	428.5	412.3
4.0	22.0	16.0	619.0	92.0	21.0	2.0	316.7	31.2	236.4	226.0
4.0	22.0	17.0	351.0	55.0	20.0	1.0	90.8	23.0	60.0	53.7
4.0	22.0	18.0	-	-	19.0	1.0	-	19.0	-	-
4.0	22.0	19.0	-	-	19.0	2.0	-	19.0	-	-
4.0	22.0	20.0	-	-	19.0	2.0	-	19.0	-	-
4.0	22.0	21.0	-	-	19.0	2.0	-	19.0	-	-
4.0	22.0	22.0	-	-	19.0	2.0	-	19.0	-	-
4.0	22.0	23.0	-	-	18.0	2.0	-	18.0	-	-
4.0	23.0	-	-	-	18.0	2.0	-	18.0	-	-
4.0	23.0	1.0	-	-	18.0	1.0	-	18.0	-	-
4.0	23.0	2.0	-	-	18.0	1.0	-	18.0	-	-
4.0	23.0	3.0	-	-	18.0	1.0	-	18.0	-	-
4.0	23.0	4.0	-	-	18.0	1.0	-	18.0	-	-
4.0	23.0	5.0	104.0	19.0	19.0	1.0	15.4	16.8	13.5	8.2
4.0	23.0	6.0	527.0	73.0	20.0	1.0	188.9	24.5	132.3	124.5
4.0	23.0	7.0	719.0	99.0	21.0	1.0	434.3	35.4	330.5	317.4
4.0	23.0	8.0	820.0	113.0	22.0	1.0	671.4	45.6	505.4	486.5
4.0	23.0	9.0	880.0	119.0	23.0	1.0	863.8	53.8	629.3	605.5
4.0	23.0	10.0	907.0	125.0	24.0	1.0	994.9	59.6	703.6	676.7
4.0	23.0	11.0	917.0	128.0	24.0	1.0	1,053.9	62.0	735.8	707.4
4.0	23.0	12.0	454.0	393.0	24.0	1.0	862.2	56.6	620.4	597.0
4.0	23.0	13.0	894.0	124.0	24.0	1.0	944.1	58.1	673.0	647.4
4.0	23.0	14.0	856.0	116.0	23.0	1.0	783.3	52.7	572.3	550.8
4.0	23.0	15.0	794.0	102.0	23.0	1.0	572.4	45.3	426.4	410.2
4.0	23.0	16.0	676.0	83.0	22.0	1.0	328.0	35.1	239.0	228.6
4.0	23.0	17.0	427.0	51.0	21.0	1.0	96.5	24.3	60.7	54.5
4.0	23.0	18.0	-	-	19.0	1.0	-	19.0	-	-
4.0	23.0	19.0	-	-	18.0	1.0	-	18.0	-	-
4.0	23.0	20.0	-	-	18.0	1.0	-	18.0	-	-
4.0	23.0	21.0	-	-	18.0	1.0	-	18.0	-	-
4.0	23.0	22.0	-	-	18.0	1.0	-	18.0	-	-
4.0	23.0	23.0	-	-	18.0	1.0	-	18.0	-	-
4.0	24.0	-	-	-	18.0	1.0	-	18.0	-	-
4.0	24.0	1.0	-	-	18.0	1.0	-	18.0	-	-
4.0	24.0	2.0	-	-	18.0	1.0	-	18.0	-	-
4.0	24.0	3.0	-	-	17.0	1.0	-	17.0	-	-
4.0	24.0	4.0	-	-	17.0	1.0	-	17.0	-	-
4.0	24.0	5.0	126.0	20.0	18.0	1.0	16.3	15.8	14.4	9.0
4.0	24.0	6.0	531.0	74.0	20.0	1.0	191.5	24.6	134.3	126.4
4.0	24.0	7.0	706.0	104.0	21.0	1.0	434.0	35.4	330.7	317.6
4.0	24.0	8.0	790.0	127.0	22.0	1.0	666.0	45.4	502.0	483.2
4.0	24.0	9.0	831.0	146.0	23.0	1.0	854.3	53.5	623.6	600.0
4.0	24.0	10.0	849.0	161.0	24.0	1.0	982.2	59.2	696.3	669.7
4.0	24.0	11.0	464.0	374.0	24.0	2.0	860.2	51.4	636.5	612.5
4.0	24.0	12.0	468.0	391.0	24.0	1.0	873.4	56.0	630.6	606.7
4.0	24.0	13.0	835.0	155.0	24.0	1.0	926.6	57.6	662.3	637.1
4.0	24.0	14.0	790.0	145.0	23.0	1.0	764.4	52.1	560.7	539.6

4.0	24.0	15.0	718.0	128.0	23.0	1.0	553.9	44.6	414.8	399.0
4.0	24.0	16.0	592.0	102.0	22.0	1.0	316.3	34.6	233.3	223.0
4.0	24.0	17.0	346.0	58.0	21.0	1.0	92.9	24.1	61.7	55.4
4.0	24.0	18.0	-	-	20.0	1.0	-	20.0	-	-
4.0	24.0	19.0	-	-	19.0	1.0	-	19.0	-	-
4.0	24.0	20.0	-	-	19.0	1.0	-	19.0	-	-
4.0	24.0	21.0	-	-	19.0	1.0	-	19.0	-	-
4.0	24.0	22.0	-	-	19.0	1.0	-	19.0	-	-
4.0	24.0	23.0	-	-	19.0	1.0	-	19.0	-	-
4.0	25.0	-	-	-	19.0	1.0	-	19.0	-	-
4.0	25.0	1.0	-	-	19.0	1.0	-	19.0	-	-
4.0	25.0	2.0	-	-	18.0	1.0	-	18.0	-	-
4.0	25.0	3.0	-	-	18.0	1.0	-	18.0	-	-
4.0	25.0	4.0	-	-	18.0	1.0	-	18.0	-	-
4.0	25.0	5.0	-	19.0	19.0	1.0	18.0	16.9	15.8	10.4
4.0	25.0	6.0	211.0	100.0	20.0	1.0	142.8	22.8	110.8	103.5
4.0	25.0	7.0	503.0	147.0	21.0	1.0	381.1	33.2	296.5	284.4
4.0	25.0	8.0	488.0	231.0	22.0	1.0	565.4	41.9	435.7	419.2
4.0	25.0	9.0	559.0	280.0	23.0	1.0	761.3	50.1	566.2	545.0
4.0	25.0	10.0	574.0	319.0	24.0	1.0	882.6	55.8	637.8	613.7
4.0	25.0	11.0	855.0	168.0	25.0	1.0	1,038.8	61.9	725.5	697.5
4.0	25.0	12.0	856.0	164.0	25.0	1.0	1,022.9	62.2	713.3	685.9
4.0	25.0	13.0	837.0	157.0	24.0	1.0	929.9	58.4	661.6	636.5
4.0	25.0	14.0	798.0	146.0	24.0	1.0	771.0	53.2	562.0	540.9
4.0	25.0	15.0	725.0	129.0	23.0	1.0	558.6	44.8	417.8	402.0
4.0	25.0	16.0	602.0	103.0	22.0	1.0	320.7	34.7	236.2	225.8
4.0	25.0	17.0	356.0	60.0	21.0	1.0	95.8	24.3	63.6	57.3
4.0	25.0	18.0	-	-	20.0	1.0	-	20.0	-	-
4.0	25.0	19.0	-	-	20.0	1.0	-	20.0	-	-
4.0	25.0	20.0	-	-	19.0	1.0	-	19.0	-	-
4.0	25.0	21.0	-	-	19.0	1.0	-	19.0	-	-
4.0	25.0	22.0	-	-	19.0	1.0	-	19.0	-	-
4.0	25.0	23.0	-	-	19.0	1.0	-	19.0	-	-
4.0	26.0	-	-	-	19.0	1.0	-	19.0	-	-
4.0	26.0	1.0	-	-	19.0	1.0	-	19.0	-	-
4.0	26.0	2.0	-	-	18.0	1.0	-	18.0	-	-
4.0	26.0	3.0	-	-	18.0	1.0	-	18.0	-	-
4.0	26.0	4.0	-	-	18.0	1.0	-	18.0	-	-
4.0	26.0	5.0	105.0	23.0	19.0	2.0	18.5	17.4	16.2	10.8
4.0	26.0	6.0	490.0	82.0	20.0	2.0	191.2	23.9	136.8	128.9
4.0	26.0	7.0	102.0	206.0	22.0	2.0	245.4	28.4	201.3	191.8
4.0	26.0	8.0	72.0	294.0	23.0	3.0	335.0	31.3	274.1	262.7
4.0	26.0	9.0	93.0	386.0	23.0	3.0	458.6	34.9	369.3	355.0
4.0	26.0	10.0	228.0	455.0	24.0	3.0	676.7	42.0	526.0	506.3
4.0	26.0	11.0	206.0	475.0	24.0	3.0	688.8	43.0	532.6	512.7
4.0	26.0	12.0	150.0	480.0	24.0	3.0	634.8	41.7	494.3	475.8
4.0	26.0	13.0	801.0	180.0	24.0	3.0	919.7	48.8	689.6	663.2
4.0	26.0	14.0	758.0	167.0	23.0	3.0	762.3	44.7	581.3	559.5
4.0	26.0	15.0	683.0	147.0	23.0	3.0	551.7	38.8	426.0	409.8
4.0	26.0	16.0	561.0	114.0	22.0	2.0	316.4	32.2	237.3	226.9
4.0	26.0	17.0	313.0	66.0	21.0	2.0	96.3	23.4	66.4	60.1
4.0	26.0	18.0	-	-	20.0	2.0	-	20.0	-	-
4.0	26.0	19.0	-	-	20.0	2.0	-	20.0	-	-
4.0	26.0	20.0	-	-	19.0	2.0	-	19.0	-	-
4.0	26.0	21.0	-	-	19.0	1.0	-	19.0	-	-
4.0	26.0	22.0	-	-	19.0	1.0	-	19.0	-	-
4.0	26.0	23.0	-	-	19.0	1.0	-	19.0	-	-
4.0	27.0	-	-	-	19.0	1.0	-	19.0	-	-
4.0	27.0	1.0	-	-	19.0	1.0	-	19.0	-	-
4.0	27.0	2.0	-	-	19.0	2.0	-	19.0	-	-
4.0	27.0	3.0	-	-	19.0	2.0	-	19.0	-	-
4.0	27.0	4.0	-	-	19.0	2.0	-	19.0	-	-
4.0	27.0	5.0	75.0	25.0	19.0	2.0	21.4	17.5	18.8	13.3
4.0	27.0	6.0	441.0	91.0	21.0	2.0	187.8	24.8	135.9	128.0
4.0	27.0	7.0	629.0	129.0	22.0	3.0	424.7	32.5	330.0	316.9
4.0	27.0	8.0	80.0	303.0	23.0	3.0	349.2	32.3	284.2	272.5
4.0	27.0	9.0	793.0	165.0	23.0	3.0	841.7	44.9	642.9	618.6
4.0	27.0	10.0	825.0	173.0	24.0	3.0	970.8	50.7	720.9	693.2
4.0	27.0	11.0	208.0	488.0	24.0	2.0	703.6	47.1	532.9	512.9
4.0	27.0	12.0	844.0	169.0	24.0	2.0	1,015.0	54.6	738.2	709.7
4.0	27.0	13.0	825.0	162.0	24.0	2.0	922.8	53.3	675.5	649.8
4.0	27.0	14.0	781.0	153.0	23.0	2.0	763.8	47.6	573.7	552.2
4.0	27.0	15.0	712.0	134.0	23.0	2.0	555.2	41.1	423.4	407.3
4.0	27.0	16.0	600.0	104.0	22.0	2.0	320.5	32.3	239.0	228.5
4.0	27.0	17.0	348.0	63.0	21.0	2.0	97.5	23.5	65.7	59.3
4.0	27.0	18.0	-	-	20.0	2.0	-	20.0	-	-
4.0	27.0	19.0	-	-	20.0	2.0	-	20.0	-	-
4.0	27.0	20.0	-	-	19.0	1.0	-	19.0	-	-
4.0	27.0	21.0	-	-	19.0	1.0	-	19.0	-	-
4.0	27.0	22.0	-	-	19.0	1.0	-	19.0	-	-
4.0	27.0	23.0	-	-	19.0	1.0	-	19.0	-	-

4.0	28.0	-	-	-	19.0	1.0	-	19.0	-	-
4.0	28.0	1.0	-	-	19.0	1.0	-	19.0	-	-
4.0	28.0	2.0	-	-	18.0	1.0	-	18.0	-	-
4.0	28.0	3.0	-	-	18.0	1.0	-	18.0	-	-
4.0	28.0	4.0	-	-	18.0	1.0	-	18.0	-	-
4.0	28.0	5.0	97.0	25.0	19.0	1.0	21.5	17.1	18.8	13.4
4.0	28.0	6.0	7.0	97.0	21.0	1.0	93.0	22.0	79.3	72.7
4.0	28.0	7.0	80.0	205.0	22.0	2.0	234.1	27.6	193.3	184.0
4.0	28.0	8.0	53.0	286.0	23.0	2.0	314.1	31.7	256.5	245.6
4.0	28.0	9.0	101.0	389.0	23.0	2.0	467.9	36.6	373.5	359.1
4.0	28.0	10.0	234.0	456.0	24.0	2.0	682.7	44.5	524.0	504.4
4.0	28.0	11.0	392.0	426.0	24.0	2.0	831.8	49.5	621.9	598.4
4.0	28.0	12.0	190.0	482.0	24.0	2.0	675.3	45.7	515.1	495.8
4.0	28.0	13.0	353.0	400.0	24.0	1.0	728.5	50.6	541.3	521.0
4.0	28.0	14.0	419.0	305.0	24.0	1.0	635.3	48.0	477.2	459.3
4.0	28.0	15.0	333.0	242.0	23.0	1.0	434.4	40.0	336.4	323.1
4.0	28.0	16.0	524.0	109.0	22.0	1.0	297.9	33.2	222.4	212.4
4.0	28.0	17.0	61.0	71.0	21.0	1.0	72.6	23.2	58.8	52.6
4.0	28.0	18.0	-	-	21.0	1.0	-	21.0	-	-
4.0	28.0	19.0	-	-	20.0	1.0	-	20.0	-	-
4.0	28.0	20.0	-	-	20.0	1.0	-	20.0	-	-
4.0	28.0	21.0	-	-	20.0	1.0	-	20.0	-	-
4.0	28.0	22.0	-	-	20.0	-	-	20.0	-	-
4.0	28.0	23.0	-	-	20.0	-	-	20.0	-	-
4.0	29.0	-	-	-	20.0	-	-	20.0	-	-
4.0	29.0	1.0	-	-	20.0	-	-	20.0	-	-
4.0	29.0	2.0	-	-	20.0	-	-	20.0	-	-
4.0	29.0	3.0	-	-	19.0	-	-	19.0	-	-
4.0	29.0	4.0	-	-	19.0	1.0	-	19.0	-	-
4.0	29.0	5.0	115.0	26.0	19.0	1.0	20.7	17.0	18.1	12.7
4.0	29.0	6.0	480.0	84.0	20.0	2.0	192.5	24.0	138.4	130.5
4.0	29.0	7.0	662.0	115.0	22.0	2.0	427.2	33.9	329.0	315.9
4.0	29.0	8.0	758.0	135.0	23.0	2.0	654.0	42.5	500.7	482.0
4.0	29.0	9.0	811.0	149.0	23.0	2.0	840.7	48.7	629.6	605.8
4.0	29.0	10.0	839.0	157.0	24.0	2.0	967.2	53.8	706.4	679.3
4.0	29.0	11.0	848.0	162.0	24.0	2.0	1,023.6	55.8	739.7	711.1
4.0	29.0	12.0	836.0	167.0	24.0	2.0	1,003.8	55.5	726.6	698.6
4.0	29.0	13.0	812.0	163.0	24.0	2.0	910.7	52.9	668.0	642.6
4.0	29.0	14.0	774.0	150.0	23.0	2.0	754.3	47.3	567.5	546.2
4.0	29.0	15.0	221.0	263.0	23.0	2.0	386.2	36.1	306.0	293.6
4.0	29.0	16.0	609.0	97.0	22.0	2.0	316.5	31.5	236.3	226.0
4.0	29.0	17.0	376.0	58.0	21.0	1.0	96.2	24.2	62.9	56.6
4.0	29.0	18.0	-	-	20.0	1.0	-	20.0	-	-
4.0	29.0	19.0	-	-	20.0	1.0	-	20.0	-	-
4.0	29.0	20.0	-	-	20.0	1.0	-	20.0	-	-
4.0	29.0	21.0	-	-	19.0	1.0	-	19.0	-	-
4.0	29.0	22.0	-	-	19.0	1.0	-	19.0	-	-
4.0	29.0	23.0	-	-	19.0	1.0	-	19.0	-	-
4.0	30.0	-	-	-	19.0	1.0	-	19.0	-	-
4.0	30.0	1.0	-	-	19.0	1.0	-	19.0	-	-
4.0	30.0	2.0	-	-	19.0	1.0	-	19.0	-	-
4.0	30.0	3.0	-	-	19.0	2.0	-	19.0	-	-
4.0	30.0	4.0	-	-	19.0	2.0	-	19.0	-	-
4.0	30.0	5.0	137.0	27.0	20.0	2.0	21.5	18.5	18.7	13.2
4.0	30.0	6.0	517.0	78.0	21.0	2.0	195.7	25.1	138.5	130.6
4.0	30.0	7.0	694.0	105.0	22.0	2.0	432.6	34.1	332.3	319.2
4.0	30.0	8.0	786.0	122.0	23.0	2.0	660.0	42.7	504.7	485.8
4.0	30.0	9.0	449.0	323.0	23.0	2.0	710.5	45.1	542.8	522.5
4.0	30.0	10.0	861.0	142.0	24.0	2.0	966.6	53.3	707.8	680.6
4.0	30.0	11.0	523.0	349.0	24.0	2.0	890.8	52.2	656.5	631.5
4.0	30.0	12.0	523.0	340.0	24.0	2.0	872.8	51.4	645.9	621.4
4.0	30.0	13.0	448.0	338.0	24.0	2.0	757.2	48.2	569.8	548.4
4.0	30.0	14.0	139.0	363.0	23.0	2.0	467.1	38.5	369.1	354.8
4.0	30.0	15.0	323.0	252.0	23.0	2.0	437.7	36.4	345.2	331.7
4.0	30.0	16.0	497.0	127.0	22.0	2.0	303.4	31.3	230.1	219.8
4.0	30.0	17.0	133.0	74.0	21.0	1.0	83.2	23.7	64.1	57.8
4.0	30.0	18.0	-	-	21.0	3.0	-	21.0	-	-
4.0	30.0	19.0	-	-	21.0	3.0	-	21.0	-	-
4.0	30.0	20.0	-	-	21.0	3.0	-	21.0	-	-
4.0	30.0	21.0	-	-	21.0	2.0	-	21.0	-	-
4.0	30.0	22.0	-	-	20.0	2.0	-	20.0	-	-
4.0	30.0	23.0	-	-	20.0	2.0	-	20.0	-	-
5.0	1.0	-	-	-	20.0	1.0	-	20.0	-	-
5.0	1.0	1.0	-	-	20.0	1.0	-	20.0	-	-
5.0	1.0	2.0	-	-	20.0	1.0	-	20.0	-	-
5.0	1.0	3.0	-	-	20.0	1.0	-	20.0	-	-
5.0	1.0	4.0	-	-	20.0	1.0	-	20.0	-	-
5.0	1.0	5.0	43.0	29.0	20.0	2.0	25.7	18.6	22.3	16.8
5.0	1.0	6.0	-	69.0	20.0	2.0	65.4	20.0	56.6	50.4
5.0	1.0	7.0	541.0	158.0	21.0	2.0	411.3	31.9	322.5	309.7
5.0	1.0	8.0	648.0	190.0	21.0	2.0	635.4	40.0	493.6	475.1

5.0	1.0	9.0	731.0	199.0	22.0	2.0	825.8	47.2	623.4	599.8
5.0	1.0	10.0	768.0	209.0	23.0	2.0	955.3	52.5	702.7	675.8
5.0	1.0	11.0	789.0	209.0	24.0	2.0	1,010.5	55.4	731.8	703.6
5.0	1.0	12.0	794.0	201.0	24.0	2.0	995.1	55.2	721.4	693.7
5.0	1.0	13.0	776.0	191.0	24.0	2.0	904.7	52.7	664.4	639.1
5.0	1.0	14.0	743.0	171.0	24.0	2.0	752.0	48.1	563.2	542.1
5.0	1.0	15.0	654.0	157.0	23.0	2.0	542.7	40.7	415.3	399.5
5.0	1.0	16.0	531.0	122.0	23.0	2.0	310.7	33.0	232.8	222.5
5.0	1.0	17.0	292.0	71.0	22.0	2.0	98.3	24.5	68.8	62.3
5.0	1.0	18.0	-	-	20.0	1.0	-	20.0	-	-
5.0	1.0	19.0	-	-	20.0	1.0	-	20.0	-	-
5.0	1.0	20.0	-	-	19.0	1.0	-	19.0	-	-
5.0	1.0	21.0	-	-	19.0	1.0	-	19.0	-	-
5.0	1.0	22.0	-	-	19.0	1.0	-	19.0	-	-
5.0	1.0	23.0	-	-	19.0	1.0	-	19.0	-	-
5.0	2.0	-	-	-	19.0	1.0	-	19.0	-	-
5.0	2.0	1.0	-	-	19.0	1.0	-	19.0	-	-
5.0	2.0	2.0	-	-	19.0	1.0	-	19.0	-	-
5.0	2.0	3.0	-	-	19.0	1.0	-	19.0	-	-
5.0	2.0	4.0	-	-	19.0	1.0	-	19.0	-	-
5.0	2.0	5.0	111.0	30.0	20.0	1.0	25.3	18.2	22.0	16.5
5.0	2.0	6.0	469.0	90.0	21.0	1.0	195.6	25.8	140.5	132.5
5.0	2.0	7.0	647.0	123.0	22.0	1.0	429.1	36.2	327.3	314.3
5.0	2.0	8.0	742.0	146.0	23.0	1.0	655.2	46.0	492.8	474.3
5.0	2.0	9.0	794.0	162.0	24.0	1.0	839.0	53.9	611.1	588.0
5.0	2.0	10.0	475.0	349.0	25.0	1.0	815.5	55.0	591.6	569.4
5.0	2.0	11.0	479.0	367.0	25.0	1.0	863.7	56.4	622.1	598.6
5.0	2.0	12.0	473.0	363.0	26.0	1.0	845.3	57.0	606.8	583.9
5.0	2.0	13.0	794.0	178.0	25.0	2.0	907.5	53.2	664.7	639.4
5.0	2.0	14.0	755.0	164.0	25.0	2.0	753.5	49.2	561.3	540.3
5.0	2.0	15.0	686.0	142.0	24.0	2.0	546.1	41.7	415.2	399.4
5.0	2.0	16.0	565.0	112.0	23.0	2.0	314.8	33.1	234.7	224.4
5.0	2.0	17.0	329.0	67.0	22.0	1.0	99.0	25.4	67.2	60.8
5.0	2.0	18.0	-	-	21.0	1.0	-	21.0	-	-
5.0	2.0	19.0	-	-	20.0	1.0	-	20.0	-	-
5.0	2.0	20.0	-	-	20.0	1.0	-	20.0	-	-
5.0	2.0	21.0	-	-	20.0	1.0	-	20.0	-	-
5.0	2.0	22.0	-	-	19.0	1.0	-	19.0	-	-
5.0	2.0	23.0	-	-	19.0	1.0	-	19.0	-	-
5.0	3.0	-	-	-	19.0	1.0	-	19.0	-	-
5.0	3.0	1.0	-	-	19.0	1.0	-	19.0	-	-
5.0	3.0	2.0	-	-	19.0	1.0	-	19.0	-	-
5.0	3.0	3.0	-	-	19.0	1.0	-	19.0	-	-
5.0	3.0	4.0	-	-	19.0	1.0	-	19.0	-	-
5.0	3.0	5.0	158.0	30.0	20.0	-	23.6	17.0	20.7	15.2
5.0	3.0	6.0	526.0	81.0	22.0	-	202.1	28.8	141.1	133.1
5.0	3.0	7.0	701.0	108.0	23.0	-	439.9	41.6	325.7	312.8
5.0	3.0	8.0	794.0	124.0	24.0	-	667.8	52.8	484.3	466.2
5.0	3.0	9.0	849.0	134.0	25.0	-	856.8	61.5	598.0	575.5
5.0	3.0	10.0	877.0	140.0	26.0	-	978.7	67.4	661.8	636.6
5.0	3.0	11.0	889.0	143.0	27.0	1.0	1,035.9	64.1	714.4	687.0
5.0	3.0	12.0	886.0	142.0	27.0	1.0	1,018.3	63.9	703.3	676.3
5.0	3.0	13.0	867.0	137.0	27.0	1.0	926.6	61.1	649.5	624.9
5.0	3.0	14.0	827.0	129.0	26.0	2.0	771.8	50.7	570.0	548.6
5.0	3.0	15.0	757.0	117.0	25.0	2.0	562.2	43.2	423.4	407.3
5.0	3.0	16.0	634.0	96.0	24.0	2.0	323.9	34.5	238.0	227.5
5.0	3.0	17.0	393.0	61.0	23.0	1.0	101.0	26.5	65.4	59.0
5.0	3.0	18.0	-	-	22.0	1.0	-	22.0	-	-
5.0	3.0	19.0	-	-	21.0	1.0	-	21.0	-	-
5.0	3.0	20.0	-	-	21.0	1.0	-	21.0	-	-
5.0	3.0	21.0	-	-	20.0	1.0	-	20.0	-	-
5.0	3.0	22.0	-	-	20.0	1.0	-	20.0	-	-
5.0	3.0	23.0	-	-	20.0	1.0	-	20.0	-	-
5.0	4.0	-	-	-	20.0	1.0	-	20.0	-	-
5.0	4.0	1.0	-	-	20.0	1.0	-	20.0	-	-
5.0	4.0	2.0	-	-	20.0	1.0	-	20.0	-	-
5.0	4.0	3.0	-	-	20.0	1.0	-	20.0	-	-
5.0	4.0	4.0	-	-	20.0	1.0	-	20.0	-	-
5.0	4.0	5.0	156.0	30.0	21.0	1.0	23.5	19.2	20.4	14.9
5.0	4.0	6.0	515.0	81.0	22.0	1.0	199.9	27.0	141.1	133.1
5.0	4.0	7.0	298.0	201.0	24.0	1.0	336.6	35.1	263.5	252.4
5.0	4.0	8.0	308.0	298.0	25.0	-	505.1	47.2	379.9	365.2
5.0	4.0	9.0	64.0	376.0	26.0	-	422.5	46.5	320.8	308.0
5.0	4.0	10.0	399.0	401.0	26.0	-	788.2	58.6	560.7	539.6
5.0	4.0	11.0	319.0	440.0	27.0	1.0	769.8	55.3	557.9	537.0
5.0	4.0	12.0	844.0	159.0	27.0	1.0	1,000.1	62.1	697.7	671.0
5.0	4.0	13.0	818.0	158.0	27.0	1.0	907.9	60.5	638.7	614.5
5.0	4.0	14.0	767.0	152.0	26.0	2.0	748.4	50.0	555.0	534.1
5.0	4.0	15.0	458.0	214.0	26.0	2.0	481.3	41.8	367.9	353.6
5.0	4.0	16.0	326.0	149.0	25.0	2.0	260.9	33.2	199.7	190.3
5.0	4.0	17.0	288.0	72.0	24.0	2.0	98.8	26.3	68.7	62.3

5.0	4.0	18.0	-	-	23.0	2.0	-	23.0	-	-
5.0	4.0	19.0	-	-	22.0	2.0	-	22.0	-	-
5.0	4.0	20.0	-	-	22.0	2.0	-	22.0	-	-
5.0	4.0	21.0	-	-	22.0	2.0	-	22.0	-	-
5.0	4.0	22.0	-	-	22.0	2.0	-	22.0	-	-
5.0	4.0	23.0	-	-	22.0	2.0	-	22.0	-	-
5.0	5.0	-	-	-	22.0	2.0	-	22.0	-	-
5.0	5.0	1.0	-	-	22.0	2.0	-	22.0	-	-
5.0	5.0	2.0	-	-	22.0	2.0	-	22.0	-	-
5.0	5.0	3.0	-	-	22.0	1.0	-	22.0	-	-
5.0	5.0	4.0	-	-	22.0	1.0	-	22.0	-	-
5.0	5.0	5.0	-	17.0	22.0	2.0	16.1	20.4	13.9	8.5
5.0	5.0	6.0	283.0	105.0	23.0	2.0	166.2	26.2	125.2	117.5
5.0	5.0	7.0	539.0	154.0	23.0	1.0	407.2	36.3	312.5	300.0
5.0	5.0	8.0	646.0	181.0	24.0	1.0	625.1	45.9	471.0	453.3
5.0	5.0	9.0	642.0	239.0	24.0	2.0	789.6	48.1	593.5	571.1
5.0	5.0	10.0	34.0	371.0	25.0	2.0	397.9	38.6	314.7	302.1
5.0	5.0	11.0	606.0	324.0	25.0	1.0	944.8	56.8	679.0	653.1
5.0	5.0	12.0	2.0	149.0	25.0	1.0	144.7	34.1	117.1	109.6
5.0	5.0	13.0	516.0	342.0	26.0	2.0	819.6	49.0	614.0	590.8
5.0	5.0	14.0	8.0	218.0	26.0	2.0	214.8	34.3	173.5	164.7
5.0	5.0	15.0	-	67.0	26.0	2.0	63.7	27.1	53.3	47.2
5.0	5.0	16.0	498.0	126.0	25.0	2.0	302.2	32.6	227.5	217.4
5.0	5.0	17.0	267.0	74.0	24.0	2.0	98.1	26.5	69.2	62.7
5.0	5.0	18.0	-	-	23.0	2.0	-	23.0	-	-
5.0	5.0	19.0	-	-	23.0	2.0	-	23.0	-	-
5.0	5.0	20.0	-	-	23.0	2.0	-	23.0	-	-
5.0	5.0	21.0	-	-	22.0	1.0	-	22.0	-	-
5.0	5.0	22.0	-	-	22.0	1.0	-	22.0	-	-
5.0	5.0	23.0	-	-	22.0	1.0	-	22.0	-	-
5.0	6.0	-	-	-	21.0	1.0	-	21.0	-	-
5.0	6.0	1.0	-	-	21.0	1.0	-	21.0	-	-
5.0	6.0	2.0	-	-	20.0	1.0	-	20.0	-	-
5.0	6.0	3.0	-	-	20.0	1.0	-	20.0	-	-
5.0	6.0	4.0	-	-	20.0	1.0	-	20.0	-	-
5.0	6.0	5.0	39.0	31.0	20.0	2.0	27.2	18.7	23.7	18.1
5.0	6.0	6.0	387.0	107.0	21.0	2.0	193.4	25.0	143.5	135.4
5.0	6.0	7.0	568.0	148.0	23.0	1.0	415.2	36.7	317.5	304.8
5.0	6.0	8.0	666.0	176.0	24.0	1.0	633.6	46.2	476.6	458.7
5.0	6.0	9.0	467.0	320.0	25.0	1.0	720.7	51.1	533.4	513.4
5.0	6.0	10.0	437.0	387.0	26.0	1.0	814.8	55.4	590.1	567.9
5.0	6.0	11.0	618.0	309.0	26.0	1.0	941.6	59.7	666.0	640.7
5.0	6.0	12.0	499.0	341.0	26.0	1.0	846.3	57.4	606.2	583.3
5.0	6.0	13.0	431.0	366.0	26.0	1.0	765.8	54.5	557.0	536.1
5.0	6.0	14.0	535.0	263.0	25.0	1.0	679.1	50.5	502.9	484.1
5.0	6.0	15.0	330.0	249.0	25.0	2.0	437.1	39.3	339.7	326.3
5.0	6.0	16.0	97.0	169.0	24.0	2.0	195.0	30.0	157.2	148.8
5.0	6.0	17.0	-	57.0	23.0	1.0	53.6	23.9	45.5	39.6
5.0	6.0	18.0	-	-	23.0	1.0	-	23.0	-	-
5.0	6.0	19.0	-	-	23.0	1.0	-	23.0	-	-
5.0	6.0	20.0	-	-	23.0	1.0	-	23.0	-	-
5.0	6.0	21.0	-	-	22.0	1.0	-	22.0	-	-
5.0	6.0	22.0	-	-	22.0	1.0	-	22.0	-	-
5.0	6.0	23.0	-	-	22.0	1.0	-	22.0	-	-
5.0	7.0	-	-	-	22.0	1.0	-	22.0	-	-
5.0	7.0	1.0	-	-	22.0	1.0	-	22.0	-	-
5.0	7.0	2.0	-	-	22.0	1.0	-	22.0	-	-
5.0	7.0	3.0	-	-	22.0	1.0	-	22.0	-	-
5.0	7.0	4.0	-	-	22.0	1.0	-	22.0	-	-
5.0	7.0	5.0	122.0	34.0	22.0	1.0	28.1	20.5	24.2	18.7
5.0	7.0	6.0	445.0	95.0	23.0	2.0	196.2	27.2	141.5	133.5
5.0	7.0	7.0	86.0	216.0	24.0	2.0	247.0	30.5	201.1	191.6
5.0	7.0	8.0	15.0	237.0	25.0	2.0	236.7	31.5	193.8	184.5
5.0	7.0	9.0	85.0	392.0	25.0	2.0	455.5	37.9	361.3	347.3
5.0	7.0	10.0	178.0	470.0	26.0	2.0	640.1	45.2	489.6	471.2
5.0	7.0	11.0	386.0	406.0	26.0	2.0	800.6	50.4	595.8	573.3
5.0	7.0	12.0	195.0	488.0	26.0	2.0	682.1	47.7	514.8	495.6
5.0	7.0	13.0	530.0	339.0	25.0	2.0	828.0	50.4	615.9	592.6
5.0	7.0	14.0	559.0	261.0	25.0	2.0	695.0	47.2	523.6	504.0
5.0	7.0	15.0	453.0	236.0	24.0	2.0	498.6	40.1	384.7	369.9
5.0	7.0	16.0	230.0	164.0	24.0	1.0	240.2	33.6	186.2	177.1
5.0	7.0	17.0	175.0	72.0	23.0	-	86.1	27.5	63.3	56.9
5.0	7.0	18.0	-	-	23.0	-	-	23.0	-	-
5.0	7.0	19.0	-	-	23.0	1.0	-	23.0	-	-
5.0	7.0	20.0	-	-	23.0	1.0	-	23.0	-	-
5.0	7.0	21.0	-	-	22.0	1.0	-	22.0	-	-
5.0	7.0	22.0	-	-	22.0	1.0	-	22.0	-	-
5.0	7.0	23.0	-	-	22.0	1.0	-	22.0	-	-
5.0	8.0	-	-	-	22.0	1.0	-	22.0	-	-
5.0	8.0	1.0	-	-	22.0	1.0	-	22.0	-	-
5.0	8.0	2.0	-	-	22.0	1.0	-	22.0	-	-

5.0	8.0	3.0	-	-	21.0	-	-	21.0	-	-
5.0	8.0	4.0	-	-	21.0	-	-	21.0	-	-
5.0	8.0	5.0	58.0	31.0	22.0	-	27.2	19.3	23.6	18.1
5.0	8.0	6.0	27.0	112.0	23.0	-	111.5	25.4	92.7	85.7
5.0	8.0	7.0	37.0	199.0	24.0	-	207.7	32.2	168.6	159.9
5.0	8.0	8.0	387.0	280.0	25.0	-	540.2	47.4	405.3	389.8
5.0	8.0	9.0	451.0	328.0	26.0	-	714.3	56.9	512.1	492.9
5.0	8.0	10.0	429.0	365.0	26.0	-	784.6	60.4	552.4	531.7
5.0	8.0	11.0	381.0	436.0	26.0	1.0	825.3	56.0	595.7	573.3
5.0	8.0	12.0	390.0	424.0	26.0	1.0	815.1	55.9	588.7	566.5
5.0	8.0	13.0	340.0	411.0	26.0	1.0	722.3	53.0	529.7	509.9
5.0	8.0	14.0	315.0	356.0	25.0	1.0	596.7	47.7	449.2	432.3
5.0	8.0	15.0	448.0	239.0	25.0	1.0	498.3	43.8	377.4	362.8
5.0	8.0	16.0	195.0	168.0	24.0	1.0	230.2	33.2	179.7	170.8
5.0	8.0	17.0	140.0	74.0	24.0	1.0	83.7	26.3	63.4	57.0
5.0	8.0	18.0	-	-	23.0	1.0	-	23.0	-	-
5.0	8.0	19.0	-	-	23.0	1.0	-	23.0	-	-
5.0	8.0	20.0	-	-	23.0	1.0	-	23.0	-	-
5.0	8.0	21.0	-	-	23.0	1.0	-	23.0	-	-
5.0	8.0	22.0	-	-	23.0	1.0	-	23.0	-	-
5.0	8.0	23.0	-	-	22.0	1.0	-	22.0	-	-
5.0	9.0	-	-	-	22.0	1.0	-	22.0	-	-
5.0	9.0	1.0	-	-	22.0	1.0	-	22.0	-	-
5.0	9.0	2.0	-	-	22.0	1.0	-	22.0	-	-
5.0	9.0	3.0	-	-	22.0	1.0	-	22.0	-	-
5.0	9.0	4.0	-	-	22.0	1.0	-	22.0	-	-
5.0	9.0	5.0	53.0	34.0	22.0	1.0	29.5	20.5	25.5	19.9
5.0	9.0	6.0	247.0	136.0	23.0	1.0	186.5	27.6	143.2	135.1
5.0	9.0	7.0	394.0	210.0	23.0	2.0	390.4	33.8	306.5	294.1
5.0	9.0	8.0	499.0	256.0	24.0	2.0	596.3	41.7	460.2	442.9
5.0	9.0	9.0	3.0	159.0	24.0	2.0	154.5	29.5	127.7	120.0
5.0	9.0	10.0	17.0	308.0	24.0	2.0	312.8	32.3	255.2	244.3
5.0	9.0	11.0	-	116.0	24.0	2.0	111.0	26.9	93.0	86.1
5.0	9.0	12.0	100.0	477.0	25.0	2.0	570.2	40.8	446.1	429.3
5.0	9.0	13.0	-	109.0	25.0	2.0	104.1	28.9	86.3	79.5
5.0	9.0	14.0	354.0	335.0	24.0	2.0	605.5	40.8	472.2	454.4
5.0	9.0	15.0	-	127.0	24.0	1.0	120.9	30.1	99.7	92.6
5.0	9.0	16.0	-	79.0	23.0	1.0	75.1	24.1	63.7	57.4
5.0	9.0	17.0	89.0	90.0	23.0	1.0	91.9	24.4	73.4	66.9
5.0	9.0	18.0	-	-	23.0	1.0	-	23.0	-	-
5.0	9.0	19.0	-	-	23.0	1.0	-	23.0	-	-
5.0	9.0	20.0	-	-	23.0	1.0	-	23.0	-	-
5.0	9.0	21.0	-	-	23.0	1.0	-	23.0	-	-
5.0	9.0	22.0	-	-	23.0	1.0	-	23.0	-	-
5.0	9.0	23.0	-	-	23.0	1.0	-	23.0	-	-
5.0	10.0	-	-	-	23.0	1.0	-	23.0	-	-
5.0	10.0	1.0	-	-	23.0	1.0	-	23.0	-	-
5.0	10.0	2.0	-	-	23.0	1.0	-	23.0	-	-
5.0	10.0	3.0	-	-	23.0	1.0	-	23.0	-	-
5.0	10.0	4.0	-	-	23.0	1.0	-	23.0	-	-
5.0	10.0	5.0	-	4.0	23.0	2.0	3.8	21.1	3.3	-
5.0	10.0	6.0	-	63.0	24.0	2.0	59.8	23.9	50.8	44.8
5.0	10.0	7.0	101.0	221.0	24.0	2.0	258.6	30.3	210.6	200.9
5.0	10.0	8.0	40.0	283.0	25.0	2.0	300.8	33.4	243.8	233.2
5.0	10.0	9.0	6.0	186.0	25.0	2.0	182.9	30.1	150.9	142.6
5.0	10.0	10.0	18.0	318.0	26.0	1.0	323.4	36.5	258.5	247.5
5.0	10.0	11.0	32.0	400.0	25.0	1.0	426.9	39.9	335.5	322.3
5.0	10.0	12.0	495.0	399.0	25.0	1.0	897.2	55.5	649.4	624.8
5.0	10.0	13.0	59.0	407.0	25.0	1.0	452.8	44.0	348.4	334.8
5.0	10.0	14.0	69.0	349.0	25.0	2.0	392.4	37.0	312.5	300.0
5.0	10.0	15.0	1.0	165.0	25.0	2.0	157.7	29.7	130.3	122.5
5.0	10.0	16.0	-	101.0	24.0	2.0	95.8	25.7	80.7	74.0
5.0	10.0	17.0	126.0	91.0	24.0	2.0	97.2	25.5	75.7	69.1
5.0	10.0	18.0	-	-	24.0	2.0	-	24.0	-	-
5.0	10.0	19.0	-	-	24.0	2.0	-	24.0	-	-
5.0	10.0	20.0	-	-	24.0	3.0	-	24.0	-	-
5.0	10.0	21.0	-	-	24.0	3.0	-	24.0	-	-
5.0	10.0	22.0	-	-	24.0	3.0	-	24.0	-	-
5.0	10.0	23.0	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	-	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	1.0	-	-	24.0	3.0	-	24.0	-	-
5.0	11.0	2.0	-	-	23.0	2.0	-	23.0	-	-
5.0	11.0	3.0	-	-	23.0	2.0	-	23.0	-	-
5.0	11.0	4.0	-	-	22.0	2.0	-	22.0	-	-
5.0	11.0	5.0	-	2.0	20.0	3.0	1.9	18.2	1.6	-
5.0	11.0	6.0	8.0	108.0	19.0	3.0	103.4	20.0	89.0	82.1
5.0	11.0	7.0	487.0	166.0	19.0	3.0	394.6	28.4	315.7	303.1
5.0	11.0	8.0	708.0	163.0	19.0	3.0	648.3	36.2	513.0	493.8
5.0	11.0	9.0	840.0	146.0	21.0	3.0	858.8	44.4	657.8	632.8
5.0	11.0	10.0	903.0	139.0	22.0	3.0	998.3	49.6	745.9	717.1
5.0	11.0	11.0	927.0	137.0	22.0	3.0	1,062.7	51.6	785.7	755.0

5.0	11.0	12.0	931.0	131.0	23.0	3.0	1,046.2	52.3	770.4	740.4
5.0	11.0	13.0	911.0	129.0	23.0	3.0	953.6	50.0	710.5	683.2
5.0	11.0	14.0	873.0	122.0	23.0	2.0	793.6	48.5	592.7	570.4
5.0	11.0	15.0	810.0	109.0	23.0	2.0	583.0	42.0	441.5	424.8
5.0	11.0	16.0	699.0	90.0	22.0	2.0	341.1	33.1	251.3	240.5
5.0	11.0	17.0	476.0	60.0	21.0	2.0	111.8	24.0	70.9	64.4
5.0	11.0	18.0	-	-	19.0	2.0	-	19.0	-	-
5.0	11.0	19.0	-	-	18.0	2.0	-	18.0	-	-
5.0	11.0	20.0	-	-	18.0	2.0	-	18.0	-	-
5.0	11.0	21.0	-	-	18.0	2.0	-	18.0	-	-
5.0	11.0	22.0	-	-	17.0	2.0	-	17.0	-	-
5.0	11.0	23.0	-	-	17.0	2.0	-	17.0	-	-
5.0	12.0	-	-	-	17.0	2.0	-	17.0	-	-
5.0	12.0	1.0	-	-	17.0	2.0	-	17.0	-	-
5.0	12.0	2.0	-	-	16.0	2.0	-	16.0	-	-
5.0	12.0	3.0	-	-	16.0	2.0	-	16.0	-	-
5.0	12.0	4.0	-	-	16.0	2.0	-	16.0	-	-
5.0	12.0	5.0	252.0	36.0	16.0	2.0	27.9	14.6	24.7	19.2
5.0	12.0	6.0	603.0	76.0	18.0	1.0	218.6	23.6	154.9	146.6
5.0	12.0	7.0	760.0	98.0	20.0	1.0	460.2	35.4	351.1	337.4
5.0	12.0	8.0	839.0	115.0	21.0	1.0	688.6	45.3	519.4	499.9
5.0	12.0	9.0	891.0	122.0	21.0	1.0	873.6	52.3	641.5	617.3
5.0	12.0	10.0	914.0	129.0	22.0	1.0	998.3	57.9	712.7	685.4
5.0	12.0	11.0	926.0	129.0	23.0	2.0	1,053.1	55.8	761.1	731.5
5.0	12.0	12.0	929.0	124.0	23.0	2.0	1,036.7	55.5	750.1	721.1
5.0	12.0	13.0	910.0	120.0	23.0	2.0	943.3	53.0	691.5	665.1
5.0	12.0	14.0	870.0	115.0	23.0	2.0	784.1	48.2	586.5	564.4
5.0	12.0	15.0	800.0	106.0	23.0	2.0	574.0	41.7	435.3	418.8
5.0	12.0	16.0	681.0	90.0	22.0	2.0	334.7	32.8	247.0	236.3
5.0	12.0	17.0	450.0	61.0	21.0	1.0	109.8	24.9	70.2	63.8
5.0	12.0	18.0	-	-	20.0	1.0	-	20.0	-	-
5.0	12.0	19.0	-	-	19.0	1.0	-	19.0	-	-
5.0	12.0	20.0	-	-	19.0	1.0	-	19.0	-	-
5.0	12.0	21.0	-	-	18.0	1.0	-	18.0	-	-
5.0	12.0	22.0	-	-	18.0	1.0	-	18.0	-	-
5.0	12.0	23.0	-	-	18.0	1.0	-	18.0	-	-
5.0	13.0	-	-	-	17.0	1.0	-	17.0	-	-
5.0	13.0	1.0	-	-	17.0	1.0	-	17.0	-	-
5.0	13.0	2.0	-	-	17.0	1.0	-	17.0	-	-
5.0	13.0	3.0	-	-	17.0	1.0	-	17.0	-	-
5.0	13.0	4.0	-	-	17.0	1.0	-	17.0	-	-
5.0	13.0	5.0	241.0	36.0	19.0	1.0	27.8	17.3	24.4	18.8
5.0	13.0	6.0	579.0	78.0	21.0	1.0	214.9	26.6	151.0	142.7
5.0	13.0	7.0	736.0	101.0	23.0	1.0	451.0	38.1	339.8	326.5
5.0	13.0	8.0	822.0	115.0	24.0	1.0	676.9	47.8	504.0	485.2
5.0	13.0	9.0	874.0	123.0	25.0	1.0	859.9	55.6	620.4	597.0
5.0	13.0	10.0	905.0	127.0	25.0	1.0	987.2	60.3	695.5	668.9
5.0	13.0	11.0	916.0	129.0	26.0	1.0	1,042.5	63.4	721.8	694.1
5.0	13.0	12.0	913.0	127.0	26.0	2.0	1,023.3	58.0	730.7	702.5
5.0	13.0	13.0	892.0	125.0	26.0	2.0	931.5	55.4	673.8	648.1
5.0	13.0	14.0	853.0	119.0	25.0	2.0	774.7	49.8	574.6	553.0
5.0	13.0	15.0	790.0	107.0	24.0	2.0	569.1	42.5	429.9	413.6
5.0	13.0	16.0	680.0	89.0	23.0	2.0	333.5	33.8	244.9	234.3
5.0	13.0	17.0	460.0	60.0	22.0	2.0	110.3	24.9	70.0	63.6
5.0	13.0	18.0	-	-	21.0	2.0	-	21.0	-	-
5.0	13.0	19.0	-	-	20.0	2.0	-	20.0	-	-
5.0	13.0	20.0	-	-	20.0	2.0	-	20.0	-	-
5.0	13.0	21.0	-	-	21.0	2.0	-	21.0	-	-
5.0	13.0	22.0	-	-	21.0	2.0	-	21.0	-	-
5.0	13.0	23.0	-	-	20.0	2.0	-	20.0	-	-
5.0	14.0	-	-	-	20.0	2.0	-	20.0	-	-
5.0	14.0	1.0	-	-	20.0	2.0	-	20.0	-	-
5.0	14.0	2.0	-	-	20.0	2.0	-	20.0	-	-
5.0	14.0	3.0	-	-	20.0	2.0	-	20.0	-	-
5.0	14.0	4.0	-	-	20.0	2.0	-	20.0	-	-
5.0	14.0	5.0	-	23.0	21.0	2.0	21.8	19.5	18.9	13.4
5.0	14.0	6.0	5.0	109.0	22.0	2.0	103.6	23.3	88.0	81.1
5.0	14.0	7.0	252.0	217.0	23.0	2.0	329.5	31.6	263.5	252.4
5.0	14.0	8.0	416.0	275.0	24.0	3.0	557.1	38.5	437.4	420.8
5.0	14.0	9.0	511.0	312.0	25.0	2.0	746.4	47.6	562.7	541.6
5.0	14.0	10.0	299.0	451.0	26.0	2.0	738.6	49.1	553.3	532.6
5.0	14.0	11.0	350.0	456.0	26.0	2.0	811.2	51.1	601.5	578.8
5.0	14.0	12.0	149.0	491.0	26.0	2.0	637.2	46.5	484.0	465.8
5.0	14.0	13.0	69.0	418.0	26.0	2.0	471.9	41.1	368.5	354.3
5.0	14.0	14.0	105.0	367.0	25.0	2.0	436.8	38.4	345.4	331.9
5.0	14.0	15.0	373.0	243.0	25.0	2.0	454.5	38.8	353.7	339.9
5.0	14.0	16.0	46.0	166.0	24.0	2.0	173.4	29.5	141.7	133.7
5.0	14.0	17.0	233.0	74.0	23.0	2.0	95.3	24.8	68.9	62.5
5.0	14.0	18.0	-	-	23.0	2.0	-	23.0	-	-
5.0	14.0	19.0	-	-	23.0	2.0	-	23.0	-	-
5.0	14.0	20.0	-	-	22.0	1.0	-	22.0	-	-

5.0	14.0	21.0	-	-	22.0	1.0	-	22.0	-	-
5.0	14.0	22.0	-	-	22.0	1.0	-	22.0	-	-
5.0	14.0	23.0	-	-	22.0	1.0	-	22.0	-	-
5.0	15.0	-	-	-	21.0	1.0	-	21.0	-	-
5.0	15.0	1.0	-	-	21.0	1.0	-	21.0	-	-
5.0	15.0	2.0	-	-	20.0	1.0	-	20.0	-	-
5.0	15.0	3.0	-	-	20.0	2.0	-	20.0	-	-
5.0	15.0	4.0	-	-	19.0	2.0	-	19.0	-	-
5.0	15.0	5.0	-	22.0	19.0	2.0	20.9	17.4	18.2	12.8
5.0	15.0	6.0	-	95.0	19.0	2.0	89.5	19.7	77.5	70.9
5.0	15.0	7.0	639.0	131.0	21.0	2.0	434.3	32.7	337.9	324.6
5.0	15.0	8.0	768.0	135.0	22.0	1.0	659.8	45.2	498.2	479.5
5.0	15.0	9.0	845.0	134.0	23.0	1.0	845.5	53.2	618.1	594.7
5.0	15.0	10.0	887.0	132.0	24.0	1.0	973.9	58.9	691.5	665.1
5.0	15.0	11.0	908.0	129.0	25.0	2.0	1,033.2	57.0	741.6	712.9
5.0	15.0	12.0	900.0	134.0	25.0	2.0	1,016.2	56.8	730.3	702.1
5.0	15.0	13.0	538.0	339.0	25.0	3.0	830.7	48.7	623.2	599.7
5.0	15.0	14.0	865.0	114.0	24.0	3.0	778.3	45.8	589.5	567.3
5.0	15.0	15.0	792.0	109.0	24.0	3.0	572.0	40.3	436.8	420.3
5.0	15.0	16.0	451.0	142.0	23.0	2.0	300.1	32.8	227.5	217.4
5.0	15.0	17.0	480.0	60.0	21.0	2.0	113.1	23.9	71.8	65.3
5.0	15.0	18.0	-	-	20.0	2.0	-	20.0	-	-
5.0	15.0	19.0	-	-	19.0	2.0	-	19.0	-	-
5.0	15.0	20.0	-	-	18.0	2.0	-	18.0	-	-
5.0	15.0	21.0	-	-	17.0	2.0	-	17.0	-	-
5.0	15.0	22.0	-	-	17.0	2.0	-	17.0	-	-
5.0	15.0	23.0	-	-	16.0	2.0	-	16.0	-	-
5.0	16.0	-	-	-	16.0	1.0	-	16.0	-	-
5.0	16.0	1.0	-	-	16.0	1.0	-	16.0	-	-
5.0	16.0	2.0	-	-	15.0	1.0	-	15.0	-	-
5.0	16.0	3.0	-	-	15.0	1.0	-	15.0	-	-
5.0	16.0	4.0	-	-	15.0	1.0	-	15.0	-	-
5.0	16.0	5.0	159.0	36.0	15.0	1.0	27.8	13.1	24.8	19.3
5.0	16.0	6.0	622.0	74.0	17.0	1.0	222.0	22.7	157.6	149.2
5.0	16.0	7.0	770.0	94.0	19.0	1.0	460.9	34.5	353.1	339.3
5.0	16.0	8.0	846.0	109.0	20.0	1.0	686.2	44.3	520.2	500.7
5.0	16.0	9.0	887.0	121.0	21.0	1.0	867.4	52.1	637.7	613.5
5.0	16.0	10.0	470.0	388.0	21.0	1.0	841.3	52.3	619.7	596.3
5.0	16.0	11.0	106.0	490.0	22.0	1.0	589.4	45.2	450.8	433.8
5.0	16.0	12.0	528.0	390.0	23.0	1.0	916.7	55.0	665.3	640.0
5.0	16.0	13.0	114.0	442.0	23.0	1.0	541.1	45.0	414.1	398.3
5.0	16.0	14.0	523.0	271.0	23.0	1.0	673.7	47.2	507.6	488.5
5.0	16.0	15.0	481.0	211.0	23.0	1.0	488.9	42.0	373.1	358.7
5.0	16.0	16.0	310.0	160.0	22.0	1.0	264.9	32.4	204.5	194.9
5.0	16.0	17.0	444.0	64.0	21.0	1.0	112.8	24.5	73.0	66.5
5.0	16.0	18.0	-	-	20.0	1.0	-	20.0	-	-
5.0	16.0	19.0	-	-	19.0	1.0	-	19.0	-	-
5.0	16.0	20.0	-	-	19.0	2.0	-	19.0	-	-
5.0	16.0	21.0	-	-	18.0	2.0	-	18.0	-	-
5.0	16.0	22.0	-	-	17.0	2.0	-	17.0	-	-
5.0	16.0	23.0	-	-	17.0	1.0	-	17.0	-	-
5.0	17.0	-	-	-	17.0	1.0	-	17.0	-	-
5.0	17.0	1.0	-	-	16.0	1.0	-	16.0	-	-
5.0	17.0	2.0	-	-	16.0	1.0	-	16.0	-	-
5.0	17.0	3.0	-	-	16.0	2.0	-	16.0	-	-
5.0	17.0	4.0	-	-	16.0	2.0	-	16.0	-	-
5.0	17.0	5.0	256.0	38.0	17.0	2.0	29.8	15.7	26.3	20.7
5.0	17.0	6.0	570.0	81.0	19.0	2.0	216.1	23.7	154.5	146.2
5.0	17.0	7.0	720.0	106.0	20.0	2.0	448.0	32.6	347.1	333.5
5.0	17.0	8.0	805.0	121.0	21.0	2.0	670.2	41.1	516.7	497.3
5.0	17.0	9.0	863.0	126.0	22.0	2.0	851.7	48.1	639.8	615.6
5.0	17.0	10.0	896.0	128.0	23.0	2.0	977.2	53.2	716.0	688.5
5.0	17.0	11.0	911.0	127.0	23.0	2.0	1,032.8	55.2	749.0	720.0
5.0	17.0	12.0	280.0	476.0	24.0	3.0	754.7	45.9	575.1	553.5
5.0	17.0	13.0	214.0	433.0	24.0	3.0	621.6	41.6	484.2	466.0
5.0	17.0	14.0	14.0	252.0	25.0	2.0	251.6	33.6	204.0	194.5
5.0	17.0	15.0	764.0	116.0	24.0	2.0	562.6	40.1	430.3	414.0
5.0	17.0	16.0	651.0	96.0	24.0	2.0	330.3	34.6	242.5	231.9
5.0	17.0	17.0	444.0	64.0	23.0	2.0	113.0	26.0	72.6	66.1
5.0	17.0	18.0	-	-	21.0	2.0	-	21.0	-	-
5.0	17.0	19.0	-	-	20.0	2.0	-	20.0	-	-
5.0	17.0	20.0	-	-	19.0	2.0	-	19.0	-	-
5.0	17.0	21.0	-	-	19.0	1.0	-	19.0	-	-
5.0	17.0	22.0	-	-	18.0	1.0	-	18.0	-	-
5.0	17.0	23.0	-	-	18.0	1.0	-	18.0	-	-
5.0	18.0	-	-	-	18.0	1.0	-	18.0	-	-
5.0	18.0	1.0	-	-	18.0	1.0	-	18.0	-	-
5.0	18.0	2.0	-	-	18.0	1.0	-	18.0	-	-
5.0	18.0	3.0	-	-	18.0	1.0	-	18.0	-	-
5.0	18.0	4.0	-	-	18.0	1.0	-	18.0	-	-
5.0	18.0	5.0	298.0	36.0	19.0	1.0	28.8	17.3	25.2	19.7

5.0	18.0	6.0	611.0	73.0	21.0	2.0	218.5	25.8	153.0	144.7
5.0	18.0	7.0	754.0	94.0	23.0	2.0	453.1	35.8	345.0	331.4
5.0	18.0	8.0	831.0	108.0	24.0	2.0	674.4	44.2	511.6	492.4
5.0	18.0	9.0	875.0	118.0	25.0	2.0	853.4	51.0	631.1	607.2
5.0	18.0	10.0	897.0	126.0	26.0	2.0	975.6	56.0	704.0	677.0
5.0	18.0	11.0	901.0	133.0	26.0	3.0	1,028.1	54.5	748.3	719.4
5.0	18.0	12.0	894.0	133.0	27.0	3.0	1,007.4	55.1	730.9	702.7
5.0	18.0	13.0	873.0	131.0	27.0	3.0	917.8	52.8	673.5	647.8
5.0	18.0	14.0	837.0	123.0	27.0	3.0	767.3	48.7	572.4	550.9
5.0	18.0	15.0	775.0	111.0	26.0	3.0	564.0	42.1	427.0	410.8
5.0	18.0	16.0	667.0	92.0	25.0	3.0	332.3	34.3	244.0	233.4
5.0	18.0	17.0	458.0	63.0	24.0	3.0	114.0	26.6	72.6	66.1
5.0	18.0	18.0	-	-	22.0	3.0	-	22.0	-	-
5.0	18.0	19.0	-	-	22.0	2.0	-	22.0	-	-
5.0	18.0	20.0	-	-	21.0	2.0	-	21.0	-	-
5.0	18.0	21.0	-	-	21.0	2.0	-	21.0	-	-
5.0	18.0	22.0	-	-	21.0	2.0	-	21.0	-	-
5.0	18.0	23.0	-	-	20.0	2.0	-	20.0	-	-
5.0	19.0	-	-	-	20.0	2.0	-	20.0	-	-
5.0	19.0	1.0	-	-	20.0	2.0	-	20.0	-	-
5.0	19.0	2.0	-	-	20.0	2.0	-	20.0	-	-
5.0	19.0	3.0	-	-	20.0	2.0	-	20.0	-	-
5.0	19.0	4.0	-	-	20.0	2.0	-	20.0	-	-
5.0	19.0	5.0	200.0	42.0	21.0	2.0	33.1	19.9	28.7	23.0
5.0	19.0	6.0	504.0	93.0	22.0	2.0	211.5	26.7	151.9	143.6
5.0	19.0	7.0	660.0	122.0	24.0	2.0	435.0	36.2	332.0	318.9
5.0	19.0	8.0	748.0	141.0	25.0	1.0	650.8	47.8	484.8	466.6
5.0	19.0	9.0	800.0	154.0	26.0	1.0	829.3	55.5	598.8	576.2
5.0	19.0	10.0	833.0	159.0	27.0	1.0	952.6	61.0	668.6	643.1
5.0	19.0	11.0	848.0	159.0	28.0	1.0	999.9	63.9	690.6	664.2
5.0	19.0	12.0	837.0	163.0	29.0	1.0	987.2	64.6	678.7	652.9
5.0	19.0	13.0	815.0	159.0	28.0	2.0	897.7	56.3	646.3	621.8
5.0	19.0	14.0	770.0	152.0	28.0	2.0	744.8	51.8	546.9	526.4
5.0	19.0	15.0	693.0	139.0	27.0	3.0	543.6	42.5	411.5	395.9
5.0	19.0	16.0	570.0	116.0	26.0	3.0	320.5	34.9	237.3	226.9
5.0	19.0	17.0	357.0	75.0	25.0	2.0	111.6	28.0	75.1	68.5
5.0	19.0	18.0	-	-	23.0	2.0	-	23.0	-	-
5.0	19.0	19.0	-	-	23.0	2.0	-	23.0	-	-
5.0	19.0	20.0	-	-	22.0	2.0	-	22.0	-	-
5.0	19.0	21.0	-	-	22.0	2.0	-	22.0	-	-
5.0	19.0	22.0	-	-	22.0	2.0	-	22.0	-	-
5.0	19.0	23.0	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	-	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	1.0	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	2.0	-	-	21.0	2.0	-	21.0	-	-
5.0	20.0	3.0	-	-	21.0	2.0	-	21.0	-	-
5.0	20.0	4.0	-	-	21.0	2.0	-	21.0	-	-
5.0	20.0	5.0	200.0	43.0	22.0	2.0	34.0	21.0	29.3	23.7
5.0	20.0	6.0	522.0	91.0	23.0	2.0	214.0	27.8	152.3	144.0
5.0	20.0	7.0	689.0	115.0	24.0	2.0	441.6	36.4	336.3	323.0
5.0	20.0	8.0	784.0	129.0	25.0	1.0	662.9	48.2	492.5	474.0
5.0	20.0	9.0	842.0	136.0	26.0	1.0	842.4	55.9	606.6	583.7
5.0	20.0	10.0	874.0	140.0	27.0	1.0	966.2	61.4	676.3	650.6
5.0	20.0	11.0	888.0	141.0	28.0	1.0	1,021.6	64.5	702.7	675.8
5.0	20.0	12.0	892.0	135.0	28.0	2.0	1,006.2	59.3	713.1	685.7
5.0	20.0	13.0	875.0	130.0	28.0	2.0	917.8	56.9	658.5	633.5
5.0	20.0	14.0	841.0	122.0	27.0	2.0	766.6	51.5	563.5	542.4
5.0	20.0	15.0	782.0	110.0	26.0	2.0	567.0	44.3	424.3	408.2
5.0	20.0	16.0	678.0	91.0	25.0	2.0	335.8	35.8	244.6	234.0
5.0	20.0	17.0	475.0	62.0	24.0	2.0	115.8	27.2	72.9	66.4
5.0	20.0	18.0	27.0	9.0	23.0	2.0	7.8	21.7	6.7	1.5
5.0	20.0	19.0	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	20.0	-	-	22.0	2.0	-	22.0	-	-
5.0	20.0	21.0	-	-	21.0	2.0	-	21.0	-	-
5.0	20.0	22.0	-	-	21.0	2.0	-	21.0	-	-
5.0	20.0	23.0	-	-	21.0	2.0	-	21.0	-	-
5.0	21.0	-	-	-	20.0	2.0	-	20.0	-	-
5.0	21.0	1.0	-	-	20.0	1.0	-	20.0	-	-
5.0	21.0	2.0	-	-	20.0	1.0	-	20.0	-	-
5.0	21.0	3.0	-	-	20.0	1.0	-	20.0	-	-
5.0	21.0	4.0	-	-	20.0	1.0	-	20.0	-	-
5.0	21.0	5.0	306.0	39.0	21.0	1.0	32.0	19.5	27.7	22.1
5.0	21.0	6.0	628.0	75.0	23.0	1.0	224.6	29.0	154.9	146.6
5.0	21.0	7.0	777.0	94.0	24.0	1.0	463.4	39.5	346.1	332.6
5.0	21.0	8.0	857.0	106.0	26.0	1.0	687.6	50.1	505.5	486.5
5.0	21.0	9.0	905.0	112.0	27.0	1.0	870.8	57.9	620.4	596.9
5.0	21.0	10.0	457.0	390.0	27.0	1.0	828.1	57.5	592.8	570.5
5.0	21.0	11.0	941.0	118.0	28.0	1.0	1,050.9	64.8	722.0	694.2
5.0	21.0	12.0	939.0	117.0	28.0	1.0	1,033.8	65.3	708.1	680.9
5.0	21.0	13.0	922.0	114.0	28.0	2.0	943.7	57.7	674.1	648.5
5.0	21.0	14.0	888.0	108.0	27.0	2.0	788.4	52.2	577.3	555.6

5.0	21.0	15.0	828.0	99.0	26.0	2.0	582.8	44.9	434.6	418.2
5.0	21.0	16.0	402.0	147.0	25.0	2.0	287.4	34.5	217.3	207.5
5.0	21.0	17.0	520.0	59.0	24.0	1.0	119.0	27.9	73.0	66.5
5.0	21.0	18.0	48.0	10.0	22.0	1.0	7.6	20.6	6.5	1.3
5.0	21.0	19.0	-	-	22.0	1.0	-	22.0	-	-
5.0	21.0	20.0	-	-	21.0	1.0	-	21.0	-	-
5.0	21.0	21.0	-	-	21.0	1.0	-	21.0	-	-
5.0	21.0	22.0	-	-	21.0	1.0	-	21.0	-	-
5.0	21.0	23.0	-	-	20.0	1.0	-	20.0	-	-
5.0	22.0	-	-	-	20.0	1.0	-	20.0	-	-
5.0	22.0	1.0	-	-	20.0	1.0	-	20.0	-	-
5.0	22.0	2.0	-	-	20.0	1.0	-	20.0	-	-
5.0	22.0	3.0	-	-	20.0	1.0	-	20.0	-	-
5.0	22.0	4.0	-	-	20.0	1.0	-	20.0	-	-
5.0	22.0	5.0	128.0	40.0	22.0	1.0	33.5	20.6	28.9	23.2
5.0	22.0	6.0	568.0	82.0	24.0	1.0	216.5	29.7	150.7	142.5
5.0	22.0	7.0	627.0	125.0	25.0	1.0	421.6	39.1	317.5	304.8
5.0	22.0	8.0	521.0	233.0	26.0	-	584.8	51.6	428.0	411.8
5.0	22.0	9.0	430.0	340.0	27.0	-	702.0	57.8	500.9	482.1
5.0	22.0	10.0	410.0	401.0	28.0	-	793.9	62.5	552.5	531.8
5.0	22.0	11.0	417.0	425.0	29.0	-	846.7	65.7	578.7	556.9
5.0	22.0	12.0	441.0	413.0	29.0	1.0	850.9	59.9	601.0	578.4
5.0	22.0	13.0	438.0	368.0	29.0	1.0	766.0	57.4	548.4	527.9
5.0	22.0	14.0	354.0	341.0	28.0	2.0	607.4	47.4	457.6	440.4
5.0	22.0	15.0	604.0	169.0	27.0	2.0	521.1	43.4	393.6	378.5
5.0	22.0	16.0	626.0	95.0	26.0	2.0	321.2	36.2	234.4	224.1
5.0	22.0	17.0	183.0	83.0	25.0	2.0	98.0	27.6	72.6	66.0
5.0	22.0	18.0	24.0	9.0	24.0	2.0	7.8	22.7	6.7	1.4
5.0	22.0	19.0	-	-	23.0	1.0	-	23.0	-	-
5.0	22.0	20.0	-	-	23.0	1.0	-	23.0	-	-
5.0	22.0	21.0	-	-	23.0	1.0	-	23.0	-	-
5.0	22.0	22.0	-	-	23.0	1.0	-	23.0	-	-
5.0	22.0	23.0	-	-	22.0	1.0	-	22.0	-	-
5.0	23.0	-	-	-	22.0	1.0	-	22.0	-	-
5.0	23.0	1.0	-	-	22.0	1.0	-	22.0	-	-
5.0	23.0	2.0	-	-	22.0	1.0	-	22.0	-	-
5.0	23.0	3.0	-	-	22.0	1.0	-	22.0	-	-
5.0	23.0	4.0	-	-	22.0	1.0	-	22.0	-	-
5.0	23.0	5.0	218.0	44.0	22.0	1.0	35.1	20.7	30.3	24.6
5.0	23.0	6.0	510.0	93.0	24.0	1.0	212.8	29.6	150.5	142.3
5.0	23.0	7.0	662.0	121.0	26.0	1.0	434.0	40.5	324.1	311.2
5.0	23.0	8.0	745.0	141.0	27.0	-	647.1	54.9	464.1	446.7
5.0	23.0	9.0	779.0	164.0	29.0	-	819.4	63.9	564.2	543.1
5.0	23.0	10.0	802.0	175.0	30.0	-	936.7	69.6	625.5	601.8
5.0	23.0	11.0	803.0	186.0	30.0	-	986.8	71.8	650.6	625.9
5.0	23.0	12.0	743.0	224.0	30.0	-	958.1	71.2	633.8	609.9
5.0	23.0	13.0	559.0	302.0	29.0	1.0	809.6	59.2	573.6	552.1
5.0	23.0	14.0	345.0	344.0	29.0	1.0	603.2	52.1	443.2	426.5
5.0	23.0	15.0	104.0	280.0	28.0	1.0	328.2	41.2	254.7	243.8
5.0	23.0	16.0	300.0	177.0	27.0	2.0	277.4	35.1	212.4	202.6
5.0	23.0	17.0	313.0	74.0	26.0	2.0	106.0	28.6	72.3	65.8
5.0	23.0	18.0	-	7.0	25.0	2.0	6.6	23.7	5.6	0.4
5.0	23.0	19.0	-	-	24.0	1.0	-	24.0	-	-
5.0	23.0	20.0	-	-	24.0	1.0	-	24.0	-	-
5.0	23.0	21.0	-	-	24.0	1.0	-	24.0	-	-
5.0	23.0	22.0	-	-	23.0	1.0	-	23.0	-	-
5.0	23.0	23.0	-	-	23.0	1.0	-	23.0	-	-
5.0	24.0	-	-	-	23.0	1.0	-	23.0	-	-
5.0	24.0	1.0	-	-	23.0	1.0	-	23.0	-	-
5.0	24.0	2.0	-	-	23.0	1.0	-	23.0	-	-
5.0	24.0	3.0	-	-	22.0	1.0	-	22.0	-	-
5.0	24.0	4.0	-	-	22.0	1.0	-	22.0	-	-
5.0	24.0	5.0	185.0	46.0	23.0	1.0	36.6	21.8	31.4	25.7
5.0	24.0	6.0	465.0	102.0	25.0	1.0	208.8	30.5	148.9	140.7
5.0	24.0	7.0	622.0	134.0	27.0	-	427.3	45.1	312.3	299.8
5.0	24.0	8.0	714.0	155.0	28.0	-	639.7	55.5	457.3	440.1
5.0	24.0	9.0	707.0	208.0	29.0	-	804.2	63.4	555.6	534.7
5.0	24.0	10.0	749.0	213.0	30.0	-	927.3	69.2	620.6	597.2
5.0	24.0	11.0	771.0	212.0	31.0	-	979.9	72.4	643.5	619.1
5.0	24.0	12.0	719.0	246.0	31.0	1.0	956.1	65.5	654.1	629.3
5.0	24.0	13.0	695.0	237.0	30.0	1.0	868.1	61.9	605.8	583.0
5.0	24.0	14.0	642.0	225.0	30.0	1.0	719.0	57.0	513.6	494.4
5.0	24.0	15.0	283.0	269.0	29.0	2.0	426.1	43.1	325.4	312.4
5.0	24.0	16.0	386.0	152.0	28.0	2.0	286.6	36.8	214.9	205.0
5.0	24.0	17.0	263.0	79.0	26.0	2.0	104.2	28.6	73.3	66.8
5.0	24.0	18.0	17.0	8.0	25.0	2.0	7.6	23.8	6.5	1.2
5.0	24.0	19.0	-	-	24.0	2.0	-	24.0	-	-
5.0	24.0	20.0	-	-	24.0	1.0	-	24.0	-	-
5.0	24.0	21.0	-	-	24.0	1.0	-	24.0	-	-
5.0	24.0	22.0	-	-	23.0	1.0	-	23.0	-	-
5.0	24.0	23.0	-	-	23.0	1.0	-	23.0	-	-

5.0	25.0	-	-	-	23.0	1.0	-	23.0	-	-
5.0	25.0	1.0	-	-	23.0	1.0	-	23.0	-	-
5.0	25.0	2.0	-	-	23.0	1.0	-	23.0	-	-
5.0	25.0	3.0	-	-	22.0	1.0	-	22.0	-	-
5.0	25.0	4.0	-	-	22.0	1.0	-	22.0	-	-
5.0	25.0	5.0	175.0	47.0	24.0	1.0	39.2	23.0	33.5	27.7
5.0	25.0	6.0	454.0	105.0	25.0	1.0	208.7	30.5	149.3	141.1
5.0	25.0	7.0	617.0	137.0	27.0	1.0	427.6	41.2	318.9	306.2
5.0	25.0	8.0	715.0	155.0	28.0	-	639.9	55.5	457.5	440.2
5.0	25.0	9.0	774.0	166.0	29.0	-	816.0	63.7	562.4	541.3
5.0	25.0	10.0	810.0	170.0	29.0	-	937.9	68.7	629.6	605.8
5.0	25.0	11.0	828.0	169.0	30.0	1.0	993.4	65.4	679.8	653.9
5.0	25.0	12.0	839.0	158.0	30.0	1.0	974.0	65.1	667.7	642.3
5.0	25.0	13.0	825.0	149.0	29.0	2.0	894.3	57.1	640.9	616.7
5.0	25.0	14.0	792.0	138.0	29.0	2.0	746.6	52.8	545.2	524.8
5.0	25.0	15.0	735.0	121.0	28.0	2.0	550.9	45.8	409.7	394.1
5.0	25.0	16.0	637.0	98.0	27.0	2.0	328.9	37.6	238.7	228.2
5.0	25.0	17.0	448.0	66.0	26.0	2.0	117.7	29.2	74.9	68.4
5.0	25.0	18.0	51.0	11.0	25.0	2.0	8.3	23.8	7.1	1.8
5.0	25.0	19.0	-	-	24.0	2.0	-	24.0	-	-
5.0	25.0	20.0	-	-	24.0	2.0	-	24.0	-	-
5.0	25.0	21.0	-	-	24.0	2.0	-	24.0	-	-
5.0	25.0	22.0	-	-	23.0	2.0	-	23.0	-	-
5.0	25.0	23.0	-	-	23.0	1.0	-	23.0	-	-
5.0	26.0	-	-	-	23.0	1.0	-	23.0	-	-
5.0	26.0	1.0	-	-	23.0	1.0	-	23.0	-	-
5.0	26.0	2.0	-	-	23.0	1.0	-	23.0	-	-
5.0	26.0	3.0	-	-	23.0	1.0	-	23.0	-	-
5.0	26.0	4.0	-	-	23.0	1.0	-	23.0	-	-
5.0	26.0	5.0	293.0	39.0	24.0	1.0	31.9	22.7	27.3	21.7
5.0	26.0	6.0	584.0	75.0	25.0	1.0	213.3	30.6	146.6	138.5
5.0	26.0	7.0	729.0	95.0	26.0	1.0	440.3	40.7	327.0	314.1
5.0	26.0	8.0	813.0	105.0	27.0	1.0	655.6	49.9	482.3	464.2
5.0	26.0	9.0	869.0	107.0	28.0	1.0	832.9	57.5	594.5	572.1
5.0	26.0	10.0	894.0	112.0	29.0	1.0	953.7	62.9	662.1	636.9
5.0	26.0	11.0	904.0	115.0	29.0	2.0	1,008.2	60.1	711.5	684.2
5.0	26.0	12.0	881.0	129.0	29.0	2.0	986.5	59.7	697.6	670.9
5.0	26.0	13.0	863.0	127.0	29.0	2.0	901.9	57.3	645.5	621.1
5.0	26.0	14.0	829.0	120.0	29.0	2.0	754.7	53.0	550.2	529.6
5.0	26.0	15.0	770.0	108.0	28.0	2.0	558.6	46.0	414.5	398.7
5.0	26.0	16.0	671.0	90.0	27.0	2.0	333.9	37.7	241.3	230.8
5.0	26.0	17.0	481.0	62.0	26.0	2.0	118.6	29.3	74.0	67.4
5.0	26.0	18.0	64.0	12.0	25.0	1.0	9.1	23.7	7.7	2.5
5.0	26.0	19.0	-	-	24.0	1.0	-	24.0	-	-
5.0	26.0	20.0	-	-	24.0	1.0	-	24.0	-	-
5.0	26.0	21.0	-	-	24.0	2.0	-	24.0	-	-
5.0	26.0	22.0	-	-	24.0	2.0	-	24.0	-	-
5.0	26.0	23.0	-	-	23.0	1.0	-	23.0	-	-
5.0	27.0	-	-	-	23.0	1.0	-	23.0	-	-
5.0	27.0	1.0	-	-	23.0	1.0	-	23.0	-	-
5.0	27.0	2.0	-	-	23.0	1.0	-	23.0	-	-
5.0	27.0	3.0	-	-	23.0	1.0	-	23.0	-	-
5.0	27.0	4.0	-	-	23.0	1.0	-	23.0	-	-
5.0	27.0	5.0	297.0	41.0	24.0	1.0	33.1	22.7	28.3	22.7
5.0	27.0	6.0	592.0	78.0	26.0	1.0	218.0	31.8	149.1	140.9
5.0	27.0	7.0	736.0	98.0	27.0	1.0	446.1	41.9	329.4	316.3
5.0	27.0	8.0	816.0	110.0	28.0	-	662.1	56.4	470.4	452.7
5.0	27.0	9.0	863.0	117.0	29.0	-	837.2	64.6	574.1	552.5
5.0	27.0	10.0	454.0	392.0	30.0	1.0	823.8	60.0	581.5	559.7
5.0	27.0	11.0	899.0	123.0	30.0	1.0	1,010.5	65.4	691.5	665.1
5.0	27.0	12.0	887.0	128.0	31.0	1.0	990.8	66.6	673.4	647.7
5.0	27.0	13.0	868.0	125.0	31.0	1.0	904.2	64.0	623.2	599.6
5.0	27.0	14.0	831.0	119.0	30.0	2.0	755.1	54.0	547.6	527.1
5.0	27.0	15.0	767.0	109.0	29.0	2.0	558.0	47.0	412.0	396.3
5.0	27.0	16.0	661.0	93.0	28.0	2.0	333.5	38.7	240.2	229.7
5.0	27.0	17.0	464.0	65.0	27.0	2.0	119.6	30.3	75.2	68.6
5.0	27.0	18.0	59.0	13.0	26.0	1.0	9.9	24.8	8.4	3.1
5.0	27.0	19.0	-	-	25.0	1.0	-	25.0	-	-
5.0	27.0	20.0	-	-	25.0	1.0	-	25.0	-	-
5.0	27.0	21.0	-	-	25.0	1.0	-	25.0	-	-
5.0	27.0	22.0	-	-	24.0	1.0	-	24.0	-	-
5.0	27.0	23.0	-	-	24.0	1.0	-	24.0	-	-
5.0	28.0	-	-	-	24.0	1.0	-	24.0	-	-
5.0	28.0	1.0	-	-	24.0	1.0	-	24.0	-	-
5.0	28.0	2.0	-	-	24.0	-	-	24.0	-	-
5.0	28.0	3.0	-	-	24.0	-	-	24.0	-	-
5.0	28.0	4.0	-	-	24.0	-	-	24.0	-	-
5.0	28.0	5.0	313.0	39.0	24.0	-	32.0	21.7	27.4	21.8
5.0	28.0	6.0	604.0	73.0	26.0	-	215.9	33.7	145.6	137.5
5.0	28.0	7.0	745.0	91.0	27.0	-	443.1	45.8	320.2	307.5
5.0	28.0	8.0	822.0	102.0	29.0	-	656.7	57.2	464.5	447.0

5.0	28.0	9.0	848.0	120.0	30.0	-	827.0	65.1	565.3	544.0
5.0	28.0	10.0	412.0	400.0	31.0	-	791.7	66.0	540.0	519.7
5.0	28.0	11.0	417.0	425.0	31.0	-	843.5	67.4	570.7	549.3
5.0	28.0	12.0	870.0	134.0	31.0	1.0	979.7	65.6	669.9	644.4
5.0	28.0	13.0	290.0	432.0	31.0	1.0	690.2	57.6	493.7	475.2
5.0	28.0	14.0	66.0	355.0	31.0	1.0	393.4	46.8	298.1	286.0
5.0	28.0	15.0	424.0	236.0	30.0	1.0	479.0	46.9	357.0	343.1
5.0	28.0	16.0	649.0	95.0	29.0	1.0	331.3	41.6	235.5	225.2
5.0	28.0	17.0	459.0	66.0	28.0	1.0	120.2	32.4	75.2	68.6
5.0	28.0	18.0	65.0	13.0	27.0	1.0	9.9	25.9	8.3	3.1
5.0	28.0	19.0	-	-	26.0	1.0	-	26.0	-	-
5.0	28.0	20.0	-	-	25.0	1.0	-	25.0	-	-
5.0	28.0	21.0	-	-	25.0	1.0	-	25.0	-	-
5.0	28.0	22.0	-	-	25.0	1.0	-	25.0	-	-
5.0	28.0	23.0	-	-	24.0	1.0	-	24.0	-	-
5.0	29.0	-	-	-	24.0	1.0	-	24.0	-	-
5.0	29.0	1.0	-	-	24.0	1.0	-	24.0	-	-
5.0	29.0	2.0	-	-	23.0	1.0	-	23.0	-	-
5.0	29.0	3.0	-	-	23.0	1.0	-	23.0	-	-
5.0	29.0	4.0	-	-	23.0	1.0	-	23.0	-	-
5.0	29.0	5.0	222.0	46.0	24.0	1.0	36.8	22.9	31.4	25.7
5.0	29.0	6.0	503.0	94.0	26.0	1.0	211.0	31.6	148.0	139.8
5.0	29.0	7.0	649.0	124.0	28.0	1.0	428.6	42.3	317.2	304.5
5.0	29.0	8.0	730.0	145.0	29.0	1.0	638.0	51.3	466.5	449.0
5.0	29.0	9.0	772.0	163.0	30.0	1.0	809.0	58.6	574.0	552.5
5.0	29.0	10.0	406.0	403.0	31.0	1.0	788.4	59.7	557.3	536.4
5.0	29.0	11.0	409.0	427.0	31.0	1.0	837.1	61.1	587.3	565.3
5.0	29.0	12.0	398.0	397.0	31.0	1.0	790.5	59.9	558.3	537.3
5.0	29.0	13.0	535.0	344.0	31.0	1.0	827.2	60.8	580.9	559.0
5.0	29.0	14.0	11.0	236.0	30.0	1.0	233.7	41.3	182.3	173.3
5.0	29.0	15.0	34.0	249.0	29.0	1.0	257.7	37.6	204.4	194.8
5.0	29.0	16.0	43.0	174.0	28.0	1.0	179.5	34.0	143.7	135.6
5.0	29.0	17.0	183.0	88.0	27.0	1.0	103.4	29.7	76.2	69.6
5.0	29.0	18.0	-	9.0	26.0	1.0	8.5	24.7	7.2	2.0
5.0	29.0	19.0	-	-	26.0	1.0	-	26.0	-	-
5.0	29.0	20.0	-	-	25.0	-	-	25.0	-	-
5.0	29.0	21.0	-	-	25.0	-	-	25.0	-	-
5.0	29.0	22.0	-	-	25.0	-	-	25.0	-	-
5.0	29.0	23.0	-	-	25.0	-	-	25.0	-	-
5.0	30.0	-	-	-	24.0	-	-	24.0	-	-
5.0	30.0	1.0	-	-	24.0	-	-	24.0	-	-
5.0	30.0	2.0	-	-	23.0	-	-	23.0	-	-
5.0	30.0	3.0	-	-	23.0	1.0	-	23.0	-	-
5.0	30.0	4.0	-	-	23.0	1.0	-	23.0	-	-
5.0	30.0	5.0	190.0	49.0	24.0	1.0	40.9	23.0	34.9	29.1
5.0	30.0	6.0	475.0	103.0	26.0	2.0	211.2	30.8	150.1	141.8
5.0	30.0	7.0	636.0	133.0	28.0	1.0	430.8	42.3	319.1	306.3
5.0	30.0	8.0	726.0	155.0	29.0	1.0	644.6	51.5	470.9	453.2
5.0	30.0	9.0	685.0	227.0	30.0	1.0	800.9	58.4	569.1	547.8
5.0	30.0	10.0	714.0	243.0	31.0	1.0	920.3	63.6	636.2	612.2
5.0	30.0	11.0	727.0	248.0	31.0	1.0	973.6	65.7	665.2	639.9
5.0	30.0	12.0	614.0	328.0	31.0	1.0	930.6	64.7	639.5	615.3
5.0	30.0	13.0	587.0	317.0	31.0	1.0	847.1	62.0	590.6	568.4
5.0	30.0	14.0	539.0	292.0	31.0	2.0	703.2	53.3	512.8	493.6
5.0	30.0	15.0	465.0	252.0	30.0	2.0	518.1	46.6	386.7	371.9
5.0	30.0	16.0	355.0	193.0	29.0	2.0	313.2	39.0	234.8	224.4
5.0	30.0	17.0	195.0	109.0	28.0	1.0	123.1	32.3	90.7	83.8
5.0	30.0	18.0	-	9.0	26.0	1.0	8.5	24.8	7.2	2.0
5.0	30.0	19.0	-	-	25.0	1.0	-	25.0	-	-
5.0	30.0	20.0	-	-	25.0	1.0	-	25.0	-	-
5.0	30.0	21.0	-	-	25.0	-	-	25.0	-	-
5.0	30.0	22.0	-	-	25.0	-	-	25.0	-	-
5.0	30.0	23.0	-	-	25.0	-	-	25.0	-	-
5.0	31.0	-	-	-	24.0	-	-	24.0	-	-
5.0	31.0	1.0	-	-	24.0	1.0	-	24.0	-	-
5.0	31.0	2.0	-	-	23.0	1.0	-	23.0	-	-
5.0	31.0	3.0	-	-	23.0	1.0	-	23.0	-	-
5.0	31.0	4.0	-	-	23.0	1.0	-	23.0	-	-
5.0	31.0	5.0	164.0	50.0	24.0	1.0	41.5	23.0	35.4	29.6
5.0	31.0	6.0	435.0	113.0	26.0	1.0	210.4	31.6	150.8	142.5
5.0	31.0	7.0	599.0	147.0	29.0	1.0	426.5	43.2	315.2	302.6
5.0	31.0	8.0	696.0	167.0	30.0	1.0	635.8	52.2	462.9	445.5
5.0	31.0	9.0	753.0	181.0	31.0	1.0	809.6	59.5	571.4	550.0
5.0	31.0	10.0	785.0	189.0	31.0	1.0	929.3	63.9	641.3	617.0
5.0	31.0	11.0	799.0	191.0	32.0	1.0	982.9	67.0	666.7	641.4
5.0	31.0	12.0	520.0	396.0	32.0	1.0	907.0	65.0	622.3	598.8
5.0	31.0	13.0	469.0	338.0	31.0	1.0	761.9	59.4	539.3	519.1
5.0	31.0	14.0	379.0	337.0	31.0	1.0	621.2	54.4	450.8	433.8
5.0	31.0	15.0	299.0	270.0	30.0	1.0	436.2	46.8	326.6	313.7
5.0	31.0	16.0	271.0	186.0	29.0	1.0	275.9	39.4	207.8	198.1
5.0	31.0	17.0	213.0	87.0	28.0	1.0	107.0	31.5	76.9	70.3

5.0	31.0	18.0	-	8.0	24.0	2.0	7.6	22.7	6.5	1.2
5.0	31.0	19.0	-	-	24.0	2.0	-	24.0	-	-
5.0	31.0	20.0	-	-	24.0	2.0	-	24.0	-	-
5.0	31.0	21.0	-	-	24.0	2.0	-	24.0	-	-
5.0	31.0	22.0	-	-	24.0	2.0	-	24.0	-	-
5.0	31.0	23.0	-	-	23.0	2.0	-	23.0	-	-
6.0	1.0	-	-	-	23.0	2.0	-	23.0	-	-
6.0	1.0	1.0	-	-	23.0	2.0	-	23.0	-	-
6.0	1.0	2.0	-	-	23.0	2.0	-	23.0	-	-
6.0	1.0	3.0	-	-	23.0	2.0	-	23.0	-	-
6.0	1.0	4.0	-	-	23.0	2.0	-	23.0	-	-
6.0	1.0	5.0	-	37.0	24.0	2.0	34.6	23.1	29.5	23.9
6.0	1.0	6.0	107.0	133.0	24.0	2.0	149.0	26.8	119.4	111.9
6.0	1.0	7.0	58.0	222.0	24.0	2.0	237.4	30.0	194.4	185.1
6.0	1.0	8.0	205.0	330.0	25.0	2.0	456.5	38.0	360.4	346.4
6.0	1.0	9.0	452.0	333.0	26.0	2.0	708.6	47.1	535.5	515.5
6.0	1.0	10.0	84.0	457.0	26.0	2.0	525.4	42.9	406.6	391.1
6.0	1.0	11.0	852.0	140.0	27.0	2.0	977.8	55.8	706.6	679.5
6.0	1.0	12.0	859.0	132.0	27.0	2.0	965.5	57.1	692.6	666.1
6.0	1.0	13.0	844.0	128.0	27.0	2.0	884.6	54.9	641.7	617.4
6.0	1.0	14.0	808.0	122.0	26.0	2.0	742.7	49.7	551.1	530.5
6.0	1.0	15.0	743.0	114.0	26.0	2.0	550.0	43.8	413.3	397.5
6.0	1.0	16.0	632.0	99.0	25.0	2.0	330.4	35.6	242.7	232.2
6.0	1.0	17.0	430.0	71.0	24.0	1.0	121.7	28.3	79.2	72.6
6.0	1.0	18.0	52.0	15.0	23.0	1.0	12.8	21.8	11.0	5.7
6.0	1.0	19.0	-	-	23.0	1.0	-	23.0	-	-
6.0	1.0	20.0	-	-	23.0	1.0	-	23.0	-	-
6.0	1.0	21.0	-	-	23.0	1.0	-	23.0	-	-
6.0	1.0	22.0	-	-	23.0	1.0	-	23.0	-	-
6.0	1.0	23.0	-	-	23.0	1.0	-	23.0	-	-
6.0	2.0	-	-	-	23.0	1.0	-	23.0	-	-
6.0	2.0	1.0	-	-	23.0	1.0	-	23.0	-	-
6.0	2.0	2.0	-	-	23.0	1.0	-	23.0	-	-
6.0	2.0	3.0	-	-	23.0	1.0	-	23.0	-	-
6.0	2.0	4.0	-	-	23.0	1.0	-	23.0	-	-
6.0	2.0	5.0	129.0	51.0	24.0	1.0	42.0	23.1	35.8	30.0
6.0	2.0	6.0	343.0	114.0	24.0	1.0	188.5	28.8	139.3	131.3
6.0	2.0	7.0	155.0	233.0	25.0	1.0	294.1	34.5	233.5	223.2
6.0	2.0	8.0	-	93.0	26.0	1.0	88.5	28.9	73.4	66.9
6.0	2.0	9.0	262.0	405.0	26.0	1.0	617.3	45.8	470.0	452.3
6.0	2.0	10.0	66.0	442.0	26.0	1.0	493.6	44.7	378.4	363.8
6.0	2.0	11.0	85.0	483.0	27.0	1.0	557.9	47.1	422.4	406.4
6.0	2.0	12.0	38.0	415.0	27.0	2.0	443.2	40.9	346.5	332.9
6.0	2.0	13.0	46.0	377.0	27.0	2.0	408.1	39.4	321.4	308.6
6.0	2.0	14.0	766.0	145.0	27.0	2.0	733.6	48.6	547.8	527.3
6.0	2.0	15.0	717.0	125.0	27.0	2.0	545.3	44.6	408.3	392.8
6.0	2.0	16.0	78.0	185.0	26.0	2.0	202.6	32.8	162.1	153.6
6.0	2.0	17.0	120.0	94.0	25.0	1.0	101.6	27.8	78.5	71.9
6.0	2.0	18.0	-	13.0	24.0	1.0	12.3	22.7	10.5	5.2
6.0	2.0	19.0	-	-	24.0	1.0	-	24.0	-	-
6.0	2.0	20.0	-	-	24.0	1.0	-	24.0	-	-
6.0	2.0	21.0	-	-	24.0	1.0	-	24.0	-	-
6.0	2.0	22.0	-	-	24.0	1.0	-	24.0	-	-
6.0	2.0	23.0	-	-	23.0	1.0	-	23.0	-	-
6.0	3.0	-	-	-	23.0	1.0	-	23.0	-	-
6.0	3.0	1.0	-	-	23.0	1.0	-	23.0	-	-
6.0	3.0	2.0	-	-	23.0	1.0	-	23.0	-	-
6.0	3.0	3.0	-	-	23.0	-	-	23.0	-	-
6.0	3.0	4.0	-	-	23.0	-	-	23.0	-	-
6.0	3.0	5.0	287.0	41.0	24.0	-	32.7	21.7	28.0	22.4
6.0	3.0	6.0	573.0	78.0	25.0	-	211.5	32.5	144.3	136.2
6.0	3.0	7.0	714.0	99.0	26.0	-	433.7	44.4	315.9	303.2
6.0	3.0	8.0	792.0	113.0	27.0	1.0	645.0	49.6	475.3	457.5
6.0	3.0	9.0	484.0	296.0	28.0	1.0	698.4	53.3	510.5	491.4
6.0	3.0	10.0	856.0	134.0	28.0	1.0	934.7	60.8	656.7	631.8
6.0	3.0	11.0	865.0	137.0	28.0	1.0	986.7	63.4	683.3	657.2
6.0	3.0	12.0	851.0	145.0	28.0	1.0	969.5	63.1	672.3	646.7
6.0	3.0	13.0	834.0	140.0	28.0	1.0	887.0	60.6	623.3	599.7
6.0	3.0	14.0	800.0	131.0	28.0	1.0	745.7	56.0	535.1	515.0
6.0	3.0	15.0	744.0	117.0	27.0	1.0	554.1	48.3	406.6	391.1
6.0	3.0	16.0	647.0	97.0	26.0	1.0	334.9	39.1	241.6	231.0
6.0	3.0	17.0	461.0	68.0	25.0	1.0	124.8	29.5	79.7	73.0
6.0	3.0	18.0	71.0	17.0	25.0	1.0	14.5	24.0	12.3	7.0
6.0	3.0	19.0	-	-	24.0	1.0	-	24.0	-	-
6.0	3.0	20.0	-	-	24.0	1.0	-	24.0	-	-
6.0	3.0	21.0	-	-	24.0	1.0	-	24.0	-	-
6.0	3.0	22.0	-	-	24.0	1.0	-	24.0	-	-
6.0	3.0	23.0	-	-	24.0	1.0	-	24.0	-	-
6.0	4.0	-	-	-	24.0	1.0	-	24.0	-	-
6.0	4.0	1.0	-	-	24.0	1.0	-	24.0	-	-
6.0	4.0	2.0	-	-	24.0	1.0	-	24.0	-	-

6.0	4.0	3.0	-	-	24.0	1.0	-	24.0	-	-
6.0	4.0	4.0	-	-	24.0	1.0	-	24.0	-	-
6.0	4.0	5.0	242.0	45.0	25.0	-	35.6	22.9	30.4	24.7
6.0	4.0	6.0	53.0	129.0	26.0	-	132.5	29.8	106.7	99.5
6.0	4.0	7.0	-	20.0	27.0	1.0	19.0	26.3	15.9	10.5
6.0	4.0	8.0	-	80.0	27.0	1.0	76.1	27.6	63.5	57.2
6.0	4.0	9.0	286.0	398.0	27.0	1.0	629.7	47.1	476.0	458.1
6.0	4.0	10.0	465.0	392.0	28.0	1.0	830.1	57.3	594.8	572.4
6.0	4.0	11.0	557.0	326.0	28.0	1.0	881.2	59.8	622.8	599.3
6.0	4.0	12.0	521.0	397.0	28.0	1.0	907.5	60.8	637.7	613.6
6.0	4.0	13.0	468.0	366.0	27.0	1.0	787.3	56.4	566.6	545.4
6.0	4.0	14.0	802.0	125.0	27.0	1.0	741.4	54.4	536.5	516.4
6.0	4.0	15.0	749.0	110.0	27.0	1.0	550.5	48.2	404.1	388.7
6.0	4.0	16.0	655.0	92.0	26.0	1.0	333.5	39.1	240.3	229.8
6.0	4.0	17.0	476.0	65.0	25.0	1.0	124.5	29.5	78.6	72.0
6.0	4.0	18.0	92.0	17.0	25.0	1.0	13.0	23.9	11.0	5.7
6.0	4.0	19.0	-	-	25.0	1.0	-	25.0	-	-
6.0	4.0	20.0	-	-	24.0	1.0	-	24.0	-	-
6.0	4.0	21.0	-	-	24.0	1.0	-	24.0	-	-
6.0	4.0	22.0	-	-	24.0	1.0	-	24.0	-	-
6.0	4.0	23.0	-	-	24.0	1.0	-	24.0	-	-
6.0	5.0	-	-	-	24.0	1.0	-	24.0	-	-
6.0	5.0	1.0	-	-	24.0	1.0	-	24.0	-	-
6.0	5.0	2.0	-	-	24.0	1.0	-	24.0	-	-
6.0	5.0	3.0	-	-	24.0	1.0	-	24.0	-	-
6.0	5.0	4.0	-	-	24.0	1.0	-	24.0	-	-
6.0	5.0	5.0	266.0	43.0	24.0	1.0	34.0	22.8	29.0	23.4
6.0	5.0	6.0	555.0	81.0	25.0	1.0	209.3	30.5	144.7	136.6
6.0	5.0	7.0	700.0	102.0	26.0	1.0	428.0	40.2	318.5	305.8
6.0	5.0	8.0	780.0	116.0	27.0	1.0	638.8	49.3	471.3	453.6
6.0	5.0	9.0	810.0	135.0	27.0	1.0	808.4	55.7	582.6	560.7
6.0	5.0	10.0	831.0	145.0	28.0	1.0	920.8	60.9	646.6	622.1
6.0	5.0	11.0	838.0	151.0	28.0	1.0	972.6	62.9	675.3	649.6
6.0	5.0	12.0	814.0	165.0	28.0	1.0	958.9	62.7	666.4	641.1
6.0	5.0	13.0	796.0	159.0	28.0	1.0	876.0	60.2	616.9	593.6
6.0	5.0	14.0	765.0	147.0	28.0	1.0	735.1	55.6	528.6	508.8
6.0	5.0	15.0	708.0	130.0	27.0	1.0	545.8	48.0	401.6	386.2
6.0	5.0	16.0	608.0	107.0	27.0	1.0	330.8	39.9	238.8	228.4
6.0	5.0	17.0	422.0	74.0	26.0	1.0	124.9	30.5	81.3	74.6
6.0	5.0	18.0	62.0	18.0	25.0	1.0	15.3	24.0	13.0	7.6
6.0	5.0	19.0	-	-	25.0	1.0	-	25.0	-	-
6.0	5.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	5.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	5.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	5.0	23.0	-	-	25.0	1.0	-	25.0	-	-
6.0	6.0	-	-	-	25.0	1.0	-	25.0	-	-
6.0	6.0	1.0	-	-	25.0	-	-	25.0	-	-
6.0	6.0	2.0	-	-	25.0	-	-	25.0	-	-
6.0	6.0	3.0	-	-	25.0	-	-	25.0	-	-
6.0	6.0	4.0	-	-	25.0	1.0	-	25.0	-	-
6.0	6.0	5.0	263.0	43.0	25.0	1.0	33.8	23.8	28.7	23.1
6.0	6.0	6.0	549.0	81.0	25.0	1.0	207.5	30.4	143.5	135.5
6.0	6.0	7.0	693.0	102.0	26.0	-	424.2	44.0	309.6	297.1
6.0	6.0	8.0	247.0	322.0	27.0	-	478.1	48.8	356.6	342.7
6.0	6.0	9.0	184.0	395.0	27.0	-	538.3	51.4	398.0	382.8
6.0	6.0	10.0	314.0	448.0	28.0	-	739.6	59.7	523.0	503.4
6.0	6.0	11.0	830.0	152.0	28.0	-	965.3	68.2	650.1	625.5
6.0	6.0	12.0	286.0	476.0	28.0	-	753.2	62.8	523.2	503.6
6.0	6.0	13.0	484.0	363.0	28.0	-	798.4	63.0	553.8	533.1
6.0	6.0	14.0	278.0	368.0	28.0	-	573.9	55.9	413.4	397.7
6.0	6.0	15.0	226.0	286.0	27.0	-	407.0	47.5	304.5	292.2
6.0	6.0	16.0	445.0	147.0	27.0	-	306.6	42.3	222.8	212.8
6.0	6.0	17.0	338.0	80.0	26.0	-	118.7	32.8	79.6	72.9
6.0	6.0	18.0	-	19.0	25.0	-	18.0	24.3	15.3	9.9
6.0	6.0	19.0	-	-	25.0	-	-	25.0	-	-
6.0	6.0	20.0	-	-	24.0	-	-	24.0	-	-
6.0	6.0	21.0	-	-	24.0	-	-	24.0	-	-
6.0	6.0	22.0	-	-	24.0	-	-	24.0	-	-
6.0	6.0	23.0	-	-	24.0	-	-	24.0	-	-
6.0	7.0	-	-	-	23.0	1.0	-	23.0	-	-
6.0	7.0	1.0	-	-	23.0	1.0	-	23.0	-	-
6.0	7.0	2.0	-	-	23.0	-	-	23.0	-	-
6.0	7.0	3.0	-	-	23.0	-	-	23.0	-	-
6.0	7.0	4.0	-	-	24.0	-	-	24.0	-	-
6.0	7.0	5.0	211.0	47.0	25.0	-	36.8	23.0	31.3	25.7
6.0	7.0	6.0	249.0	125.0	26.0	-	174.9	31.9	130.7	122.9
6.0	7.0	7.0	628.0	127.0	27.0	-	417.6	44.5	305.3	293.0
6.0	7.0	8.0	713.0	146.0	28.0	-	622.5	54.9	446.2	429.4
6.0	7.0	9.0	767.0	157.0	28.0	-	793.5	62.0	552.2	531.5
6.0	7.0	10.0	798.0	164.0	29.0	-	913.0	67.8	616.1	592.8
6.0	7.0	11.0	812.0	165.0	29.0	-	966.8	70.1	643.7	619.3

6.0	7.0	12.0	832.0	148.0	29.0	1.0	952.9	63.5	659.5	634.4
6.0	7.0	13.0	510.0	357.0	29.0	1.0	815.8	59.3	577.6	555.9
6.0	7.0	14.0	174.0	384.0	28.0	1.0	506.7	48.2	380.8	366.1
6.0	7.0	15.0	247.0	284.0	28.0	1.0	419.5	43.7	319.9	307.2
6.0	7.0	16.0	138.0	192.0	27.0	1.0	232.2	35.8	181.3	172.4
6.0	7.0	17.0	92.0	98.0	26.0	1.0	101.7	29.0	79.6	72.9
6.0	7.0	18.0	-	15.0	26.0	1.0	14.2	24.9	12.0	6.7
6.0	7.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	7.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	7.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	7.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	7.0	23.0	-	-	25.0	1.0	-	25.0	-	-
6.0	8.0	-	-	-	24.0	1.0	-	24.0	-	-
6.0	8.0	1.0	-	-	24.0	1.0	-	24.0	-	-
6.0	8.0	2.0	-	-	24.0	1.0	-	24.0	-	-
6.0	8.0	3.0	-	-	24.0	1.0	-	24.0	-	-
6.0	8.0	4.0	-	-	24.0	-	-	24.0	-	-
6.0	8.0	5.0	267.0	43.0	25.0	-	33.5	22.8	28.6	23.0
6.0	8.0	6.0	542.0	84.0	26.0	-	207.9	33.3	142.2	134.1
6.0	8.0	7.0	686.0	106.0	27.0	-	423.8	45.0	307.8	295.4
6.0	8.0	8.0	61.0	309.0	28.0	-	336.6	44.6	257.7	246.7
6.0	8.0	9.0	206.0	413.0	29.0	-	573.4	53.5	419.1	403.2
6.0	8.0	10.0	396.0	407.0	30.0	-	775.0	62.9	537.9	517.8
6.0	8.0	11.0	438.0	428.0	30.0	-	862.5	67.0	585.0	563.0
6.0	8.0	12.0	23.0	329.0	30.0	-	343.4	50.4	255.6	244.7
6.0	8.0	13.0	278.0	439.0	29.0	1.0	684.5	52.3	503.9	485.0
6.0	8.0	14.0	141.0	384.0	29.0	1.0	481.5	47.6	363.0	348.9
6.0	8.0	15.0	286.0	277.0	28.0	1.0	435.9	44.1	331.3	318.2
6.0	8.0	16.0	441.0	149.0	27.0	1.0	307.6	38.5	228.2	218.0
6.0	8.0	17.0	292.0	85.0	26.0	1.0	117.2	30.1	81.7	75.0
6.0	8.0	18.0	18.0	18.0	26.0	-	17.2	25.1	14.5	9.2
6.0	8.0	19.0	-	-	25.0	-	-	25.0	-	-
6.0	8.0	20.0	-	-	25.0	-	-	25.0	-	-
6.0	8.0	21.0	-	-	25.0	-	-	25.0	-	-
6.0	8.0	22.0	-	-	25.0	-	-	25.0	-	-
6.0	8.0	23.0	-	-	24.0	-	-	24.0	-	-
6.0	9.0	-	-	-	24.0	-	-	24.0	-	-
6.0	9.0	1.0	-	-	24.0	-	-	24.0	-	-
6.0	9.0	2.0	-	-	24.0	-	-	24.0	-	-
6.0	9.0	3.0	-	-	24.0	1.0	-	24.0	-	-
6.0	9.0	4.0	-	-	24.0	1.0	-	24.0	-	-
6.0	9.0	5.0	272.0	43.0	24.0	1.0	33.4	22.7	28.5	22.9
6.0	9.0	6.0	545.0	83.0	25.0	1.0	207.3	30.4	143.5	135.4
6.0	9.0	7.0	685.0	107.0	26.0	1.0	423.8	40.1	315.6	303.0
6.0	9.0	8.0	767.0	121.0	27.0	1.0	632.8	49.1	467.3	449.7
6.0	9.0	9.0	816.0	130.0	28.0	1.0	803.1	56.5	576.3	554.6
6.0	9.0	10.0	846.0	134.0	28.0	1.0	922.2	60.9	647.4	622.9
6.0	9.0	11.0	861.0	134.0	29.0	1.0	977.4	64.0	674.5	648.8
6.0	9.0	12.0	840.0	147.0	29.0	1.0	959.3	63.7	663.0	637.8
6.0	9.0	13.0	822.0	143.0	29.0	1.0	879.0	61.3	615.4	592.2
6.0	9.0	14.0	783.0	138.0	28.0	1.0	740.7	55.8	532.1	512.2
6.0	9.0	15.0	716.0	128.0	28.0	1.0	550.0	49.2	402.3	386.9
6.0	9.0	16.0	604.0	111.0	27.0	1.0	334.9	40.1	242.2	231.6
6.0	9.0	17.0	412.0	79.0	26.0	1.0	129.5	30.7	85.4	78.6
6.0	9.0	18.0	77.0	19.0	26.0	1.0	16.1	25.1	13.6	8.3
6.0	9.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	9.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	9.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	9.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	9.0	23.0	-	-	25.0	1.0	-	25.0	-	-
6.0	10.0	-	-	-	25.0	1.0	-	25.0	-	-
6.0	10.0	1.0	-	-	25.0	1.0	-	25.0	-	-
6.0	10.0	2.0	-	-	25.0	1.0	-	25.0	-	-
6.0	10.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	10.0	4.0	-	-	25.0	2.0	-	25.0	-	-
6.0	10.0	5.0	-	11.0	25.0	2.0	10.4	23.3	8.9	3.6
6.0	10.0	6.0	-	51.0	25.0	2.0	48.4	24.6	41.0	35.1
6.0	10.0	7.0	-	124.0	26.0	2.0	117.7	27.9	98.0	91.0
6.0	10.0	8.0	13.0	232.0	26.0	3.0	229.4	31.0	188.2	179.1
6.0	10.0	9.0	41.0	357.0	26.0	3.0	379.2	35.4	304.6	292.3
6.0	10.0	10.0	55.0	428.0	26.0	3.0	468.6	38.3	371.2	356.8
6.0	10.0	11.0	-	133.0	26.0	3.0	127.3	29.5	105.3	98.1
6.0	10.0	12.0	109.0	488.0	26.0	3.0	583.4	40.5	457.1	439.8
6.0	10.0	13.0	371.0	403.0	26.0	3.0	732.3	45.8	557.9	536.9
6.0	10.0	14.0	285.0	368.0	26.0	3.0	579.3	42.4	448.4	431.5
6.0	10.0	15.0	339.0	266.0	26.0	3.0	456.9	38.7	356.4	342.6
6.0	10.0	16.0	362.0	166.0	25.0	3.0	293.5	32.9	226.0	215.9
6.0	10.0	17.0	-	30.0	25.0	3.0	28.4	25.1	24.0	18.5
6.0	10.0	18.0	-	4.0	25.0	3.0	3.8	23.5	3.2	-
6.0	10.0	19.0	-	-	24.0	3.0	-	24.0	-	-
6.0	10.0	20.0	-	-	24.0	3.0	-	24.0	-	-

6.0	10.0	21.0	-	-	24.0	3.0	-	24.0	-	-
6.0	10.0	22.0	-	-	24.0	3.0	-	24.0	-	-
6.0	10.0	23.0	-	-	23.0	3.0	-	23.0	-	-
6.0	11.0	-	-	-	23.0	3.0	-	23.0	-	-
6.0	11.0	1.0	-	-	23.0	4.0	-	23.0	-	-
6.0	11.0	2.0	-	-	23.0	4.0	-	23.0	-	-
6.0	11.0	3.0	-	-	23.0	5.0	-	23.0	-	-
6.0	11.0	4.0	-	-	23.0	5.0	-	23.0	-	-
6.0	11.0	5.0	-	2.0	24.0	5.0	1.9	22.6	1.6	-
6.0	11.0	6.0	-	9.0	24.0	5.0	8.5	22.8	7.3	2.0
6.0	11.0	7.0	-	22.0	25.0	5.0	20.9	24.1	17.7	12.3
6.0	11.0	8.0	-	77.0	25.0	4.0	73.3	25.4	61.8	55.5
6.0	11.0	9.0	13.0	260.0	26.0	4.0	259.2	31.2	212.6	202.8
6.0	11.0	10.0	4.0	159.0	26.0	3.0	155.8	29.5	128.8	121.1
6.0	11.0	11.0	9.0	196.0	26.0	3.0	196.7	30.3	162.1	153.6
6.0	11.0	12.0	39.0	419.0	26.0	2.0	447.4	38.5	354.0	340.2
6.0	11.0	13.0	16.0	293.0	26.0	-	295.0	41.2	230.3	220.0
6.0	11.0	14.0	8.0	207.0	26.0	-	203.6	36.2	162.9	154.4
6.0	11.0	15.0	87.0	287.0	26.0	1.0	324.7	36.7	258.1	247.1
6.0	11.0	16.0	-	135.0	26.0	2.0	127.5	29.5	105.5	98.3
6.0	11.0	17.0	-	20.0	25.0	3.0	18.9	24.3	16.1	10.7
6.0	11.0	18.0	-	2.0	25.0	3.0	1.9	23.4	1.6	-
6.0	11.0	19.0	-	-	24.0	3.0	-	24.0	-	-
6.0	11.0	20.0	-	-	24.0	3.0	-	24.0	-	-
6.0	11.0	21.0	-	-	24.0	3.0	-	24.0	-	-
6.0	11.0	22.0	-	-	24.0	2.0	-	24.0	-	-
6.0	11.0	23.0	-	-	24.0	2.0	-	24.0	-	-
6.0	12.0	-	-	-	24.0	2.0	-	24.0	-	-
6.0	12.0	1.0	-	-	24.0	2.0	-	24.0	-	-
6.0	12.0	2.0	-	-	24.0	1.0	-	24.0	-	-
6.0	12.0	3.0	-	-	24.0	1.0	-	24.0	-	-
6.0	12.0	4.0	-	-	24.0	1.0	-	24.0	-	-
6.0	12.0	5.0	327.0	39.0	24.0	1.0	29.8	22.6	25.5	19.9
6.0	12.0	6.0	-	93.0	25.0	1.0	87.6	26.0	73.7	67.1
6.0	12.0	7.0	125.0	232.0	26.0	2.0	277.6	33.0	222.5	212.5
6.0	12.0	8.0	818.0	96.0	27.0	1.0	639.3	48.6	473.1	455.4
6.0	12.0	9.0	834.0	119.0	27.0	1.0	805.5	55.6	580.6	558.8
6.0	12.0	10.0	863.0	123.0	28.0	1.0	926.0	61.0	649.6	625.0
6.0	12.0	11.0	875.0	124.0	28.0	1.0	980.6	63.2	679.8	653.9
6.0	12.0	12.0	848.0	142.0	28.0	1.0	961.9	62.9	668.0	642.6
6.0	12.0	13.0	830.0	138.0	28.0	1.0	881.5	60.4	620.1	596.7
6.0	12.0	14.0	795.0	131.0	28.0	1.0	743.7	55.9	534.0	514.0
6.0	12.0	15.0	737.0	119.0	28.0	1.0	555.4	49.3	405.7	390.3
6.0	12.0	16.0	642.0	100.0	27.0	1.0	340.1	40.3	245.0	234.3
6.0	12.0	17.0	470.0	71.0	26.0	1.0	132.8	30.8	85.0	78.2
6.0	12.0	18.0	114.0	21.0	25.0	1.0	16.1	24.1	13.7	8.3
6.0	12.0	19.0	-	-	25.0	1.0	-	25.0	-	-
6.0	12.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	12.0	21.0	-	-	24.0	-	-	24.0	-	-
6.0	12.0	22.0	-	-	24.0	-	-	24.0	-	-
6.0	12.0	23.0	-	-	24.0	-	-	24.0	-	-
6.0	13.0	-	-	-	24.0	-	-	24.0	-	-
6.0	13.0	1.0	-	-	24.0	-	-	24.0	-	-
6.0	13.0	2.0	-	-	24.0	-	-	24.0	-	-
6.0	13.0	3.0	-	-	24.0	-	-	24.0	-	-
6.0	13.0	4.0	-	-	24.0	1.0	-	24.0	-	-
6.0	13.0	5.0	295.0	42.0	25.0	1.0	32.0	23.7	27.2	21.6
6.0	13.0	6.0	578.0	76.0	26.0	1.0	206.8	31.4	140.6	132.6
6.0	13.0	7.0	720.0	94.0	27.0	1.0	426.3	41.2	314.7	302.1
6.0	13.0	8.0	794.0	108.0	28.0	-	635.4	55.3	453.4	436.3
6.0	13.0	9.0	836.0	118.0	29.0	-	805.7	63.4	556.0	535.1
6.0	13.0	10.0	861.0	125.0	29.0	-	925.6	68.2	622.9	599.3
6.0	13.0	11.0	872.0	127.0	29.0	-	980.2	70.6	650.7	626.0
6.0	13.0	12.0	850.0	140.0	29.0	-	961.8	70.3	639.4	615.2
6.0	13.0	13.0	836.0	135.0	29.0	1.0	884.1	61.4	618.4	595.1
6.0	13.0	14.0	805.0	126.0	29.0	1.0	746.7	56.9	533.0	513.1
6.0	13.0	15.0	748.0	115.0	28.0	1.0	558.4	49.5	407.6	392.1
6.0	13.0	16.0	654.0	97.0	28.0	1.0	342.3	41.4	245.0	234.4
6.0	13.0	17.0	482.0	69.0	27.0	1.0	133.1	31.9	84.2	77.5
6.0	13.0	18.0	125.0	21.0	26.0	1.0	16.1	25.2	13.6	8.3
6.0	13.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	13.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	13.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	13.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	13.0	23.0	-	-	25.0	1.0	-	25.0	-	-
6.0	14.0	-	-	-	25.0	1.0	-	25.0	-	-
6.0	14.0	1.0	-	-	25.0	1.0	-	25.0	-	-
6.0	14.0	2.0	-	-	24.0	1.0	-	24.0	-	-
6.0	14.0	3.0	-	-	24.0	1.0	-	24.0	-	-
6.0	14.0	4.0	-	-	24.0	1.0	-	24.0	-	-
6.0	14.0	5.0	303.0	41.0	25.0	1.0	31.7	23.7	27.0	21.4

6.0	14.0	6.0	578.0	76.0	26.0	1.0	206.4	31.4	140.2	132.3
6.0	14.0	7.0	715.0	97.0	27.0	1.0	426.3	41.2	314.8	302.2
6.0	14.0	8.0	790.0	111.0	28.0	-	635.1	55.3	453.3	436.2
6.0	14.0	9.0	852.0	111.0	29.0	-	811.4	63.6	559.3	538.3
6.0	14.0	10.0	876.0	117.0	30.0	-	931.4	69.3	622.6	599.1
6.0	14.0	11.0	540.0	339.0	31.0	-	874.4	69.2	585.4	563.4
6.0	14.0	12.0	529.0	335.0	31.0	-	853.1	68.2	574.4	552.9
6.0	14.0	13.0	820.0	148.0	31.0	-	886.9	69.1	593.3	571.0
6.0	14.0	14.0	775.0	145.0	30.0	1.0	742.9	57.8	527.9	508.1
6.0	14.0	15.0	698.0	139.0	29.0	1.0	552.2	50.2	402.1	386.8
6.0	14.0	16.0	586.0	119.0	29.0	2.0	338.0	39.8	245.9	235.3
6.0	14.0	17.0	398.0	84.0	28.0	1.0	133.9	32.9	88.7	81.8
6.0	14.0	18.0	73.0	22.0	27.0	1.0	18.5	26.3	15.6	10.2
6.0	14.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	14.0	20.0	-	-	26.0	1.0	-	26.0	-	-
6.0	14.0	21.0	-	-	26.0	1.0	-	26.0	-	-
6.0	14.0	22.0	-	-	26.0	1.0	-	26.0	-	-
6.0	14.0	23.0	-	-	26.0	1.0	-	26.0	-	-
6.0	15.0	-	-	-	26.0	1.0	-	26.0	-	-
6.0	15.0	1.0	-	-	26.0	1.0	-	26.0	-	-
6.0	15.0	2.0	-	-	25.0	1.0	-	25.0	-	-
6.0	15.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	15.0	4.0	-	-	25.0	1.0	-	25.0	-	-
6.0	15.0	5.0	200.0	48.0	26.0	1.0	36.9	25.0	31.1	25.5
6.0	15.0	6.0	475.0	99.0	27.0	1.0	202.3	32.3	141.4	133.4
6.0	15.0	7.0	628.0	129.0	28.0	1.0	415.5	41.8	307.6	295.2
6.0	15.0	8.0	715.0	149.0	29.0	1.0	622.3	50.7	455.9	438.8
6.0	15.0	9.0	715.0	194.0	30.0	-	784.5	63.5	541.1	520.8
6.0	15.0	10.0	368.0	395.0	31.0	-	735.3	63.9	507.5	488.5
6.0	15.0	11.0	216.0	466.0	31.0	-	673.1	61.6	471.0	453.3
6.0	15.0	12.0	753.0	208.0	31.0	-	940.3	69.7	627.4	603.7
6.0	15.0	13.0	735.0	200.0	31.0	1.0	864.7	62.6	600.8	578.2
6.0	15.0	14.0	363.0	347.0	31.0	1.0	619.3	54.8	448.5	431.5
6.0	15.0	15.0	361.0	262.0	30.0	1.0	467.1	47.8	347.6	334.0
6.0	15.0	16.0	-	9.0	29.0	1.0	8.5	30.3	7.0	1.8
6.0	15.0	17.0	56.0	98.0	28.0	1.0	98.1	29.4	78.3	71.7
6.0	15.0	18.0	-	15.0	27.0	1.0	14.2	25.9	12.0	6.6
6.0	15.0	19.0	-	-	27.0	1.0	-	27.0	-	-
6.0	15.0	20.0	-	-	27.0	1.0	-	27.0	-	-
6.0	15.0	21.0	-	-	27.0	1.0	-	27.0	-	-
6.0	15.0	22.0	-	-	26.0	1.0	-	26.0	-	-
6.0	15.0	23.0	-	-	26.0	1.0	-	26.0	-	-
6.0	16.0	-	-	-	26.0	1.0	-	26.0	-	-
6.0	16.0	1.0	-	-	26.0	1.0	-	26.0	-	-
6.0	16.0	2.0	-	-	25.0	1.0	-	25.0	-	-
6.0	16.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	16.0	4.0	-	-	25.0	1.0	-	25.0	-	-
6.0	16.0	5.0	193.0	48.0	25.0	1.0	36.9	23.9	31.3	25.6
6.0	16.0	6.0	490.0	96.0	26.0	1.0	202.6	31.3	141.6	133.6
6.0	16.0	7.0	669.0	114.0	27.0	1.0	419.3	40.9	310.9	298.4
6.0	16.0	8.0	775.0	121.0	28.0	1.0	634.0	50.1	465.5	448.0
6.0	16.0	9.0	839.0	123.0	29.0	1.0	811.4	57.7	578.3	556.6
6.0	16.0	10.0	874.0	123.0	30.0	1.0	934.6	63.1	647.7	623.2
6.0	16.0	11.0	890.0	123.0	30.0	1.0	993.4	65.4	679.8	653.9
6.0	16.0	12.0	860.0	143.0	31.0	1.0	974.3	66.1	664.2	639.0
6.0	16.0	13.0	851.0	135.0	31.0	1.0	898.1	63.8	619.9	596.5
6.0	16.0	14.0	825.0	124.0	31.0	1.0	759.1	59.3	534.9	514.8
6.0	16.0	15.0	777.0	110.0	30.0	1.0	572.1	51.9	412.2	396.6
6.0	16.0	16.0	692.0	91.0	30.0	1.0	352.7	43.8	248.9	238.2
6.0	16.0	17.0	529.0	66.0	29.0	1.0	138.8	34.2	85.4	78.6
6.0	16.0	18.0	165.0	22.0	27.0	1.0	16.9	26.3	14.2	8.9
6.0	16.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	16.0	20.0	-	-	26.0	1.0	-	26.0	-	-
6.0	16.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	16.0	22.0	-	-	24.0	1.0	-	24.0	-	-
6.0	16.0	23.0	-	-	24.0	1.0	-	24.0	-	-
6.0	17.0	-	-	-	23.0	1.0	-	23.0	-	-
6.0	17.0	1.0	-	-	23.0	1.0	-	23.0	-	-
6.0	17.0	2.0	-	-	22.0	1.0	-	22.0	-	-
6.0	17.0	3.0	-	-	22.0	1.0	-	22.0	-	-
6.0	17.0	4.0	-	-	22.0	1.0	-	22.0	-	-
6.0	17.0	5.0	112.0	44.0	23.0	1.0	35.9	21.8	30.8	25.1
6.0	17.0	6.0	497.0	94.0	24.0	1.0	203.0	29.3	143.0	134.9
6.0	17.0	7.0	618.0	131.0	25.0	-	411.8	42.5	303.7	291.4
6.0	17.0	8.0	694.0	158.0	27.0	-	616.2	53.6	444.5	427.7
6.0	17.0	9.0	705.0	198.0	28.0	-	779.4	61.5	543.9	523.5
6.0	17.0	10.0	426.0	395.0	29.0	-	792.4	63.9	547.1	526.6
6.0	17.0	11.0	503.0	336.0	30.0	-	834.8	66.2	568.7	547.4
6.0	17.0	12.0	54.0	446.0	30.0	-	488.4	55.2	354.2	340.4
6.0	17.0	13.0	-	123.0	30.0	-	117.4	38.7	92.8	85.9
6.0	17.0	14.0	-	84.0	30.0	1.0	80.0	31.6	65.5	59.2

6.0	17.0	15.0	-	85.0	29.0	1.0	80.9	30.3	66.6	60.2
6.0	17.0	16.0	1.0	146.0	28.0	1.0	138.1	31.4	113.2	105.8
6.0	17.0	17.0	-	3.0	27.0	-	2.8	25.8	2.4	-
6.0	17.0	18.0	-	-	27.0	-	-	27.0	-	-
6.0	17.0	19.0	-	-	26.0	-	-	26.0	-	-
6.0	17.0	20.0	-	-	26.0	-	-	26.0	-	-
6.0	17.0	21.0	-	-	25.0	-	-	25.0	-	-
6.0	17.0	22.0	-	-	25.0	-	-	25.0	-	-
6.0	17.0	23.0	-	-	24.0	-	-	24.0	-	-
6.0	18.0	-	-	-	24.0	-	-	24.0	-	-
6.0	18.0	1.0	-	-	23.0	1.0	-	23.0	-	-
6.0	18.0	2.0	-	-	23.0	1.0	-	23.0	-	-
6.0	18.0	3.0	-	-	23.0	1.0	-	23.0	-	-
6.0	18.0	4.0	-	-	23.0	1.0	-	23.0	-	-
6.0	18.0	5.0	-	5.0	23.0	1.0	4.7	20.6	4.1	-
6.0	18.0	6.0	20.0	120.0	23.0	1.0	116.6	24.9	97.6	90.5
6.0	18.0	7.0	-	84.0	24.0	1.0	79.9	25.3	67.4	61.0
6.0	18.0	8.0	-	120.0	24.0	1.0	114.2	26.3	95.9	88.9
6.0	18.0	9.0	24.0	318.0	24.0	1.0	323.7	34.1	261.8	250.7
6.0	18.0	10.0	452.0	392.0	24.0	1.0	813.4	51.4	601.7	579.1
6.0	18.0	11.0	398.0	431.0	24.0	2.0	820.8	49.7	613.0	589.9
6.0	18.0	12.0	161.0	498.0	25.0	2.0	648.3	45.9	494.1	475.5
6.0	18.0	13.0	53.0	411.0	26.0	2.0	447.1	40.4	350.4	336.7
6.0	18.0	14.0	498.0	291.0	27.0	2.0	673.0	47.0	507.7	488.6
6.0	18.0	15.0	475.0	224.0	27.0	2.0	501.7	43.1	381.5	366.8
6.0	18.0	16.0	618.0	116.0	27.0	1.0	349.4	40.3	253.4	242.5
6.0	18.0	17.0	471.0	77.0	26.0	1.0	141.3	31.2	91.6	84.7
6.0	18.0	18.0	130.0	23.0	24.0	1.0	17.7	23.2	15.1	9.7
6.0	18.0	19.0	-	-	24.0	1.0	-	24.0	-	-
6.0	18.0	20.0	-	-	23.0	1.0	-	23.0	-	-
6.0	18.0	21.0	-	-	22.0	1.0	-	22.0	-	-
6.0	18.0	22.0	-	-	22.0	1.0	-	22.0	-	-
6.0	18.0	23.0	-	-	21.0	1.0	-	21.0	-	-
6.0	19.0	-	-	-	21.0	1.0	-	21.0	-	-
6.0	19.0	1.0	-	-	21.0	1.0	-	21.0	-	-
6.0	19.0	2.0	-	-	20.0	1.0	-	20.0	-	-
6.0	19.0	3.0	-	-	20.0	1.0	-	20.0	-	-
6.0	19.0	4.0	-	-	20.0	1.0	-	20.0	-	-
6.0	19.0	5.0	291.0	44.0	21.0	1.0	33.7	19.6	29.2	23.6
6.0	19.0	6.0	578.0	84.0	23.0	1.0	211.4	28.5	146.3	138.1
6.0	19.0	7.0	723.0	106.0	24.0	1.0	434.6	38.5	325.2	312.3
6.0	19.0	8.0	804.0	121.0	26.0	1.0	651.3	48.8	481.4	463.3
6.0	19.0	9.0	835.0	141.0	27.0	1.0	827.2	56.4	593.9	571.5
6.0	19.0	10.0	860.0	148.0	28.0	1.0	944.7	61.7	660.3	635.2
6.0	19.0	11.0	869.0	152.0	28.0	1.0	1,000.0	63.8	690.7	664.4
6.0	19.0	12.0	849.0	162.0	29.0	1.0	988.4	64.7	679.4	653.5
6.0	19.0	13.0	826.0	160.0	29.0	1.0	905.2	62.2	630.5	606.7
6.0	19.0	14.0	781.0	155.0	29.0	-	759.1	63.6	522.2	502.7
6.0	19.0	15.0	705.0	146.0	29.0	-	565.5	56.3	398.7	383.5
6.0	19.0	16.0	-	52.0	28.0	-	49.4	34.8	39.8	33.9
6.0	19.0	17.0	391.0	91.0	27.0	-	141.0	31.6	95.3	88.3
6.0	19.0	18.0	76.0	23.0	26.0	-	19.3	26.1	16.3	10.9
6.0	19.0	19.0	-	-	25.0	-	-	25.0	-	-
6.0	19.0	20.0	-	-	24.0	-	-	24.0	-	-
6.0	19.0	21.0	-	-	24.0	1.0	-	24.0	-	-
6.0	19.0	22.0	-	-	23.0	1.0	-	23.0	-	-
6.0	19.0	23.0	-	-	23.0	1.0	-	23.0	-	-
6.0	20.0	-	-	-	22.0	1.0	-	22.0	-	-
6.0	20.0	1.0	-	-	22.0	1.0	-	22.0	-	-
6.0	20.0	2.0	-	-	22.0	1.0	-	22.0	-	-
6.0	20.0	3.0	-	-	22.0	2.0	-	22.0	-	-
6.0	20.0	4.0	-	-	22.0	2.0	-	22.0	-	-
6.0	20.0	5.0	178.0	50.0	22.0	2.0	40.4	21.2	34.8	29.0
6.0	20.0	6.0	452.0	109.0	24.0	2.0	203.9	28.5	146.5	138.3
6.0	20.0	7.0	615.0	140.0	25.0	2.0	417.5	36.7	317.3	304.6
6.0	20.0	8.0	709.0	160.0	26.0	2.0	626.5	44.6	473.9	456.1
6.0	20.0	9.0	766.0	171.0	27.0	2.0	800.0	51.3	590.4	568.2
6.0	20.0	10.0	804.0	173.0	27.0	2.0	922.3	55.3	668.0	642.5
6.0	20.0	11.0	823.0	171.0	28.0	2.0	980.4	58.3	698.8	672.1
6.0	20.0	12.0	457.0	367.0	28.0	2.0	814.8	54.0	594.6	572.3
6.0	20.0	13.0	52.0	409.0	28.0	2.0	444.3	43.0	343.6	330.2
6.0	20.0	14.0	711.0	187.0	28.0	2.0	738.0	49.8	547.9	527.4
6.0	20.0	15.0	589.0	195.0	28.0	1.0	544.2	48.9	400.4	385.1
6.0	20.0	16.0	176.0	206.0	27.0	1.0	261.1	37.6	201.7	192.2
6.0	20.0	17.0	82.0	102.0	26.0	1.0	105.1	29.3	82.7	76.0
6.0	20.0	18.0	-	17.0	25.0	1.0	16.1	23.9	13.7	8.3
6.0	20.0	19.0	-	-	25.0	1.0	-	25.0	-	-
6.0	20.0	20.0	-	-	24.0	1.0	-	24.0	-	-
6.0	20.0	21.0	-	-	24.0	1.0	-	24.0	-	-
6.0	20.0	22.0	-	-	24.0	1.0	-	24.0	-	-
6.0	20.0	23.0	-	-	24.0	1.0	-	24.0	-	-

6.0	21.0	-	-	-	23.0	1.0	-	23.0	-	-
6.0	21.0	1.0	-	-	23.0	1.0	-	23.0	-	-
6.0	21.0	2.0	-	-	22.0	1.0	-	22.0	-	-
6.0	21.0	3.0	-	-	22.0	1.0	-	22.0	-	-
6.0	21.0	4.0	-	-	22.0	1.0	-	22.0	-	-
6.0	21.0	5.0	206.0	47.0	23.0	1.0	36.2	21.8	31.0	25.3
6.0	21.0	6.0	491.0	96.0	24.0	2.0	200.7	28.4	141.8	133.8
6.0	21.0	7.0	650.0	122.0	25.0	2.0	415.6	36.6	314.9	302.3
6.0	21.0	8.0	739.0	139.0	26.0	1.0	625.3	47.9	464.7	447.2
6.0	21.0	9.0	741.0	181.0	27.0	1.0	790.4	55.1	571.5	550.1
6.0	21.0	10.0	771.0	191.0	28.0	1.0	909.1	60.4	639.9	615.7
6.0	21.0	11.0	783.0	197.0	28.0	1.0	966.6	62.7	672.0	646.4
6.0	21.0	12.0	208.0	494.0	28.0	1.0	689.9	54.7	501.7	482.9
6.0	21.0	13.0	235.0	431.0	28.0	1.0	638.5	51.7	471.7	454.0
6.0	21.0	14.0	708.0	189.0	28.0	1.0	738.1	54.5	534.4	514.4
6.0	21.0	15.0	645.0	169.0	28.0	1.0	553.1	49.2	405.8	390.3
6.0	21.0	16.0	277.0	194.0	27.0	1.0	289.8	38.6	220.0	210.0
6.0	21.0	17.0	214.0	97.0	26.0	1.0	120.4	30.1	88.2	81.4
6.0	21.0	18.0	8.0	22.0	25.0	1.0	20.7	24.2	17.5	12.1
6.0	21.0	19.0	-	-	25.0	1.0	-	25.0	-	-
6.0	21.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	21.0	21.0	-	-	25.0	-	-	25.0	-	-
6.0	21.0	22.0	-	-	25.0	-	-	25.0	-	-
6.0	21.0	23.0	-	-	24.0	-	-	24.0	-	-
6.0	22.0	-	-	-	24.0	-	-	24.0	-	-
6.0	22.0	1.0	-	-	24.0	-	-	24.0	-	-
6.0	22.0	2.0	-	-	23.0	-	-	23.0	-	-
6.0	22.0	3.0	-	-	22.0	1.0	-	22.0	-	-
6.0	22.0	4.0	-	-	22.0	1.0	-	22.0	-	-
6.0	22.0	5.0	186.0	48.0	23.0	1.0	38.9	21.9	33.4	27.6
6.0	22.0	6.0	455.0	106.0	24.0	1.0	201.1	29.2	143.4	135.3
6.0	22.0	7.0	612.0	139.0	26.0	1.0	414.2	39.7	309.8	297.4
6.0	22.0	8.0	708.0	158.0	27.0	1.0	623.0	48.8	461.0	443.7
6.0	22.0	9.0	741.0	186.0	28.0	1.0	795.0	56.2	571.4	550.0
6.0	22.0	10.0	771.0	196.0	29.0	1.0	913.7	61.5	639.2	615.0
6.0	22.0	11.0	788.0	198.0	29.0	1.0	972.4	63.8	671.8	646.2
6.0	22.0	12.0	704.0	257.0	30.0	-	946.0	70.7	627.5	603.8
6.0	22.0	13.0	687.0	245.0	30.0	-	867.5	68.1	583.8	561.9
6.0	22.0	14.0	646.0	229.0	30.0	-	729.5	63.3	503.0	484.2
6.0	22.0	15.0	638.0	173.0	30.0	-	553.2	56.6	390.1	375.2
6.0	22.0	16.0	520.0	147.0	29.0	-	341.4	46.9	242.2	231.7
6.0	22.0	17.0	329.0	101.0	28.0	-	141.3	36.2	96.5	89.5
6.0	22.0	18.0	55.0	23.0	27.0	-	19.3	27.1	16.2	10.8
6.0	22.0	19.0	-	-	27.0	1.0	-	27.0	-	-
6.0	22.0	20.0	-	-	26.0	1.0	-	26.0	-	-
6.0	22.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	22.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	22.0	23.0	-	-	24.0	1.0	-	24.0	-	-
6.0	23.0	-	-	-	24.0	1.0	-	24.0	-	-
6.0	23.0	1.0	-	-	23.0	1.0	-	23.0	-	-
6.0	23.0	2.0	-	-	23.0	1.0	-	23.0	-	-
6.0	23.0	3.0	-	-	23.0	1.0	-	23.0	-	-
6.0	23.0	4.0	-	-	23.0	1.0	-	23.0	-	-
6.0	23.0	5.0	118.0	50.0	23.0	1.0	40.4	22.0	34.6	28.8
6.0	23.0	6.0	352.0	128.0	25.0	1.0	197.4	30.1	144.9	136.8
6.0	23.0	7.0	515.0	175.0	27.0	1.0	402.2	40.3	302.0	289.8
6.0	23.0	8.0	620.0	202.0	28.0	1.0	607.5	49.2	449.2	432.3
6.0	23.0	9.0	673.0	227.0	29.0	1.0	779.4	56.6	559.1	538.1
6.0	23.0	10.0	708.0	239.0	30.0	1.0	900.9	62.0	628.5	604.7
6.0	23.0	11.0	731.0	238.0	30.0	-	960.6	70.8	637.1	613.0
6.0	23.0	12.0	685.0	269.0	30.0	-	939.5	70.4	624.2	600.6
6.0	23.0	13.0	669.0	255.0	30.0	-	861.3	67.9	580.5	558.6
6.0	23.0	14.0	629.0	237.0	30.0	-	724.5	63.1	500.2	481.4
6.0	23.0	15.0	561.0	209.0	30.0	-	540.6	56.1	383.0	368.3
6.0	23.0	16.0	456.0	168.0	29.0	1.0	336.6	42.1	246.6	236.0
6.0	23.0	17.0	289.0	108.0	28.0	1.0	142.1	33.2	100.7	93.6
6.0	23.0	18.0	54.0	22.0	27.0	1.0	18.5	26.4	15.6	10.2
6.0	23.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	23.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	23.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	23.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	23.0	23.0	-	-	25.0	1.0	-	25.0	-	-
6.0	24.0	-	-	-	24.0	1.0	-	24.0	-	-
6.0	24.0	1.0	-	-	24.0	1.0	-	24.0	-	-
6.0	24.0	2.0	-	-	24.0	1.0	-	24.0	-	-
6.0	24.0	3.0	-	-	23.0	1.0	-	23.0	-	-
6.0	24.0	4.0	-	-	23.0	1.0	-	23.0	-	-
6.0	24.0	5.0	113.0	49.0	24.0	1.0	39.6	23.0	33.8	28.1
6.0	24.0	6.0	332.0	132.0	25.0	1.0	196.0	30.1	144.8	136.7
6.0	24.0	7.0	480.0	188.0	27.0	1.0	398.1	40.1	299.9	287.7
6.0	24.0	8.0	569.0	228.0	28.0	1.0	597.3	48.8	442.8	426.1

6.0	24.0	9.0	566.0	294.0	29.0	1.0	755.8	55.8	544.8	524.3
6.0	24.0	10.0	597.0	316.0	29.0	1.0	872.2	60.1	615.1	591.9
6.0	24.0	11.0	613.0	324.0	30.0	1.0	928.6	63.3	643.5	619.1
6.0	24.0	12.0	226.0	491.0	30.0	1.0	704.6	56.8	506.3	487.3
6.0	24.0	13.0	57.0	416.0	29.0	2.0	455.8	43.9	350.9	337.2
6.0	24.0	14.0	9.0	219.0	29.0	1.0	215.9	37.5	171.7	162.9
6.0	24.0	15.0	307.0	278.0	28.0	1.0	452.4	43.1	345.7	332.2
6.0	24.0	16.0	519.0	135.0	28.0	1.0	330.7	40.4	242.2	231.6
6.0	24.0	17.0	292.0	109.0	27.0	-	143.7	35.1	100.8	93.7
6.0	24.0	18.0	51.0	23.0	26.0	-	19.3	26.1	16.2	10.8
6.0	24.0	19.0	-	-	26.0	-	-	26.0	-	-
6.0	24.0	20.0	-	-	26.0	-	-	26.0	-	-
6.0	24.0	21.0	-	-	25.0	-	-	25.0	-	-
6.0	24.0	22.0	-	-	24.0	1.0	-	24.0	-	-
6.0	24.0	23.0	-	-	24.0	1.0	-	24.0	-	-
6.0	25.0	-	-	-	23.0	1.0	-	23.0	-	-
6.0	25.0	1.0	-	-	23.0	1.0	-	23.0	-	-
6.0	25.0	2.0	-	-	23.0	2.0	-	23.0	-	-
6.0	25.0	3.0	-	-	23.0	2.0	-	23.0	-	-
6.0	25.0	4.0	-	-	23.0	2.0	-	23.0	-	-
6.0	25.0	5.0	117.0	49.0	23.0	2.0	39.6	22.2	33.9	28.2
6.0	25.0	6.0	374.0	121.0	24.0	2.0	195.1	28.2	143.2	135.1
6.0	25.0	7.0	552.0	157.0	26.0	2.0	401.2	37.2	304.9	292.6
6.0	25.0	8.0	663.0	176.0	27.0	2.0	609.8	45.1	460.3	443.0
6.0	25.0	9.0	730.0	187.0	27.0	2.0	786.1	50.8	581.6	559.8
6.0	25.0	10.0	441.0	389.0	28.0	2.0	799.5	52.8	586.9	564.9
6.0	25.0	11.0	785.0	193.0	28.0	2.0	964.7	57.4	691.0	664.6
6.0	25.0	12.0	768.0	202.0	29.0	2.0	950.1	58.5	676.2	650.4
6.0	25.0	13.0	765.0	185.0	29.0	2.0	877.0	56.5	630.6	606.7
6.0	25.0	14.0	742.0	165.0	29.0	1.0	741.6	56.7	530.3	510.5
6.0	25.0	15.0	692.0	143.0	29.0	1.0	558.0	50.4	406.5	391.0
6.0	25.0	16.0	600.0	117.0	28.0	1.0	347.0	41.6	250.8	240.0
6.0	25.0	17.0	432.0	81.0	27.0	1.0	140.7	32.2	92.6	85.7
6.0	25.0	18.0	107.0	25.0	26.0	1.0	19.3	25.3	16.3	10.9
6.0	25.0	19.0	-	-	25.0	1.0	-	25.0	-	-
6.0	25.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	25.0	21.0	-	-	24.0	1.0	-	24.0	-	-
6.0	25.0	22.0	-	-	24.0	2.0	-	24.0	-	-
6.0	25.0	23.0	-	-	23.0	2.0	-	23.0	-	-
6.0	26.0	-	-	-	23.0	2.0	-	23.0	-	-
6.0	26.0	1.0	-	-	22.0	2.0	-	22.0	-	-
6.0	26.0	2.0	-	-	22.0	2.0	-	22.0	-	-
6.0	26.0	3.0	-	-	21.0	1.0	-	21.0	-	-
6.0	26.0	4.0	-	-	21.0	1.0	-	21.0	-	-
6.0	26.0	5.0	232.0	43.0	22.0	1.0	33.0	20.6	28.5	22.9
6.0	26.0	6.0	191.0	125.0	23.0	1.0	157.5	26.6	122.2	114.6
6.0	26.0	7.0	36.0	203.0	24.0	1.0	208.0	30.3	170.4	161.7
6.0	26.0	8.0	330.0	292.0	25.0	1.0	499.2	41.6	385.7	370.9
6.0	26.0	9.0	805.0	140.0	26.0	1.0	799.3	53.8	581.9	560.0
6.0	26.0	10.0	827.0	150.0	27.0	1.0	914.8	59.7	646.5	622.0
6.0	26.0	11.0	406.0	427.0	27.0	1.0	824.7	57.6	590.2	568.0
6.0	26.0	12.0	345.0	453.0	28.0	-	787.2	63.0	546.2	525.7
6.0	26.0	13.0	319.0	429.0	28.0	-	712.8	60.4	501.8	483.0
6.0	26.0	14.0	718.0	180.0	28.0	-	739.2	60.8	516.9	497.5
6.0	26.0	15.0	665.0	156.0	28.0	-	555.0	54.8	395.0	379.9
6.0	26.0	16.0	575.0	125.0	28.0	-	345.3	46.1	244.7	234.1
6.0	26.0	17.0	420.0	84.0	27.0	1.0	141.8	32.2	94.1	87.2
6.0	26.0	18.0	111.0	25.0	26.0	1.0	19.3	25.3	16.3	10.9
6.0	26.0	19.0	-	-	25.0	-	-	25.0	-	-
6.0	26.0	20.0	-	-	25.0	-	-	25.0	-	-
6.0	26.0	21.0	-	-	25.0	-	-	25.0	-	-
6.0	26.0	22.0	-	-	25.0	-	-	25.0	-	-
6.0	26.0	23.0	-	-	25.0	-	-	25.0	-	-
6.0	27.0	-	-	-	25.0	-	-	25.0	-	-
6.0	27.0	1.0	-	-	24.0	-	-	24.0	-	-
6.0	27.0	2.0	-	-	24.0	-	-	24.0	-	-
6.0	27.0	3.0	-	-	24.0	-	-	24.0	-	-
6.0	27.0	4.0	-	-	24.0	-	-	24.0	-	-
6.0	27.0	5.0	278.0	37.0	24.0	-	28.5	21.5	24.5	18.9
6.0	27.0	6.0	529.0	80.0	26.0	-	192.6	32.6	130.3	122.5
6.0	27.0	7.0	323.0	203.0	27.0	-	339.0	41.6	255.7	244.8
6.0	27.0	8.0	305.0	303.0	28.0	-	493.3	49.7	365.6	351.4
6.0	27.0	9.0	440.0	330.0	28.0	-	687.5	57.6	490.7	472.3
6.0	27.0	10.0	470.0	385.0	29.0	1.0	822.4	58.3	586.0	564.0
6.0	27.0	11.0	457.0	425.0	29.0	1.0	876.3	60.5	616.8	593.5
6.0	27.0	12.0	462.0	351.0	29.0	1.0	805.1	58.7	572.6	551.1
6.0	27.0	13.0	557.0	338.0	28.0	1.0	842.4	58.5	599.2	576.7
6.0	27.0	14.0	248.0	380.0	28.0	1.0	565.0	50.2	420.0	404.0
6.0	27.0	15.0	174.0	299.0	27.0	1.0	391.3	42.1	301.9	289.6
6.0	27.0	16.0	91.0	197.0	27.0	1.0	220.4	35.2	174.2	165.4
6.0	27.0	17.0	72.0	103.0	26.0	1.0	105.9	29.1	84.0	77.2

6.0	27.0	18.0	-	20.0	26.0	1.0	19.0	25.1	16.0	10.6
6.0	27.0	19.0	-	-	26.0	1.0	-	26.0	-	-
6.0	27.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	27.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	27.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	27.0	23.0	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	-	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	1.0	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	2.0	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	3.0	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	4.0	-	-	25.0	-	-	25.0	-	-
6.0	28.0	5.0	-	15.0	25.0	-	14.2	21.9	12.2	6.9
6.0	28.0	6.0	-	74.0	26.0	1.0	70.1	26.3	58.9	52.6
6.0	28.0	7.0	21.0	190.0	27.0	1.0	188.8	32.1	153.6	145.3
6.0	28.0	8.0	37.0	281.0	27.0	1.0	293.1	36.5	233.9	223.6
6.0	28.0	9.0	150.0	409.0	27.0	1.0	521.2	44.8	399.0	383.8
6.0	28.0	10.0	25.0	355.0	27.0	1.0	368.6	41.1	288.0	276.1
6.0	28.0	11.0	129.0	498.0	27.0	1.0	619.6	48.4	466.0	448.4
6.0	28.0	12.0	192.0	496.0	26.0	1.0	677.1	50.6	503.3	484.4
6.0	28.0	13.0	225.0	453.0	26.0	2.0	648.0	46.3	492.6	474.1
6.0	28.0	14.0	17.0	276.0	26.0	2.0	276.7	35.4	222.2	212.2
6.0	28.0	15.0	4.0	182.0	26.0	2.0	175.3	30.8	144.1	136.0
6.0	28.0	16.0	13.0	164.0	25.0	1.0	159.6	29.7	131.5	123.7
6.0	28.0	17.0	10.0	94.0	25.0	1.0	89.0	27.0	74.0	67.4
6.0	28.0	18.0	-	16.0	25.0	1.0	15.2	23.8	12.9	7.5
6.0	28.0	19.0	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	20.0	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	21.0	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	22.0	-	-	25.0	1.0	-	25.0	-	-
6.0	28.0	23.0	-	-	25.0	1.0	-	25.0	-	-
6.0	29.0	-	-	-	25.0	1.0	-	25.0	-	-
6.0	29.0	1.0	-	-	25.0	2.0	-	25.0	-	-
6.0	29.0	2.0	-	-	25.0	2.0	-	25.0	-	-
6.0	29.0	3.0	-	-	24.0	1.0	-	24.0	-	-
6.0	29.0	4.0	-	-	24.0	1.0	-	24.0	-	-
6.0	29.0	5.0	-	16.0	25.0	1.0	15.1	23.1	12.9	7.6
6.0	29.0	6.0	-	36.0	25.0	1.0	34.1	23.9	29.0	23.3
6.0	29.0	7.0	-	50.0	25.0	1.0	47.5	24.6	40.2	34.3
6.0	29.0	8.0	-	86.0	25.0	1.0	81.9	25.9	68.9	62.4
6.0	29.0	9.0	1.0	145.0	25.0	2.0	139.1	27.7	116.0	108.6
6.0	29.0	10.0	4.0	158.0	26.0	2.0	154.8	29.5	128.0	120.3
6.0	29.0	11.0	19.0	334.0	26.0	2.0	339.9	35.2	273.5	262.1
6.0	29.0	12.0	64.0	458.0	26.0	2.0	510.4	41.0	398.9	383.7
6.0	29.0	13.0	24.0	343.0	26.0	2.0	354.9	37.1	282.8	271.1
6.0	29.0	14.0	9.0	216.0	26.0	2.0	213.1	32.2	173.9	165.1
6.0	29.0	15.0	86.0	291.0	26.0	2.0	329.3	35.1	263.8	252.7
6.0	29.0	16.0	107.0	199.0	25.0	2.0	229.3	31.6	184.1	175.0
6.0	29.0	17.0	172.0	102.0	25.0	1.0	119.5	28.6	90.3	83.4
6.0	29.0	18.0	24.0	23.0	24.0	1.0	20.6	23.1	17.6	12.1
6.0	29.0	19.0	-	-	24.0	1.0	-	24.0	-	-
6.0	29.0	20.0	-	-	24.0	1.0	-	24.0	-	-
6.0	29.0	21.0	-	-	24.0	1.0	-	24.0	-	-
6.0	29.0	22.0	-	-	24.0	1.0	-	24.0	-	-
6.0	29.0	23.0	-	-	24.0	1.0	-	24.0	-	-
6.0	30.0	-	-	-	24.0	1.0	-	24.0	-	-
6.0	30.0	1.0	-	-	24.0	1.0	-	24.0	-	-
6.0	30.0	2.0	-	-	24.0	1.0	-	24.0	-	-
6.0	30.0	3.0	-	-	24.0	1.0	-	24.0	-	-
6.0	30.0	4.0	-	-	24.0	-	-	24.0	-	-
6.0	30.0	5.0	281.0	36.0	25.0	-	27.8	22.5	23.7	18.2
6.0	30.0	6.0	568.0	70.0	26.0	1.0	190.4	30.8	127.6	119.9
6.0	30.0	7.0	698.0	93.0	27.0	1.0	405.9	40.4	299.7	287.5
6.0	30.0	8.0	46.0	290.0	27.0	1.0	307.5	38.3	243.1	232.5
6.0	30.0	9.0	813.0	120.0	27.0	1.0	782.5	53.2	571.2	549.8
6.0	30.0	10.0	841.0	126.0	28.0	1.0	904.5	60.3	637.2	613.1
6.0	30.0	11.0	247.0	492.0	28.0	1.0	733.9	55.7	530.6	510.7
6.0	30.0	12.0	440.0	420.0	28.0	2.0	851.4	54.1	621.1	597.6
6.0	30.0	13.0	596.0	267.0	28.0	2.0	809.9	53.4	592.6	570.3
6.0	30.0	14.0	798.0	122.0	28.0	1.0	743.1	55.5	534.9	514.8
6.0	30.0	15.0	676.0	154.0	28.0	1.0	561.8	49.5	411.5	395.8
6.0	30.0	16.0	657.0	93.0	27.0	1.0	348.7	40.6	251.8	241.0
6.0	30.0	17.0	235.0	97.0	26.0	1.0	125.6	30.6	91.1	84.2
6.0	30.0	18.0	87.0	24.0	28.0	1.0	20.1	27.3	16.8	11.4
6.0	30.0	19.0	-	-	27.0	1.0	-	27.0	-	-
6.0	30.0	20.0	-	-	26.0	1.0	-	26.0	-	-
6.0	30.0	21.0	-	-	26.0	1.0	-	26.0	-	-
6.0	30.0	22.0	-	-	26.0	1.0	-	26.0	-	-
6.0	30.0	23.0	-	-	26.0	1.0	-	26.0	-	-
7.0	1.0	-	-	-	26.0	1.0	-	26.0	-	-
7.0	1.0	1.0	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	2.0	-	-	25.0	1.0	-	25.0	-	-

7.0	1.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	1.0	5.0	86.0	42.0	26.0	1.0	36.0	24.9	30.4	24.8
7.0	1.0	6.0	471.0	96.0	27.0	1.0	191.8	32.0	132.9	125.1
7.0	1.0	7.0	443.0	176.0	28.0	1.0	367.9	40.1	277.0	265.5
7.0	1.0	8.0	713.0	148.0	30.0	1.0	613.0	51.1	447.6	430.7
7.0	1.0	9.0	156.0	409.0	31.0	1.0	526.1	50.6	390.6	375.6
7.0	1.0	10.0	322.0	445.0	32.0	1.0	740.7	57.9	529.1	509.2
7.0	1.0	11.0	428.0	426.0	32.0	1.0	849.6	62.2	592.4	570.1
7.0	1.0	12.0	819.0	164.0	33.0	1.0	964.3	67.0	653.9	629.1
7.0	1.0	13.0	796.0	163.0	33.0	2.0	886.0	60.6	622.6	599.1
7.0	1.0	14.0	751.0	159.0	32.0	2.0	745.8	55.6	536.8	516.7
7.0	1.0	15.0	688.0	145.0	31.0	2.0	560.8	49.0	411.8	396.2
7.0	1.0	16.0	584.0	123.0	30.0	3.0	349.3	39.8	255.7	244.8
7.0	1.0	17.0	412.0	86.0	29.0	2.0	143.9	33.2	95.7	88.7
7.0	1.0	18.0	103.0	25.0	28.0	2.0	20.9	27.5	17.5	12.1
7.0	1.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	1.0	20.0	-	-	27.0	2.0	-	27.0	-	-
7.0	1.0	21.0	-	-	27.0	2.0	-	27.0	-	-
7.0	1.0	22.0	-	-	27.0	2.0	-	27.0	-	-
7.0	1.0	23.0	-	-	27.0	2.0	-	27.0	-	-
7.0	2.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	2.0	1.0	-	-	26.0	1.0	-	26.0	-	-
7.0	2.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	2.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	2.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	2.0	5.0	201.0	41.0	28.0	1.0	31.6	26.9	26.5	20.9
7.0	2.0	6.0	276.0	119.0	29.0	1.0	169.7	33.2	124.0	116.4
7.0	2.0	7.0	635.0	121.0	30.0	2.0	402.7	41.1	297.6	285.5
7.0	2.0	8.0	722.0	141.0	31.0	2.0	611.6	49.1	451.4	434.4
7.0	2.0	9.0	684.0	209.0	32.0	2.0	769.1	55.2	555.7	534.9
7.0	2.0	10.0	726.0	216.0	32.0	2.0	894.6	59.2	634.0	610.0
7.0	2.0	11.0	748.0	216.0	32.0	2.0	956.7	61.3	670.3	644.8
7.0	2.0	12.0	713.0	240.0	32.0	2.0	940.9	61.1	660.0	634.9
7.0	2.0	13.0	684.0	238.0	32.0	2.0	861.9	59.0	611.5	588.5
7.0	2.0	14.0	622.0	235.0	31.0	2.0	721.3	53.9	524.5	504.8
7.0	2.0	15.0	525.0	223.0	30.0	2.0	536.3	47.2	399.3	384.0
7.0	2.0	16.0	-	78.0	29.0	2.0	74.1	31.9	60.6	54.3
7.0	2.0	17.0	219.0	119.0	28.0	2.0	142.3	30.9	105.5	98.3
7.0	2.0	18.0	-	22.0	28.0	2.0	20.9	27.5	17.4	12.0
7.0	2.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	2.0	20.0	-	-	28.0	2.0	-	28.0	-	-
7.0	2.0	21.0	-	-	27.0	2.0	-	27.0	-	-
7.0	2.0	22.0	-	-	27.0	1.0	-	27.0	-	-
7.0	2.0	23.0	-	-	27.0	1.0	-	27.0	-	-
7.0	3.0	-	-	-	27.0	1.0	-	27.0	-	-
7.0	3.0	1.0	-	-	27.0	1.0	-	27.0	-	-
7.0	3.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	3.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	3.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	3.0	5.0	123.0	44.0	27.0	1.0	35.8	26.0	30.1	24.4
7.0	3.0	6.0	382.0	112.0	28.0	1.0	186.1	32.8	132.1	124.3
7.0	3.0	7.0	553.0	149.0	29.0	1.0	391.0	41.9	289.5	277.6
7.0	3.0	8.0	663.0	168.0	30.0	-	599.5	55.8	427.2	411.0
7.0	3.0	9.0	462.0	320.0	31.0	-	695.4	61.4	485.8	467.6
7.0	3.0	10.0	774.0	181.0	32.0	-	901.5	69.6	601.7	579.1
7.0	3.0	11.0	797.0	180.0	32.0	-	965.3	72.7	632.6	608.7
7.0	3.0	12.0	787.0	186.0	33.0	-	955.7	73.7	622.7	599.2
7.0	3.0	13.0	776.0	178.0	33.0	-	883.7	71.4	583.2	561.2
7.0	3.0	14.0	747.0	163.0	33.0	-	747.7	66.8	505.2	486.3
7.0	3.0	15.0	700.0	142.0	33.0	-	566.1	60.0	391.5	376.5
7.0	3.0	16.0	608.0	117.0	32.0	-	353.9	50.4	244.8	234.2
7.0	3.0	17.0	446.0	81.0	31.0	-	145.5	39.5	92.4	85.4
7.0	3.0	18.0	132.0	25.0	29.0	-	19.3	29.3	16.0	10.6
7.0	3.0	19.0	-	-	28.0	-	-	28.0	-	-
7.0	3.0	20.0	-	-	27.0	-	-	27.0	-	-
7.0	3.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	3.0	22.0	-	-	26.0	1.0	-	26.0	-	-
7.0	3.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	4.0	-	-	-	24.0	1.0	-	24.0	-	-
7.0	4.0	1.0	-	-	24.0	1.0	-	24.0	-	-
7.0	4.0	2.0	-	-	24.0	1.0	-	24.0	-	-
7.0	4.0	3.0	-	-	24.0	1.0	-	24.0	-	-
7.0	4.0	4.0	-	-	24.0	1.0	-	24.0	-	-
7.0	4.0	5.0	286.0	37.0	25.0	1.0	29.1	23.6	24.7	19.2
7.0	4.0	6.0	574.0	75.0	27.0	1.0	194.5	32.0	129.8	122.0
7.0	4.0	7.0	714.0	97.0	29.0	1.0	413.9	42.7	301.8	289.6
7.0	4.0	8.0	789.0	113.0	30.0	-	627.1	56.9	443.2	426.5
7.0	4.0	9.0	831.0	125.0	31.0	-	801.3	65.1	547.5	527.0
7.0	4.0	10.0	853.0	133.0	32.0	-	922.6	70.8	611.2	588.1
7.0	4.0	11.0	861.0	138.0	33.0	-	980.6	74.2	636.9	612.8

7.0	4.0	12.0	817.0	167.0	33.0	-	966.6	74.1	628.2	604.5
7.0	4.0	13.0	791.0	167.0	33.0	1.0	887.0	65.3	607.0	584.2
7.0	4.0	14.0	744.0	163.0	32.0	2.0	745.9	55.6	536.9	516.8
7.0	4.0	15.0	667.0	154.0	31.0	2.0	558.4	48.9	410.6	395.0
7.0	4.0	16.0	556.0	131.0	30.0	2.0	347.1	41.1	253.3	242.4
7.0	4.0	17.0	375.0	92.0	29.0	2.0	144.0	33.2	97.7	90.6
7.0	4.0	18.0	82.0	24.0	28.0	1.0	20.1	27.5	16.8	11.4
7.0	4.0	19.0	-	-	28.0	1.0	-	28.0	-	-
7.0	4.0	20.0	-	-	28.0	1.0	-	28.0	-	-
7.0	4.0	21.0	-	-	27.0	1.0	-	27.0	-	-
7.0	4.0	22.0	-	-	27.0	1.0	-	27.0	-	-
7.0	4.0	23.0	-	-	27.0	1.0	-	27.0	-	-
7.0	5.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	5.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	5.0	2.0	-	-	27.0	2.0	-	27.0	-	-
7.0	5.0	3.0	-	-	27.0	2.0	-	27.0	-	-
7.0	5.0	4.0	-	-	27.0	2.0	-	27.0	-	-
7.0	5.0	5.0	125.0	42.0	28.0	2.0	34.3	27.2	28.6	23.0
7.0	5.0	6.0	-	50.0	28.0	2.0	47.4	27.8	39.6	33.7
7.0	5.0	7.0	322.0	201.0	29.0	2.0	335.1	37.6	257.6	246.6
7.0	5.0	8.0	331.0	293.0	30.0	2.0	499.7	44.6	380.0	365.4
7.0	5.0	9.0	438.0	329.0	31.0	2.0	684.6	51.5	505.2	486.3
7.0	5.0	10.0	451.0	386.0	31.0	2.0	806.5	55.6	583.4	561.5
7.0	5.0	11.0	247.0	491.0	32.0	2.0	733.9	55.0	532.7	512.7
7.0	5.0	12.0	427.0	419.0	32.0	2.0	839.5	57.6	600.6	578.0
7.0	5.0	13.0	468.0	372.0	32.0	3.0	798.2	54.1	581.7	559.8
7.0	5.0	14.0	565.0	242.0	31.0	3.0	685.2	50.2	508.3	489.2
7.0	5.0	15.0	352.0	268.0	31.0	3.0	473.3	44.4	359.0	345.0
7.0	5.0	16.0	362.0	177.0	30.0	2.0	311.3	39.7	233.2	222.9
7.0	5.0	17.0	390.0	81.0	29.0	2.0	136.8	32.8	91.3	84.4
7.0	5.0	18.0	72.0	25.0	28.0	2.0	20.9	27.4	17.5	12.1
7.0	5.0	19.0	-	-	28.0	2.0	-	28.0	-	-
7.0	5.0	20.0	-	-	28.0	2.0	-	28.0	-	-
7.0	5.0	21.0	-	-	28.0	2.0	-	28.0	-	-
7.0	5.0	22.0	-	-	28.0	2.0	-	28.0	-	-
7.0	5.0	23.0	-	-	28.0	2.0	-	28.0	-	-
7.0	6.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	6.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	6.0	2.0	-	-	27.0	2.0	-	27.0	-	-
7.0	6.0	3.0	-	-	27.0	2.0	-	27.0	-	-
7.0	6.0	4.0	-	-	27.0	2.0	-	27.0	-	-
7.0	6.0	5.0	101.0	37.0	27.0	2.0	30.4	26.1	25.6	20.0
7.0	6.0	6.0	-	77.0	27.0	2.0	72.8	27.5	60.8	54.5
7.0	6.0	7.0	-	64.0	27.0	2.0	60.8	27.3	50.8	44.7
7.0	6.0	8.0	119.0	319.0	28.0	2.0	384.9	38.1	303.9	291.7
7.0	6.0	9.0	14.0	266.0	28.0	2.0	265.6	36.0	212.8	203.0
7.0	6.0	10.0	-	59.0	28.0	3.0	56.3	28.9	46.7	40.7
7.0	6.0	11.0	-	110.0	28.0	3.0	105.2	29.5	87.1	80.2
7.0	6.0	12.0	32.0	401.0	28.0	3.0	423.6	38.2	335.7	322.5
7.0	6.0	13.0	18.0	309.0	27.0	3.0	312.6	35.3	251.3	240.5
7.0	6.0	14.0	186.0	390.0	26.0	3.0	525.3	39.6	412.7	397.1
7.0	6.0	15.0	73.0	287.0	26.0	2.0	318.4	36.1	254.0	243.1
7.0	6.0	16.0	16.0	168.0	26.0	1.0	164.7	31.8	134.2	126.3
7.0	6.0	17.0	-	85.0	25.0	1.0	79.5	26.7	66.6	60.3
7.0	6.0	18.0	-	12.0	25.0	1.0	11.4	23.5	9.7	4.4
7.0	6.0	19.0	-	-	25.0	1.0	-	25.0	-	-
7.0	6.0	20.0	-	-	25.0	1.0	-	25.0	-	-
7.0	6.0	21.0	-	-	25.0	1.0	-	25.0	-	-
7.0	6.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	6.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	7.0	-	-	-	25.0	2.0	-	25.0	-	-
7.0	7.0	1.0	-	-	25.0	2.0	-	25.0	-	-
7.0	7.0	2.0	-	-	25.0	2.0	-	25.0	-	-
7.0	7.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	7.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	7.0	5.0	-	34.0	25.0	1.0	31.6	23.7	26.9	21.3
7.0	7.0	6.0	222.0	117.0	26.0	1.0	155.2	29.6	116.9	109.4
7.0	7.0	7.0	374.0	191.0	27.0	2.0	348.5	36.4	268.3	257.1
7.0	7.0	8.0	5.0	188.0	28.0	2.0	182.1	33.3	147.8	139.7
7.0	7.0	9.0	9.0	216.0	28.0	3.0	213.6	32.9	173.8	165.0
7.0	7.0	10.0	-	119.0	28.0	3.0	113.7	30.3	93.7	86.7
7.0	7.0	11.0	13.0	266.0	28.0	3.0	268.3	34.1	217.0	207.1
7.0	7.0	12.0	361.0	443.0	28.0	4.0	795.8	46.7	603.7	581.0
7.0	7.0	13.0	415.0	384.0	28.0	3.0	762.7	49.2	570.8	549.3
7.0	7.0	14.0	204.0	388.0	28.0	3.0	537.7	43.4	414.3	398.6
7.0	7.0	15.0	348.0	270.0	28.0	3.0	473.4	41.0	365.6	351.4
7.0	7.0	16.0	515.0	138.0	27.0	2.0	337.1	37.5	251.5	240.7
7.0	7.0	17.0	257.0	106.0	27.0	2.0	138.1	30.9	100.1	93.0
7.0	7.0	18.0	27.0	23.0	26.0	2.0	20.6	25.4	17.4	11.9
7.0	7.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	7.0	20.0	-	-	26.0	1.0	-	26.0	-	-

7.0	7.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	7.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	7.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	8.0	-	-	-	25.0	2.0	-	25.0	-	-
7.0	8.0	1.0	-	-	25.0	2.0	-	25.0	-	-
7.0	8.0	2.0	-	-	25.0	2.0	-	25.0	-	-
7.0	8.0	3.0	-	-	25.0	2.0	-	25.0	-	-
7.0	8.0	4.0	-	-	25.0	2.0	-	25.0	-	-
7.0	8.0	5.0	12.0	36.0	25.0	2.0	32.5	24.0	27.6	22.0
7.0	8.0	6.0	126.0	122.0	26.0	2.0	139.3	28.5	109.2	101.9
7.0	8.0	7.0	288.0	205.0	27.0	2.0	323.3	35.6	251.5	240.7
7.0	8.0	8.0	213.0	316.0	28.0	2.0	442.8	40.9	344.0	330.5
7.0	8.0	9.0	474.0	315.0	28.0	2.0	700.5	48.8	524.4	504.8
7.0	8.0	10.0	306.0	443.0	29.0	2.0	725.0	51.4	536.4	516.3
7.0	8.0	11.0	394.0	430.0	30.0	2.0	818.3	55.1	593.8	571.4
7.0	8.0	12.0	226.0	491.0	30.0	2.0	707.3	52.4	520.8	501.3
7.0	8.0	13.0	298.0	436.0	30.0	2.0	704.3	51.9	519.7	500.3
7.0	8.0	14.0	263.0	378.0	29.0	2.0	577.8	47.3	436.0	419.5
7.0	8.0	15.0	262.0	289.0	29.0	2.0	439.6	42.9	336.9	323.7
7.0	8.0	16.0	347.0	180.0	28.0	2.0	308.9	37.5	234.5	224.1
7.0	8.0	17.0	363.0	93.0	27.0	2.0	143.7	31.0	99.1	92.1
7.0	8.0	18.0	74.0	24.0	26.0	2.0	20.1	25.4	17.0	11.6
7.0	8.0	19.0	-	-	26.0	2.0	-	26.0	-	-
7.0	8.0	20.0	-	-	25.0	1.0	-	25.0	-	-
7.0	8.0	21.0	-	-	25.0	1.0	-	25.0	-	-
7.0	8.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	8.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	9.0	-	-	-	25.0	1.0	-	25.0	-	-
7.0	9.0	1.0	-	-	24.0	1.0	-	24.0	-	-
7.0	9.0	2.0	-	-	24.0	1.0	-	24.0	-	-
7.0	9.0	3.0	-	-	24.0	1.0	-	24.0	-	-
7.0	9.0	4.0	-	-	24.0	1.0	-	24.0	-	-
7.0	9.0	5.0	205.0	37.0	25.0	1.0	28.6	23.6	24.3	18.8
7.0	9.0	6.0	493.0	86.0	26.0	1.0	185.3	30.6	127.1	119.4
7.0	9.0	7.0	647.0	115.0	27.0	1.0	399.8	40.1	296.2	284.1
7.0	9.0	8.0	733.0	135.0	28.0	-	611.5	54.3	438.5	421.9
7.0	9.0	9.0	746.0	171.0	29.0	-	780.4	62.4	541.5	521.2
7.0	9.0	10.0	779.0	180.0	30.0	-	906.2	68.4	609.2	586.2
7.0	9.0	11.0	791.0	186.0	31.0	-	967.4	71.9	637.2	613.1
7.0	9.0	12.0	66.0	460.0	31.0	-	515.5	57.9	368.2	354.0
7.0	9.0	13.0	704.0	227.0	30.0	-	872.9	65.8	595.8	573.4
7.0	9.0	14.0	9.0	217.0	30.0	-	214.2	45.9	163.2	154.7
7.0	9.0	15.0	454.0	235.0	30.0	-	507.6	51.2	370.7	356.4
7.0	9.0	16.0	2.0	150.0	29.0	-	142.5	38.9	112.5	105.1
7.0	9.0	17.0	293.0	108.0	28.0	-	146.1	34.1	103.2	96.0
7.0	9.0	18.0	51.0	22.0	27.0	1.0	18.5	26.4	15.6	10.2
7.0	9.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	9.0	20.0	-	-	25.0	1.0	-	25.0	-	-
7.0	9.0	21.0	-	-	25.0	1.0	-	25.0	-	-
7.0	9.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	9.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	10.0	-	-	-	25.0	-	-	25.0	-	-
7.0	10.0	1.0	-	-	25.0	-	-	25.0	-	-
7.0	10.0	2.0	-	-	25.0	-	-	25.0	-	-
7.0	10.0	3.0	-	-	24.0	-	-	24.0	-	-
7.0	10.0	4.0	-	-	24.0	-	-	24.0	-	-
7.0	10.0	5.0	126.0	39.0	25.0	-	31.9	22.7	27.3	21.7
7.0	10.0	6.0	391.0	108.0	26.0	-	182.3	32.2	128.9	121.1
7.0	10.0	7.0	555.0	148.0	27.0	1.0	388.9	39.8	290.7	278.8
7.0	10.0	8.0	655.0	173.0	28.0	1.0	598.0	48.8	442.4	425.7
7.0	10.0	9.0	715.0	188.0	29.0	1.0	773.6	56.3	555.4	534.6
7.0	10.0	10.0	743.0	203.0	29.0	1.0	898.9	61.0	630.7	606.9
7.0	10.0	11.0	751.0	213.0	30.0	1.0	954.8	64.1	658.3	633.3
7.0	10.0	12.0	717.0	236.0	30.0	1.0	944.6	64.1	651.4	626.7
7.0	10.0	13.0	701.0	226.0	30.0	1.0	869.8	61.9	607.2	584.3
7.0	10.0	14.0	528.0	282.0	29.0	1.0	696.3	55.3	502.6	483.8
7.0	10.0	15.0	579.0	188.0	29.0	1.0	540.7	49.6	397.1	381.9
7.0	10.0	16.0	509.0	138.0	28.0	1.0	335.7	41.1	246.1	235.4
7.0	10.0	17.0	198.0	99.0	27.0	1.0	122.6	31.5	90.2	83.3
7.0	10.0	18.0	4.0	22.0	26.0	1.0	20.9	25.3	17.6	12.2
7.0	10.0	19.0	-	-	26.0	-	-	26.0	-	-
7.0	10.0	20.0	-	-	26.0	-	-	26.0	-	-
7.0	10.0	21.0	-	-	26.0	-	-	26.0	-	-
7.0	10.0	22.0	-	-	25.0	-	-	25.0	-	-
7.0	10.0	23.0	-	-	25.0	-	-	25.0	-	-
7.0	11.0	-	-	-	25.0	-	-	25.0	-	-
7.0	11.0	1.0	-	-	24.0	-	-	24.0	-	-
7.0	11.0	2.0	-	-	24.0	1.0	-	24.0	-	-
7.0	11.0	3.0	-	-	24.0	1.0	-	24.0	-	-
7.0	11.0	4.0	-	-	24.0	1.0	-	24.0	-	-
7.0	11.0	5.0	201.0	36.0	24.0	1.0	27.9	22.5	23.8	18.3

7.0	11.0	6.0	507.0	82.0	26.0	1.0	183.8	30.6	125.1	117.5
7.0	11.0	7.0	667.0	106.0	27.0	1.0	399.3	40.1	295.3	283.2
7.0	11.0	8.0	758.0	120.0	28.0	1.0	612.6	49.3	451.0	434.0
7.0	11.0	9.0	790.0	141.0	29.0	1.0	786.6	56.8	563.2	542.1
7.0	11.0	10.0	822.0	148.0	30.0	1.0	909.7	62.3	633.5	609.6
7.0	11.0	11.0	831.0	153.0	30.0	1.0	968.2	64.6	665.8	640.5
7.0	11.0	12.0	485.0	410.0	30.0	1.0	889.9	62.6	619.2	595.8
7.0	11.0	13.0	485.0	365.0	30.0	1.0	809.6	59.8	571.9	550.4
7.0	11.0	14.0	495.0	292.0	30.0	1.0	680.6	55.5	491.0	472.5
7.0	11.0	15.0	463.0	231.0	29.0	1.0	510.1	48.5	377.7	363.2
7.0	11.0	16.0	306.0	182.0	29.0	1.0	295.1	40.5	221.5	211.5
7.0	11.0	17.0	263.0	99.0	28.0	1.0	133.5	32.6	95.2	88.2
7.0	11.0	18.0	41.0	23.0	27.0	1.0	20.6	26.4	17.3	11.9
7.0	11.0	19.0	-	-	26.0	-	-	26.0	-	-
7.0	11.0	20.0	-	-	26.0	-	-	26.0	-	-
7.0	11.0	21.0	-	-	26.0	-	-	26.0	-	-
7.0	11.0	22.0	-	-	26.0	-	-	26.0	-	-
7.0	11.0	23.0	-	-	25.0	-	-	25.0	-	-
7.0	12.0	-	-	-	25.0	-	-	25.0	-	-
7.0	12.0	1.0	-	-	25.0	-	-	25.0	-	-
7.0	12.0	2.0	-	-	25.0	-	-	25.0	-	-
7.0	12.0	3.0	-	-	24.0	-	-	24.0	-	-
7.0	12.0	4.0	-	-	24.0	-	-	24.0	-	-
7.0	12.0	5.0	22.0	34.0	25.0	1.0	30.8	23.7	26.2	20.6
7.0	12.0	6.0	441.0	87.0	26.0	1.0	173.2	30.2	120.0	112.5
7.0	12.0	7.0	303.0	200.0	28.0	1.0	324.8	38.5	248.7	238.0
7.0	12.0	8.0	244.0	308.0	29.0	-	457.9	49.2	340.4	327.1
7.0	12.0	9.0	389.0	349.0	30.0	-	661.2	58.4	470.1	452.4
7.0	12.0	10.0	307.0	441.0	31.0	-	725.0	62.8	503.6	484.7
7.0	12.0	11.0	542.0	325.0	31.0	-	866.3	67.7	585.0	563.0
7.0	12.0	12.0	717.0	230.0	31.0	-	939.8	70.8	623.0	599.5
7.0	12.0	13.0	693.0	226.0	30.0	-	863.7	68.0	581.9	560.0
7.0	12.0	14.0	653.0	211.0	30.0	-	727.5	63.2	502.1	483.3
7.0	12.0	15.0	87.0	294.0	29.0	1.0	334.2	43.1	257.3	246.4
7.0	12.0	16.0	70.0	199.0	29.0	1.0	215.3	36.7	169.6	160.9
7.0	12.0	17.0	136.0	102.0	28.0	1.0	115.8	31.5	87.8	81.0
7.0	12.0	18.0	-	17.0	27.0	1.0	16.1	26.1	13.5	8.2
7.0	12.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	12.0	20.0	-	-	27.0	1.0	-	27.0	-	-
7.0	12.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	12.0	22.0	-	-	26.0	1.0	-	26.0	-	-
7.0	12.0	23.0	-	-	26.0	1.0	-	26.0	-	-
7.0	13.0	-	-	-	26.0	1.0	-	26.0	-	-
7.0	13.0	1.0	-	-	26.0	1.0	-	26.0	-	-
7.0	13.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	13.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	13.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	13.0	5.0	83.0	36.0	26.0	1.0	29.6	24.8	25.0	19.5
7.0	13.0	6.0	322.0	117.0	27.0	1.0	175.3	31.3	127.2	119.5
7.0	13.0	7.0	489.0	167.0	28.0	1.0	377.1	40.3	282.4	270.7
7.0	13.0	8.0	594.0	197.0	29.0	1.0	581.7	49.2	429.8	413.5
7.0	13.0	9.0	659.0	216.0	30.0	1.0	756.1	56.7	542.0	521.7
7.0	13.0	10.0	454.0	382.0	30.0	1.0	807.5	59.1	572.7	551.2
7.0	13.0	11.0	14.0	270.0	31.0	1.0	273.3	43.5	210.8	201.1
7.0	13.0	12.0	34.0	403.0	31.0	1.0	428.3	45.6	326.9	313.9
7.0	13.0	13.0	24.0	343.0	31.0	1.0	356.0	44.1	273.8	262.4
7.0	13.0	14.0	168.0	390.0	30.0	1.0	513.0	47.8	386.3	371.5
7.0	13.0	15.0	-	25.0	29.0	1.0	23.7	31.1	19.5	14.0
7.0	13.0	16.0	-	25.0	28.0	2.0	23.7	27.0	19.8	14.4
7.0	13.0	17.0	-	37.0	27.0	2.0	35.1	26.3	29.5	23.8
7.0	13.0	18.0	-	4.0	27.0	2.0	3.8	25.4	3.2	-
7.0	13.0	19.0	-	-	26.0	2.0	-	26.0	-	-
7.0	13.0	20.0	-	-	26.0	1.0	-	26.0	-	-
7.0	13.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	13.0	22.0	-	-	26.0	1.0	-	26.0	-	-
7.0	13.0	23.0	-	-	26.0	1.0	-	26.0	-	-
7.0	14.0	-	-	-	26.0	1.0	-	26.0	-	-
7.0	14.0	1.0	-	-	26.0	1.0	-	26.0	-	-
7.0	14.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	14.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	14.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	14.0	5.0	-	3.0	26.0	1.0	2.8	23.7	2.4	-
7.0	14.0	6.0	354.0	110.0	27.0	1.0	175.3	31.1	125.6	118.0
7.0	14.0	7.0	522.0	154.0	28.0	1.0	379.2	40.4	283.0	271.3
7.0	14.0	8.0	623.0	182.0	29.0	1.0	585.9	49.3	432.4	416.0
7.0	14.0	9.0	73.0	368.0	30.0	-	416.0	50.8	308.8	296.4
7.0	14.0	10.0	298.0	443.0	30.0	-	719.2	60.1	507.4	488.4
7.0	14.0	11.0	371.0	405.0	31.0	-	773.1	64.7	531.3	511.4
7.0	14.0	12.0	355.0	411.0	31.0	-	761.0	64.7	523.1	503.5
7.0	14.0	13.0	710.0	215.0	31.0	-	869.5	68.0	585.6	563.6
7.0	14.0	14.0	678.0	198.0	31.0	-	735.4	64.4	504.0	485.1

7.0	14.0	15.0	609.0	179.0	30.0	1.0	552.1	51.1	402.0	386.6
7.0	14.0	16.0	501.0	147.0	30.0	1.0	342.0	43.3	248.5	237.8
7.0	14.0	17.0	363.0	82.0	29.0	1.0	134.6	34.0	90.3	83.4
7.0	14.0	18.0	41.0	21.0	27.0	1.0	18.9	26.3	15.9	10.5
7.0	14.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	14.0	20.0	-	-	26.0	1.0	-	26.0	-	-
7.0	14.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	14.0	22.0	-	-	26.0	1.0	-	26.0	-	-
7.0	14.0	23.0	-	-	26.0	1.0	-	26.0	-	-
7.0	15.0	-	-	-	26.0	1.0	-	26.0	-	-
7.0	15.0	1.0	-	-	26.0	1.0	-	26.0	-	-
7.0	15.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	15.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	15.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	15.0	5.0	129.0	36.0	27.0	1.0	29.6	25.9	24.9	19.3
7.0	15.0	6.0	431.0	94.0	28.0	-	176.6	34.0	121.1	113.5
7.0	15.0	7.0	602.0	125.0	29.0	-	388.1	45.4	280.5	268.9
7.0	15.0	8.0	701.0	144.0	30.0	-	599.1	55.7	426.4	410.3
7.0	15.0	9.0	260.0	390.0	31.0	-	597.2	58.1	425.4	409.3
7.0	15.0	10.0	783.0	169.0	31.0	-	901.0	68.1	606.9	584.0
7.0	15.0	11.0	792.0	176.0	32.0	-	961.5	72.6	630.6	606.8
7.0	15.0	12.0	763.0	196.0	32.0	1.0	948.4	66.1	646.5	622.0
7.0	15.0	13.0	577.0	282.0	31.0	1.0	814.6	61.2	570.9	549.5
7.0	15.0	14.0	455.0	306.0	30.0	1.0	664.6	55.0	480.8	462.7
7.0	15.0	15.0	295.0	280.0	30.0	2.0	453.1	44.6	343.9	330.4
7.0	15.0	16.0	406.0	168.0	29.0	2.0	323.9	39.0	242.8	232.2
7.0	15.0	17.0	255.0	93.0	28.0	1.0	127.2	32.6	90.5	83.6
7.0	15.0	18.0	7.0	21.0	27.0	1.0	19.8	26.3	16.6	11.2
7.0	15.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	15.0	20.0	-	-	27.0	1.0	-	27.0	-	-
7.0	15.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	15.0	22.0	-	-	26.0	1.0	-	26.0	-	-
7.0	15.0	23.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	-	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	1.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	2.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	16.0	5.0	41.0	31.0	26.0	1.0	27.2	24.8	23.0	17.5
7.0	16.0	6.0	427.0	87.0	27.0	1.0	169.2	31.1	116.9	109.4
7.0	16.0	7.0	451.0	166.0	28.0	1.0	359.1	39.7	270.1	258.8
7.0	16.0	8.0	708.0	138.0	28.0	1.0	597.7	48.6	441.9	425.3
7.0	16.0	9.0	212.0	398.0	29.0	1.0	562.3	49.8	419.3	403.4
7.0	16.0	10.0	10.0	223.0	29.0	1.0	222.9	38.4	176.5	167.7
7.0	16.0	11.0	236.0	490.0	29.0	1.0	720.3	52.8	529.1	509.3
7.0	16.0	12.0	296.0	471.0	29.0	2.0	763.8	52.6	561.7	540.6
7.0	16.0	13.0	384.0	397.0	29.0	2.0	747.2	52.3	550.2	529.5
7.0	16.0	14.0	274.0	374.0	28.0	2.0	585.2	46.7	443.0	426.3
7.0	16.0	15.0	254.0	288.0	28.0	2.0	435.9	41.8	336.1	322.8
7.0	16.0	16.0	306.0	180.0	28.0	2.0	294.1	37.0	224.6	214.6
7.0	16.0	17.0	393.0	78.0	27.0	1.0	136.1	31.7	91.0	84.1
7.0	16.0	18.0	71.0	21.0	27.0	1.0	17.7	26.3	14.9	9.5
7.0	16.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	16.0	20.0	-	-	26.0	2.0	-	26.0	-	-
7.0	16.0	21.0	-	-	26.0	2.0	-	26.0	-	-
7.0	16.0	22.0	-	-	26.0	2.0	-	26.0	-	-
7.0	16.0	23.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	-	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	3.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	17.0	5.0	-	2.0	26.0	1.0	1.9	23.8	1.6	-
7.0	17.0	6.0	164.0	118.0	26.0	2.0	142.9	28.5	110.2	102.9
7.0	17.0	7.0	243.0	206.0	26.0	2.0	303.9	34.0	239.0	228.5
7.0	17.0	8.0	-	90.0	27.0	2.0	85.7	29.2	71.0	64.5
7.0	17.0	9.0	32.0	330.0	27.0	2.0	346.0	36.1	277.1	265.6
7.0	17.0	10.0	127.0	462.0	28.0	2.0	575.5	44.9	440.9	424.2
7.0	17.0	11.0	151.0	497.0	28.0	2.0	644.0	47.7	486.1	467.8
7.0	17.0	12.0	289.0	474.0	28.0	2.0	760.4	51.2	563.3	542.2
7.0	17.0	13.0	132.0	454.0	28.0	2.0	569.6	46.3	432.9	416.5
7.0	17.0	14.0	311.0	364.0	28.0	2.0	604.9	46.6	458.2	440.9
7.0	17.0	15.0	540.0	201.0	28.0	2.0	530.5	44.6	400.3	385.1
7.0	17.0	16.0	564.0	123.0	27.0	2.0	346.7	38.0	257.0	246.1
7.0	17.0	17.0	191.0	97.0	27.0	2.0	120.1	30.4	88.9	82.1
7.0	17.0	18.0	-	20.0	26.0	2.0	19.0	25.2	16.0	10.6
7.0	17.0	19.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	20.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	21.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	22.0	-	-	26.0	2.0	-	26.0	-	-
7.0	17.0	23.0	-	-	26.0	2.0	-	26.0	-	-

7.0	18.0	-	-	-	26.0	2.0	-	26.0	-	-
7.0	18.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	18.0	2.0	-	-	25.0	1.0	-	25.0	-	-
7.0	18.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	18.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	18.0	5.0	-	17.0	25.0	1.0	16.1	23.3	13.7	8.4
7.0	18.0	6.0	71.0	114.0	25.0	1.0	120.3	27.2	96.9	89.9
7.0	18.0	7.0	346.0	188.0	26.0	1.0	332.1	36.4	255.9	244.9
7.0	18.0	8.0	712.0	140.0	27.0	1.0	602.3	47.7	447.7	430.8
7.0	18.0	9.0	220.0	396.0	28.0	1.0	567.3	49.0	424.8	408.7
7.0	18.0	10.0	434.0	383.0	29.0	1.0	791.9	56.8	569.0	547.7
7.0	18.0	11.0	838.0	152.0	30.0	1.0	977.8	64.3	673.4	647.8
7.0	18.0	12.0	495.0	406.0	30.0	1.0	899.6	62.9	624.8	601.2
7.0	18.0	13.0	806.0	158.0	30.0	1.0	899.9	62.5	625.7	602.1
7.0	18.0	14.0	302.0	366.0	30.0	1.0	600.1	53.5	438.2	421.7
7.0	18.0	15.0	566.0	191.0	29.0	1.0	537.0	49.0	396.0	380.8
7.0	18.0	16.0	478.0	149.0	28.0	1.0	335.5	41.0	247.1	236.4
7.0	18.0	17.0	375.0	80.0	27.0	1.0	135.0	31.9	90.9	84.0
7.0	18.0	18.0	60.0	21.0	27.0	2.0	17.7	26.3	14.9	9.5
7.0	18.0	19.0	-	-	26.0	2.0	-	26.0	-	-
7.0	18.0	20.0	-	-	26.0	2.0	-	26.0	-	-
7.0	18.0	21.0	-	-	25.0	2.0	-	25.0	-	-
7.0	18.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	18.0	23.0	-	-	24.0	1.0	-	24.0	-	-
7.0	19.0	-	-	-	24.0	1.0	-	24.0	-	-
7.0	19.0	1.0	-	-	23.0	1.0	-	23.0	-	-
7.0	19.0	2.0	-	-	23.0	1.0	-	23.0	-	-
7.0	19.0	3.0	-	-	22.0	1.0	-	22.0	-	-
7.0	19.0	4.0	-	-	22.0	1.0	-	22.0	-	-
7.0	19.0	5.0	107.0	30.0	23.0	1.0	24.9	21.5	21.4	15.9
7.0	19.0	6.0	-	3.0	23.0	1.0	2.8	20.7	2.4	-
7.0	19.0	7.0	24.0	184.0	25.0	1.0	184.4	29.4	151.9	143.7
7.0	19.0	8.0	368.0	276.0	26.0	1.0	507.7	42.8	389.5	374.6
7.0	19.0	9.0	335.0	368.0	27.0	1.0	637.6	49.7	475.2	457.4
7.0	19.0	10.0	289.0	444.0	27.0	1.0	713.6	52.8	524.1	504.4
7.0	19.0	11.0	467.0	417.0	28.0	1.0	886.3	59.4	627.8	604.1
7.0	19.0	12.0	190.0	493.0	28.0	1.0	677.7	53.9	494.9	476.3
7.0	19.0	13.0	250.0	446.0	28.0	-	674.8	58.4	480.4	462.4
7.0	19.0	14.0	291.0	368.0	29.0	-	593.8	56.6	426.2	410.0
7.0	19.0	15.0	278.0	283.0	28.0	-	446.6	50.0	329.7	316.7
7.0	19.0	16.0	200.0	194.0	28.0	-	264.2	42.1	199.1	189.7
7.0	19.0	17.0	348.0	82.0	27.0	-	132.3	33.9	89.3	82.4
7.0	19.0	18.0	102.0	21.0	25.0	-	16.1	24.5	13.7	8.3
7.0	19.0	19.0	-	-	25.0	-	-	25.0	-	-
7.0	19.0	20.0	-	-	24.0	-	-	24.0	-	-
7.0	19.0	21.0	-	-	23.0	1.0	-	23.0	-	-
7.0	19.0	22.0	-	-	22.0	1.0	-	22.0	-	-
7.0	19.0	23.0	-	-	22.0	1.0	-	22.0	-	-
7.0	20.0	-	-	-	21.0	1.0	-	21.0	-	-
7.0	20.0	1.0	-	-	21.0	2.0	-	21.0	-	-
7.0	20.0	2.0	-	-	20.0	2.0	-	20.0	-	-
7.0	20.0	3.0	-	-	20.0	2.0	-	20.0	-	-
7.0	20.0	4.0	-	-	20.0	2.0	-	20.0	-	-
7.0	20.0	5.0	212.0	30.0	21.0	2.0	23.2	19.7	20.1	14.6
7.0	20.0	6.0	532.0	77.0	23.0	2.0	181.5	26.7	124.1	116.5
7.0	20.0	7.0	687.0	104.0	25.0	2.0	404.4	36.2	304.3	292.0
7.0	20.0	8.0	773.0	123.0	26.0	1.0	625.1	47.8	463.9	446.5
7.0	20.0	9.0	824.0	135.0	27.0	1.0	810.1	55.7	583.6	561.6
7.0	20.0	10.0	853.0	144.0	28.0	1.0	938.0	61.4	656.7	631.8
7.0	20.0	11.0	864.0	149.0	29.0	1.0	1,001.7	64.8	688.2	661.9
7.0	20.0	12.0	862.0	150.0	29.0	-	996.4	71.5	657.8	632.9
7.0	20.0	13.0	33.0	373.0	30.0	-	394.6	53.1	289.4	277.5
7.0	20.0	14.0	808.0	140.0	29.0	-	782.2	61.1	546.2	525.7
7.0	20.0	15.0	742.0	130.0	29.0	-	587.7	57.2	413.1	397.4
7.0	20.0	16.0	631.0	112.0	28.0	-	363.4	47.0	256.1	245.2
7.0	20.0	17.0	434.0	81.0	27.0	1.0	145.7	32.5	96.3	89.3
7.0	20.0	18.0	90.0	19.0	26.0	1.0	14.5	25.2	12.3	6.9
7.0	20.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	20.0	20.0	-	-	25.0	1.0	-	25.0	-	-
7.0	20.0	21.0	-	-	25.0	1.0	-	25.0	-	-
7.0	20.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	20.0	23.0	-	-	24.0	-	-	24.0	-	-
7.0	21.0	-	-	-	24.0	-	-	24.0	-	-
7.0	21.0	1.0	-	-	24.0	-	-	24.0	-	-
7.0	21.0	2.0	-	-	23.0	-	-	23.0	-	-
7.0	21.0	3.0	-	-	23.0	-	-	23.0	-	-
7.0	21.0	4.0	-	-	23.0	-	-	23.0	-	-
7.0	21.0	5.0	136.0	31.0	24.0	-	23.9	21.5	20.6	15.1
7.0	21.0	6.0	444.0	91.0	25.0	-	175.2	30.7	121.1	113.6
7.0	21.0	7.0	619.0	124.0	26.0	-	393.9	42.6	288.5	276.6
7.0	21.0	8.0	722.0	142.0	27.0	-	611.1	53.3	440.7	424.0

7.0	21.0	9.0	790.0	149.0	28.0	-	796.8	62.0	554.1	533.4
7.0	21.0	10.0	823.0	155.0	29.0	-	926.9	68.2	623.8	600.2
7.0	21.0	11.0	837.0	157.0	30.0	-	983.3	71.6	648.9	624.3
7.0	21.0	12.0	838.0	155.0	30.0	-	978.3	71.8	644.9	620.5
7.0	21.0	13.0	820.0	150.0	30.0	1.0	906.5	63.1	628.3	604.6
7.0	21.0	14.0	776.0	146.0	29.0	1.0	763.4	57.6	543.8	523.4
7.0	21.0	15.0	471.0	226.0	29.0	1.0	513.5	49.1	379.2	364.6
7.0	21.0	16.0	436.0	153.0	28.0	1.0	322.9	40.5	239.2	228.8
7.0	21.0	17.0	361.0	90.0	27.0	1.0	141.6	32.0	97.0	90.0
7.0	21.0	18.0	50.0	18.0	26.0	1.0	15.3	25.2	12.9	7.6
7.0	21.0	19.0	-	-	25.0	1.0	-	25.0	-	-
7.0	21.0	20.0	-	-	25.0	1.0	-	25.0	-	-
7.0	21.0	21.0	-	-	25.0	1.0	-	25.0	-	-
7.0	21.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	21.0	23.0	-	-	24.0	1.0	-	24.0	-	-
7.0	22.0	-	-	-	24.0	1.0	-	24.0	-	-
7.0	22.0	1.0	-	-	24.0	1.0	-	24.0	-	-
7.0	22.0	2.0	-	-	24.0	1.0	-	24.0	-	-
7.0	22.0	3.0	-	-	24.0	1.0	-	24.0	-	-
7.0	22.0	4.0	-	-	24.0	1.0	-	24.0	-	-
7.0	22.0	5.0	92.0	31.0	25.0	1.0	25.7	23.6	21.8	16.3
7.0	22.0	6.0	201.0	109.0	26.0	1.0	141.8	29.0	107.0	99.8
7.0	22.0	7.0	401.0	174.0	27.0	1.0	344.6	38.0	262.2	251.1
7.0	22.0	8.0	325.0	286.0	28.0	2.0	490.2	42.4	377.0	362.5
7.0	22.0	9.0	315.0	373.0	29.0	2.0	627.1	47.9	472.1	454.3
7.0	22.0	10.0	417.0	387.0	29.0	2.0	781.8	52.7	574.3	552.8
7.0	22.0	11.0	450.0	418.0	30.0	2.0	872.2	56.7	627.1	603.4
7.0	22.0	12.0	432.0	414.0	30.0	2.0	848.0	56.4	610.7	587.7
7.0	22.0	13.0	35.0	378.0	30.0	2.0	401.7	43.9	309.3	296.8
7.0	22.0	14.0	325.0	359.0	29.0	2.0	612.9	47.1	462.9	445.5
7.0	22.0	15.0	592.0	181.0	29.0	2.0	546.4	46.1	408.8	393.3
7.0	22.0	16.0	461.0	147.0	28.0	2.0	327.3	38.5	244.4	233.8
7.0	22.0	17.0	237.0	91.0	27.0	1.0	122.4	31.4	88.0	81.2
7.0	22.0	18.0	-	17.0	26.0	1.0	16.1	25.1	13.6	8.3
7.0	22.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	22.0	20.0	-	-	25.0	1.0	-	25.0	-	-
7.0	22.0	21.0	-	-	25.0	1.0	-	25.0	-	-
7.0	22.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	22.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	23.0	-	-	-	25.0	2.0	-	25.0	-	-
7.0	23.0	1.0	-	-	25.0	2.0	-	25.0	-	-
7.0	23.0	2.0	-	-	25.0	1.0	-	25.0	-	-
7.0	23.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	23.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	23.0	5.0	-	2.0	26.0	1.0	1.9	23.8	1.6	-
7.0	23.0	6.0	-	27.0	26.0	1.0	25.6	24.6	21.7	16.2
7.0	23.0	7.0	107.0	209.0	27.0	2.0	246.1	32.8	197.3	187.9
7.0	23.0	8.0	18.0	237.0	27.0	2.0	237.5	33.5	192.4	183.2
7.0	23.0	9.0	466.0	311.0	28.0	2.0	693.7	47.8	522.1	502.6
7.0	23.0	10.0	106.0	454.0	28.0	2.0	544.1	45.4	415.8	400.0
7.0	23.0	11.0	192.0	495.0	29.0	2.0	684.5	49.7	511.2	492.1
7.0	23.0	12.0	180.0	493.0	29.0	2.0	669.4	49.8	499.6	480.9
7.0	23.0	13.0	49.0	403.0	28.0	2.0	439.4	42.3	341.1	327.7
7.0	23.0	14.0	105.0	380.0	28.0	2.0	452.0	41.7	351.7	337.9
7.0	23.0	15.0	308.0	275.0	28.0	2.0	458.2	41.9	352.7	338.9
7.0	23.0	16.0	135.0	195.0	28.0	1.0	239.4	37.3	186.3	177.2
7.0	23.0	17.0	-	29.0	27.0	1.0	27.5	27.4	23.0	17.4
7.0	23.0	18.0	-	2.0	26.0	1.0	1.9	23.9	1.6	-
7.0	23.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	23.0	20.0	-	-	26.0	1.0	-	26.0	-	-
7.0	23.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	23.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	23.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	24.0	-	-	-	25.0	1.0	-	25.0	-	-
7.0	24.0	1.0	-	-	24.0	1.0	-	24.0	-	-
7.0	24.0	2.0	-	-	24.0	-	-	24.0	-	-
7.0	24.0	3.0	-	-	24.0	-	-	24.0	-	-
7.0	24.0	4.0	-	-	24.0	1.0	-	24.0	-	-
7.0	24.0	5.0	57.0	27.0	24.0	1.0	23.9	22.4	20.5	15.0
7.0	24.0	6.0	441.0	88.0	25.0	1.0	171.3	29.1	119.0	111.5
7.0	24.0	7.0	400.0	173.0	27.0	1.0	343.3	38.1	261.0	249.9
7.0	24.0	8.0	718.0	139.0	28.0	1.0	606.1	48.8	447.7	430.8
7.0	24.0	9.0	281.0	381.0	29.0	-	608.0	56.6	436.6	420.1
7.0	24.0	10.0	261.0	425.0	30.0	-	670.8	59.7	474.2	456.4
7.0	24.0	11.0	99.0	482.0	31.0	-	573.5	57.8	409.9	394.3
7.0	24.0	12.0	106.0	458.0	31.0	-	555.6	56.5	399.9	384.6
7.0	24.0	13.0	762.0	184.0	31.0	1.0	889.1	61.5	621.7	598.2
7.0	24.0	14.0	723.0	174.0	30.0	1.0	752.0	58.1	534.3	514.3
7.0	24.0	15.0	651.0	159.0	30.0	1.0	561.6	51.5	407.9	392.4
7.0	24.0	16.0	539.0	133.0	29.0	1.0	345.4	42.5	251.0	240.2
7.0	24.0	17.0	348.0	90.0	28.0	1.0	139.3	33.1	95.3	88.3

7.0	24.0	18.0	40.0	17.0	26.0	1.0	14.5	25.1	12.2	6.9
7.0	24.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	24.0	20.0	-	-	26.0	1.0	-	26.0	-	-
7.0	24.0	21.0	-	-	25.0	1.0	-	25.0	-	-
7.0	24.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	24.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	25.0	-	-	-	25.0	1.0	-	25.0	-	-
7.0	25.0	1.0	-	-	25.0	1.0	-	25.0	-	-
7.0	25.0	2.0	-	-	25.0	1.0	-	25.0	-	-
7.0	25.0	3.0	-	-	24.0	1.0	-	24.0	-	-
7.0	25.0	4.0	-	-	24.0	1.0	-	24.0	-	-
7.0	25.0	5.0	79.0	29.0	25.0	1.0	24.1	23.6	20.5	15.0
7.0	25.0	6.0	385.0	97.0	25.0	1.0	168.1	29.0	119.3	111.8
7.0	25.0	7.0	180.0	208.0	26.0	-	277.2	37.8	215.1	205.2
7.0	25.0	8.0	88.0	301.0	27.0	-	346.6	42.7	267.6	256.4
7.0	25.0	9.0	23.0	303.0	28.0	-	309.2	42.9	239.3	228.8
7.0	25.0	10.0	35.0	381.0	29.0	-	406.0	47.2	307.2	294.8
7.0	25.0	11.0	357.0	444.0	29.0	-	803.3	61.8	561.2	540.2
7.0	25.0	12.0	313.0	464.0	29.0	-	777.9	63.5	538.2	518.0
7.0	25.0	13.0	450.0	369.0	29.0	1.0	789.0	57.7	563.9	542.7
7.0	25.0	14.0	317.0	359.0	29.0	1.0	607.6	52.2	446.8	429.9
7.0	25.0	15.0	542.0	212.0	28.0	1.0	544.6	48.3	403.4	388.0
7.0	25.0	16.0	417.0	173.0	28.0	1.0	334.4	41.1	248.1	237.4
7.0	25.0	17.0	227.0	109.0	27.0	1.0	136.5	31.9	99.8	92.7
7.0	25.0	18.0	11.0	12.0	26.0	1.0	11.5	25.0	9.7	4.4
7.0	25.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	25.0	20.0	-	-	25.0	1.0	-	25.0	-	-
7.0	25.0	21.0	-	-	25.0	1.0	-	25.0	-	-
7.0	25.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	25.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	26.0	-	-	-	25.0	1.0	-	25.0	-	-
7.0	26.0	1.0	-	-	25.0	1.0	-	25.0	-	-
7.0	26.0	2.0	-	-	25.0	1.0	-	25.0	-	-
7.0	26.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	26.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	26.0	5.0	53.0	29.0	25.0	1.0	25.5	23.6	21.7	16.2
7.0	26.0	6.0	353.0	104.0	26.0	1.0	167.9	30.0	120.2	112.6
7.0	26.0	7.0	545.0	144.0	27.0	1.0	379.1	39.3	283.6	271.9
7.0	26.0	8.0	658.0	167.0	28.0	1.0	595.5	48.7	440.7	424.1
7.0	26.0	9.0	184.0	396.0	29.0	1.0	540.1	49.0	404.3	388.9
7.0	26.0	10.0	763.0	189.0	29.0	1.0	907.6	60.1	639.9	615.7
7.0	26.0	11.0	779.0	193.0	30.0	1.0	972.3	64.7	668.3	642.8
7.0	26.0	12.0	754.0	209.0	30.0	1.0	959.3	64.6	659.7	634.6
7.0	26.0	13.0	727.0	207.0	30.0	2.0	884.2	57.7	631.8	607.9
7.0	26.0	14.0	678.0	199.0	29.0	2.0	742.2	52.6	543.5	523.2
7.0	26.0	15.0	623.0	171.0	29.0	2.0	556.6	46.9	414.5	398.8
7.0	26.0	16.0	-	139.0	28.0	2.0	131.6	32.7	107.2	99.9
7.0	26.0	17.0	282.0	85.0	27.0	2.0	123.7	29.6	87.6	80.7
7.0	26.0	18.0	-	14.0	26.0	2.0	13.3	25.1	11.2	5.9
7.0	26.0	19.0	-	-	26.0	2.0	-	26.0	-	-
7.0	26.0	20.0	-	-	26.0	2.0	-	26.0	-	-
7.0	26.0	21.0	-	-	26.0	2.0	-	26.0	-	-
7.0	26.0	22.0	-	-	26.0	2.0	-	26.0	-	-
7.0	26.0	23.0	-	-	25.0	2.0	-	25.0	-	-
7.0	27.0	-	-	-	25.0	1.0	-	25.0	-	-
7.0	27.0	1.0	-	-	25.0	1.0	-	25.0	-	-
7.0	27.0	2.0	-	-	25.0	1.0	-	25.0	-	-
7.0	27.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	27.0	4.0	-	-	25.0	1.0	-	25.0	-	-
7.0	27.0	5.0	73.0	27.0	25.0	1.0	22.5	23.5	19.2	13.7
7.0	27.0	6.0	376.0	96.0	26.0	1.0	165.1	29.9	116.8	109.3
7.0	27.0	7.0	205.0	208.0	27.0	1.0	288.3	36.2	225.0	214.9
7.0	27.0	8.0	677.0	152.0	28.0	1.0	593.3	48.1	440.2	423.5
7.0	27.0	9.0	755.0	158.0	29.0	1.0	779.7	56.5	559.3	538.3
7.0	27.0	10.0	795.0	162.0	30.0	1.0	911.2	62.3	634.6	610.6
7.0	27.0	11.0	814.0	163.0	30.0	1.0	977.7	64.9	671.3	645.8
7.0	27.0	12.0	822.0	157.0	31.0	2.0	975.4	61.2	684.0	657.9
7.0	27.0	13.0	808.0	151.0	30.0	2.0	900.0	58.2	641.4	617.1
7.0	27.0	14.0	293.0	365.0	30.0	2.0	595.2	49.6	443.9	427.2
7.0	27.0	15.0	386.0	252.0	29.0	2.0	484.7	44.3	367.8	353.6
7.0	27.0	16.0	276.0	179.0	28.0	2.0	282.3	36.9	216.3	206.4
7.0	27.0	17.0	414.0	76.0	27.0	1.0	137.0	31.6	90.7	83.8
7.0	27.0	18.0	-	18.0	26.0	1.0	17.1	25.2	14.4	9.0
7.0	27.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	27.0	20.0	-	-	26.0	1.0	-	26.0	-	-
7.0	27.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	27.0	22.0	-	-	25.0	1.0	-	25.0	-	-
7.0	27.0	23.0	-	-	25.0	1.0	-	25.0	-	-
7.0	28.0	-	-	-	25.0	1.0	-	25.0	-	-
7.0	28.0	1.0	-	-	25.0	1.0	-	25.0	-	-
7.0	28.0	2.0	-	-	25.0	1.0	-	25.0	-	-

7.0	28.0	3.0	-	-	25.0	1.0	-	25.0	-	-
7.0	28.0	4.0	-	-	25.0	-	-	25.0	-	-
7.0	28.0	5.0	-	2.0	26.0	-	1.9	22.6	1.6	-
7.0	28.0	6.0	-	4.0	27.0	-	3.8	23.5	3.2	-
7.0	28.0	7.0	573.0	127.0	27.0	-	376.9	41.3	278.3	266.7
7.0	28.0	8.0	392.0	264.0	28.0	1.0	513.4	46.0	387.1	372.2
7.0	28.0	9.0	302.0	374.0	28.0	1.0	619.7	50.2	460.9	443.6
7.0	28.0	10.0	446.0	376.0	28.0	1.0	801.2	56.4	577.1	555.4
7.0	28.0	11.0	541.0	307.0	28.0	1.0	856.1	58.9	608.1	585.2
7.0	28.0	12.0	433.0	411.0	27.0	2.0	849.7	53.5	621.7	598.2
7.0	28.0	13.0	318.0	424.0	27.0	2.0	719.2	49.9	536.3	516.2
7.0	28.0	14.0	436.0	310.0	27.0	1.0	658.8	51.5	485.9	467.7
7.0	28.0	15.0	265.0	280.0	27.0	1.0	437.7	44.1	333.4	320.2
7.0	28.0	16.0	57.0	183.0	27.0	1.0	196.2	34.7	156.4	148.0
7.0	28.0	17.0	-	31.0	26.0	1.0	29.4	26.1	24.7	19.1
7.0	28.0	18.0	-	2.0	26.0	1.0	1.9	23.9	1.6	-
7.0	28.0	19.0	-	-	26.0	1.0	-	26.0	-	-
7.0	28.0	20.0	-	-	26.0	1.0	-	26.0	-	-
7.0	28.0	21.0	-	-	26.0	1.0	-	26.0	-	-
7.0	28.0	22.0	-	-	26.0	1.0	-	26.0	-	-
7.0	28.0	23.0	-	-	26.0	2.0	-	26.0	-	-
7.0	29.0	-	-	-	26.0	2.0	-	26.0	-	-
7.0	29.0	1.0	-	-	26.0	2.0	-	26.0	-	-
7.0	29.0	2.0	-	-	26.0	2.0	-	26.0	-	-
7.0	29.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	29.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	29.0	5.0	4.0	24.0	26.0	1.0	22.7	24.5	19.3	13.8
7.0	29.0	6.0	242.0	100.0	27.0	1.0	141.7	30.1	104.3	97.1
7.0	29.0	7.0	233.0	200.0	27.0	1.0	294.7	36.3	229.2	219.0
7.0	29.0	8.0	243.0	299.0	28.0	1.0	451.5	43.5	345.9	332.3
7.0	29.0	9.0	150.0	395.0	28.0	2.0	512.3	43.5	394.9	379.8
7.0	29.0	10.0	324.0	430.0	28.0	1.0	736.7	53.8	538.0	517.9
7.0	29.0	11.0	419.0	415.0	29.0	1.0	842.9	59.1	598.0	575.5
7.0	29.0	12.0	412.0	414.0	29.0	2.0	832.5	54.9	604.5	581.7
7.0	29.0	13.0	59.0	413.0	29.0	2.0	459.7	44.5	352.8	339.0
7.0	29.0	14.0	59.0	353.0	29.0	1.0	390.3	43.4	301.1	288.9
7.0	29.0	15.0	260.0	281.0	29.0	1.0	435.8	44.5	331.3	318.2
7.0	29.0	16.0	484.0	137.0	28.0	1.0	327.1	40.2	241.3	230.8
7.0	29.0	17.0	207.0	89.0	27.0	1.0	115.2	31.1	83.8	77.0
7.0	29.0	18.0	-	12.0	27.0	1.0	11.4	25.9	9.6	4.3
7.0	29.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	29.0	20.0	-	-	27.0	1.0	-	27.0	-	-
7.0	29.0	21.0	-	-	27.0	1.0	-	27.0	-	-
7.0	29.0	22.0	-	-	27.0	1.0	-	27.0	-	-
7.0	29.0	23.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	-	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	1.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	2.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	3.0	-	-	26.0	1.0	-	26.0	-	-
7.0	30.0	4.0	-	-	26.0	1.0	-	26.0	-	-
7.0	30.0	5.0	94.0	26.0	27.0	1.0	21.7	25.6	18.3	12.9
7.0	30.0	6.0	446.0	80.0	27.0	1.0	164.3	30.9	111.9	104.6
7.0	30.0	7.0	627.0	108.0	28.0	1.0	382.1	40.4	282.1	270.4
7.0	30.0	8.0	728.0	125.0	29.0	1.0	600.2	49.8	440.9	424.3
7.0	30.0	9.0	348.0	359.0	29.0	1.0	643.2	52.3	472.8	455.0
7.0	30.0	10.0	326.0	434.0	30.0	1.0	743.1	56.6	534.5	514.5
7.0	30.0	11.0	426.0	413.0	30.0	1.0	848.5	60.3	598.1	575.6
7.0	30.0	12.0	272.0	474.0	30.0	2.0	750.1	53.7	548.5	527.9
7.0	30.0	13.0	222.0	447.0	30.0	2.0	649.2	50.5	482.7	464.6
7.0	30.0	14.0	522.0	278.0	29.0	2.0	696.3	50.4	516.3	496.9
7.0	30.0	15.0	556.0	190.0	29.0	1.0	532.6	49.3	392.1	377.0
7.0	30.0	16.0	262.0	179.0	28.0	1.0	276.7	39.0	210.0	200.3
7.0	30.0	17.0	350.0	79.0	28.0	1.0	128.7	32.3	87.0	80.2
7.0	30.0	18.0	-	14.0	27.0	1.0	13.3	26.1	11.2	5.8
7.0	30.0	19.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	20.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	21.0	-	-	27.0	1.0	-	27.0	-	-
7.0	30.0	22.0	-	-	27.0	2.0	-	27.0	-	-
7.0	30.0	23.0	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	-	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	1.0	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	2.0	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	3.0	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	4.0	-	-	27.0	2.0	-	27.0	-	-
7.0	31.0	5.0	-	4.0	27.0	2.0	3.8	25.3	3.2	-
7.0	31.0	6.0	71.0	105.0	27.0	2.0	112.0	28.6	89.3	82.5
7.0	31.0	7.0	-	7.0	28.0	2.0	6.6	26.9	5.6	0.4
7.0	31.0	8.0	-	67.0	28.0	2.0	63.7	28.2	53.0	46.9
7.0	31.0	9.0	259.0	383.0	28.0	2.0	594.7	44.3	456.4	439.2
7.0	31.0	10.0	462.0	371.0	29.0	2.0	813.1	53.5	594.9	572.5
7.0	31.0	11.0	107.0	482.0	28.0	2.0	583.4	46.9	442.2	425.5

7.0	31.0	12.0	120.0	484.0	28.0	2.0	604.4	46.6	458.8	441.5
7.0	31.0	13.0	181.0	451.0	28.0	1.0	616.0	50.5	458.0	440.7
7.0	31.0	14.0	-	83.0	28.0	1.0	79.1	32.7	64.4	58.0
7.0	31.0	15.0	-	41.0	28.0	1.0	39.0	27.7	32.5	26.8
7.0	31.0	16.0	-	116.0	27.0	1.0	110.0	29.0	91.2	84.3
7.0	31.0	17.0	-	51.0	27.0	1.0	48.4	27.2	40.5	34.6
7.0	31.0	18.0	4.0	9.0	26.0	-	8.6	23.4	7.3	2.1
7.0	31.0	19.0	-	-	26.0	-	-	26.0	-	-
7.0	31.0	20.0	-	-	26.0	-	-	26.0	-	-
7.0	31.0	21.0	-	-	26.0	-	-	26.0	-	-
7.0	31.0	22.0	-	-	25.0	-	-	25.0	-	-
7.0	31.0	23.0	-	-	25.0	-	-	25.0	-	-
8.0	1.0	-	-	-	25.0	1.0	-	25.0	-	-
8.0	1.0	1.0	-	-	25.0	1.0	-	25.0	-	-
8.0	1.0	2.0	-	-	25.0	1.0	-	25.0	-	-
8.0	1.0	3.0	-	-	25.0	1.0	-	25.0	-	-
8.0	1.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	1.0	5.0	31.0	23.0	26.0	1.0	20.6	24.4	17.5	12.0
8.0	1.0	6.0	-	50.0	27.0	1.0	47.4	26.6	39.8	34.0
8.0	1.0	7.0	-	62.0	28.0	-	58.9	28.3	49.0	43.0
8.0	1.0	8.0	45.0	274.0	29.0	-	293.7	40.4	229.7	219.4
8.0	1.0	9.0	119.0	390.0	30.0	-	483.1	50.9	358.2	344.3
8.0	1.0	10.0	424.0	380.0	30.0	1.0	787.0	57.2	564.3	543.2
8.0	1.0	11.0	4.0	155.0	30.0	1.0	152.6	38.4	120.8	113.3
8.0	1.0	12.0	16.0	301.0	30.0	1.0	306.0	39.8	240.6	230.1
8.0	1.0	13.0	744.0	184.0	30.0	2.0	876.7	55.1	635.6	611.5
8.0	1.0	14.0	705.0	174.0	30.0	2.0	740.6	53.5	539.7	519.5
8.0	1.0	15.0	632.0	158.0	29.0	1.0	550.1	50.1	402.6	387.2
8.0	1.0	16.0	518.0	130.0	29.0	1.0	333.6	42.1	243.0	232.4
8.0	1.0	17.0	318.0	85.0	28.0	1.0	128.6	32.7	88.4	81.6
8.0	1.0	18.0	12.0	10.0	28.0	1.0	9.4	27.0	7.9	2.6
8.0	1.0	19.0	-	-	27.0	1.0	-	27.0	-	-
8.0	1.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	1.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	1.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	1.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	5.0	24.0	21.0	27.0	1.0	19.0	25.4	16.0	10.6
8.0	2.0	6.0	293.0	106.0	28.0	1.0	157.3	31.6	113.6	106.3
8.0	2.0	7.0	488.0	154.0	29.0	1.0	364.7	40.8	271.8	260.4
8.0	2.0	8.0	605.0	181.0	30.0	1.0	577.3	50.0	424.7	408.6
8.0	2.0	9.0	678.0	197.0	31.0	1.0	760.6	57.8	542.1	521.8
8.0	2.0	10.0	717.0	208.0	31.0	1.0	891.7	62.6	620.1	596.7
8.0	2.0	11.0	736.0	212.0	32.0	1.0	958.2	66.1	653.4	628.6
8.0	2.0	12.0	649.0	273.0	32.0	1.0	929.3	65.5	635.6	611.6
8.0	2.0	13.0	193.0	449.0	32.0	1.0	625.7	56.3	450.8	433.8
8.0	2.0	14.0	525.0	266.0	32.0	1.0	687.8	56.7	492.8	474.4
8.0	2.0	15.0	273.0	275.0	31.0	1.0	438.6	48.2	326.9	313.9
8.0	2.0	16.0	366.0	179.0	30.0	1.0	318.0	41.9	235.8	225.4
8.0	2.0	17.0	166.0	107.0	29.0	1.0	124.1	33.4	92.2	85.3
8.0	2.0	18.0	-	4.0	28.0	1.0	3.8	26.7	3.2	-
8.0	2.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	2.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	2.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	2.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	3.0	5.0	7.0	16.0	27.0	1.0	15.3	25.3	12.9	7.6
8.0	3.0	6.0	199.0	122.0	28.0	1.0	152.9	31.5	115.0	107.6
8.0	3.0	7.0	385.0	190.0	30.0	1.0	352.3	41.4	264.1	253.0
8.0	3.0	8.0	509.0	230.0	31.0	1.0	561.5	50.4	412.9	397.2
8.0	3.0	9.0	588.0	253.0	31.0	-	742.7	62.7	514.9	495.6
8.0	3.0	10.0	638.0	264.0	32.0	-	874.4	69.0	585.8	563.8
8.0	3.0	11.0	242.0	482.0	33.0	-	725.7	66.0	495.0	476.4
8.0	3.0	12.0	459.0	407.0	33.0	-	875.1	69.9	583.5	561.6
8.0	3.0	13.0	456.0	362.0	33.0	-	792.1	68.1	533.4	513.4
8.0	3.0	14.0	575.0	251.0	32.0	1.0	712.8	58.3	506.2	487.2
8.0	3.0	15.0	514.0	214.0	32.0	1.0	530.5	52.3	384.9	370.1
8.0	3.0	16.0	375.0	175.0	31.0	1.0	317.7	43.4	233.4	223.1
8.0	3.0	17.0	-	76.0	30.0	2.0	71.2	31.9	58.2	52.0
8.0	3.0	18.0	-	2.0	29.0	2.0	1.9	27.6	1.6	-
8.0	3.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	3.0	20.0	-	-	28.0	1.0	-	28.0	-	-

8.0	3.0	21.0	-	-	28.0	1.0	-	28.0	-	-
8.0	3.0	22.0	-	-	28.0	1.0	-	28.0	-	-
8.0	3.0	23.0	-	-	28.0	1.0	-	28.0	-	-
8.0	4.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	4.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	4.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	4.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	4.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	4.0	5.0	-	10.0	27.0	1.0	9.5	25.0	8.0	2.7
8.0	4.0	6.0	-	83.0	28.0	1.0	78.1	28.7	64.9	58.5
8.0	4.0	7.0	23.0	175.0	29.0	1.0	176.0	33.7	141.9	133.9
8.0	4.0	8.0	378.0	264.0	30.0	1.0	506.5	46.6	380.7	366.1
8.0	4.0	9.0	239.0	385.0	31.0	1.0	577.2	51.7	425.9	409.8
8.0	4.0	10.0	219.0	453.0	32.0	-	658.6	61.0	462.3	444.9
8.0	4.0	11.0	431.0	369.0	33.0	-	813.3	67.5	549.9	529.3
8.0	4.0	12.0	320.0	457.0	33.0	-	783.1	67.5	529.6	509.7
8.0	4.0	13.0	433.0	368.0	33.0	-	777.3	67.1	526.6	506.9
8.0	4.0	14.0	-	59.0	32.0	1.0	56.2	37.0	44.8	38.8
8.0	4.0	15.0	-	63.0	31.0	1.0	59.9	31.5	49.1	43.0
8.0	4.0	16.0	-	68.0	30.0	1.0	64.6	30.6	53.1	47.0
8.0	4.0	17.0	-	68.0	29.0	2.0	64.0	29.5	52.9	46.8
8.0	4.0	18.0	-	3.0	28.0	2.0	2.8	26.5	2.4	-
8.0	4.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	4.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	4.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	4.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	4.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	5.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	5.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	5.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	5.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	5.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	5.0	5.0	-	10.0	26.0	1.0	9.5	24.0	8.0	2.8
8.0	5.0	6.0	-	86.0	26.0	1.0	80.9	26.7	67.8	61.4
8.0	5.0	7.0	-	64.0	27.0	1.0	60.8	27.5	50.8	44.7
8.0	5.0	8.0	106.0	299.0	28.0	1.0	358.1	39.0	281.6	270.0
8.0	5.0	9.0	323.0	364.0	28.0	1.0	630.5	49.7	470.1	452.5
8.0	5.0	10.0	392.0	368.0	29.0	1.0	747.7	55.7	540.5	520.2
8.0	5.0	11.0	70.0	458.0	29.0	1.0	523.9	49.3	392.1	377.1
8.0	5.0	12.0	735.0	212.0	29.0	1.0	954.9	61.5	668.5	643.1
8.0	5.0	13.0	723.0	201.0	28.0	1.0	879.5	60.3	619.4	596.0
8.0	5.0	14.0	694.0	182.0	28.0	1.0	740.9	55.8	533.2	513.2
8.0	5.0	15.0	678.0	138.0	28.0	1.0	558.4	49.4	409.6	394.0
8.0	5.0	16.0	579.0	110.0	27.0	1.0	339.2	40.3	247.4	236.7
8.0	5.0	17.0	391.0	71.0	26.0	1.0	126.2	30.6	83.5	76.8
8.0	5.0	18.0	21.0	9.0	26.0	1.0	7.8	24.8	6.6	1.4
8.0	5.0	19.0	-	-	26.0	1.0	-	26.0	-	-
8.0	5.0	20.0	-	-	26.0	1.0	-	26.0	-	-
8.0	5.0	21.0	-	-	26.0	1.0	-	26.0	-	-
8.0	5.0	22.0	-	-	26.0	1.0	-	26.0	-	-
8.0	5.0	23.0	-	-	26.0	1.0	-	26.0	-	-
8.0	6.0	-	-	-	26.0	1.0	-	26.0	-	-
8.0	6.0	1.0	-	-	25.0	1.0	-	25.0	-	-
8.0	6.0	2.0	-	-	25.0	1.0	-	25.0	-	-
8.0	6.0	3.0	-	-	25.0	1.0	-	25.0	-	-
8.0	6.0	4.0	-	-	25.0	1.0	-	25.0	-	-
8.0	6.0	5.0	98.0	20.0	26.0	1.0	15.3	24.2	13.0	7.6
8.0	6.0	6.0	162.0	100.0	27.0	2.0	125.8	29.1	95.8	88.8
8.0	6.0	7.0	647.0	100.0	28.0	2.0	384.3	38.4	286.1	274.4
8.0	6.0	8.0	460.0	235.0	29.0	2.0	535.9	44.9	406.0	390.5
8.0	6.0	9.0	500.0	293.0	30.0	2.0	710.6	51.4	524.7	505.1
8.0	6.0	10.0	826.0	139.0	31.0	2.0	918.0	58.7	652.6	627.9
8.0	6.0	11.0	836.0	144.0	31.0	2.0	980.3	61.1	687.9	661.6
8.0	6.0	12.0	825.0	150.0	31.0	2.0	970.5	61.0	681.1	655.1
8.0	6.0	13.0	801.0	150.0	31.0	2.0	897.1	59.0	636.3	612.2
8.0	6.0	14.0	757.0	145.0	31.0	2.0	752.2	54.9	543.9	523.6
8.0	6.0	15.0	685.0	134.0	30.0	2.0	558.5	48.0	412.8	397.1
8.0	6.0	16.0	320.0	163.0	29.0	2.0	284.2	38.3	214.7	204.9
8.0	6.0	17.0	343.0	77.0	28.0	1.0	123.9	32.2	83.5	76.8
8.0	6.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	6.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	6.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	6.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	6.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	6.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	7.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	7.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	7.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	7.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	7.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	7.0	5.0	52.0	19.0	27.0	1.0	16.1	25.3	13.6	8.2

8.0	7.0	6.0	380.0	87.0	28.0	2.0	157.6	31.1	109.7	102.4
8.0	7.0	7.0	570.0	124.0	29.0	2.0	374.5	39.2	279.4	267.8
8.0	7.0	8.0	677.0	147.0	30.0	2.0	592.5	47.4	441.3	424.6
8.0	7.0	9.0	742.0	160.0	31.0	2.0	777.0	54.4	564.0	542.8
8.0	7.0	10.0	773.0	171.0	32.0	2.0	906.9	59.6	641.5	617.2
8.0	7.0	11.0	785.0	177.0	32.0	2.0	970.6	61.7	678.5	652.6
8.0	7.0	12.0	779.0	180.0	32.0	1.0	962.8	66.6	654.7	629.8
8.0	7.0	13.0	758.0	177.0	32.0	1.0	885.1	64.3	609.5	586.5
8.0	7.0	14.0	383.0	330.0	32.0	1.0	635.0	56.4	456.2	439.0
8.0	7.0	15.0	81.0	274.0	31.0	1.0	314.4	43.9	241.1	230.6
8.0	7.0	16.0	327.0	164.0	31.0	1.0	287.7	41.1	214.1	204.3
8.0	7.0	17.0	307.0	81.0	30.0	-	121.7	36.7	81.8	75.1
8.0	7.0	18.0	-	-	28.0	-	-	28.0	-	-
8.0	7.0	19.0	-	-	28.0	-	-	28.0	-	-
8.0	7.0	20.0	-	-	28.0	-	-	28.0	-	-
8.0	7.0	21.0	-	-	27.0	-	-	27.0	-	-
8.0	7.0	22.0	-	-	27.0	-	-	27.0	-	-
8.0	7.0	23.0	-	-	27.0	-	-	27.0	-	-
8.0	8.0	-	-	-	27.0	-	-	27.0	-	-
8.0	8.0	1.0	-	-	27.0	-	-	27.0	-	-
8.0	8.0	2.0	-	-	26.0	-	-	26.0	-	-
8.0	8.0	3.0	-	-	26.0	-	-	26.0	-	-
8.0	8.0	4.0	-	-	26.0	-	-	26.0	-	-
8.0	8.0	5.0	31.0	16.0	26.0	1.0	14.7	24.2	12.5	7.2
8.0	8.0	6.0	292.0	102.0	28.0	1.0	153.7	31.5	110.8	103.5
8.0	8.0	7.0	476.0	156.0	30.0	1.0	362.8	41.7	269.3	258.1
8.0	8.0	8.0	589.0	189.0	31.0	1.0	577.4	50.9	422.8	406.8
8.0	8.0	9.0	425.0	310.0	32.0	1.0	667.0	55.8	480.9	462.9
8.0	8.0	10.0	25.0	326.0	33.0	-	344.2	51.7	254.2	243.4
8.0	8.0	11.0	12.0	243.0	33.0	-	245.9	45.4	187.9	178.7
8.0	8.0	12.0	381.0	422.0	33.0	-	810.1	64.8	556.4	535.5
8.0	8.0	13.0	440.0	334.0	33.0	-	752.0	66.5	511.4	492.2
8.0	8.0	14.0	203.0	373.0	33.0	-	530.6	58.8	376.4	361.9
8.0	8.0	15.0	442.0	227.0	33.0	-	499.1	56.2	354.8	341.0
8.0	8.0	16.0	-	118.0	32.0	1.0	112.0	37.2	89.2	82.3
8.0	8.0	17.0	-	63.0	30.0	1.0	59.4	30.8	48.8	42.8
8.0	8.0	18.0	-	-	29.0	1.0	-	29.0	-	-
8.0	8.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	8.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	8.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	8.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	8.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	9.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	9.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	9.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	9.0	3.0	-	-	26.0	-	-	26.0	-	-
8.0	9.0	4.0	-	-	26.0	-	-	26.0	-	-
8.0	9.0	5.0	-	9.0	27.0	-	8.5	23.8	7.2	2.0
8.0	9.0	6.0	91.0	113.0	27.0	-	123.5	30.1	97.1	90.1
8.0	9.0	7.0	370.0	191.0	28.0	-	348.0	42.3	260.1	249.0
8.0	9.0	8.0	498.0	232.0	29.0	-	558.9	53.1	405.3	389.9
8.0	9.0	9.0	569.0	261.0	30.0	-	737.2	61.6	514.4	495.2
8.0	9.0	10.0	621.0	272.0	31.0	-	870.5	67.9	586.9	564.9
8.0	9.0	11.0	133.0	485.0	31.0	1.0	622.9	55.0	452.2	435.2
8.0	9.0	12.0	25.0	366.0	31.0	1.0	386.8	46.2	294.3	282.3
8.0	9.0	13.0	-	97.0	30.0	2.0	92.6	32.8	75.3	68.8
8.0	9.0	14.0	110.0	369.0	30.0	2.0	448.4	42.1	348.0	334.3
8.0	9.0	15.0	132.0	291.0	29.0	1.0	365.5	42.5	281.8	270.1
8.0	9.0	16.0	232.0	173.0	28.0	1.0	258.8	37.4	198.2	188.8
8.0	9.0	17.0	192.0	93.0	27.0	1.0	114.5	30.7	84.3	77.6
8.0	9.0	18.0	-	-	27.0	1.0	-	27.0	-	-
8.0	9.0	19.0	-	-	26.0	1.0	-	26.0	-	-
8.0	9.0	20.0	-	-	26.0	1.0	-	26.0	-	-
8.0	9.0	21.0	-	-	26.0	1.0	-	26.0	-	-
8.0	9.0	22.0	-	-	26.0	1.0	-	26.0	-	-
8.0	9.0	23.0	-	-	26.0	1.0	-	26.0	-	-
8.0	10.0	-	-	-	26.0	1.0	-	26.0	-	-
8.0	10.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	10.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	10.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	10.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	10.0	5.0	-	16.0	26.0	1.0	15.2	24.2	12.9	7.5
8.0	10.0	6.0	213.0	94.0	27.0	1.0	130.8	29.6	97.0	90.0
8.0	10.0	7.0	353.0	172.0	29.0	1.0	322.6	39.2	244.6	234.0
8.0	10.0	8.0	665.0	153.0	30.0	1.0	592.2	50.2	434.8	418.3
8.0	10.0	9.0	721.0	173.0	30.0	2.0	776.6	53.4	566.8	545.5
8.0	10.0	10.0	269.0	440.0	31.0	2.0	701.8	53.0	514.8	495.5
8.0	10.0	11.0	327.0	416.0	31.0	2.0	754.1	54.2	549.8	529.2
8.0	10.0	12.0	821.0	153.0	32.0	2.0	971.4	61.2	681.1	655.1
8.0	10.0	13.0	805.0	148.0	32.0	2.0	899.9	60.1	634.6	610.6
8.0	10.0	14.0	771.0	138.0	31.0	2.0	756.3	55.0	546.5	526.0

8.0	10.0	15.0	709.0	123.0	31.0	2.0	561.2	49.0	412.1	396.5
8.0	10.0	16.0	597.0	102.0	30.0	2.0	336.5	40.8	243.7	233.1
8.0	10.0	17.0	390.0	66.0	29.0	2.0	119.2	32.4	77.3	70.7
8.0	10.0	18.0	-	-	28.0	2.0	-	28.0	-	-
8.0	10.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	10.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	10.0	21.0	-	-	27.0	2.0	-	27.0	-	-
8.0	10.0	22.0	-	-	27.0	2.0	-	27.0	-	-
8.0	10.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	2.0	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	3.0	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	4.0	-	-	27.0	2.0	-	27.0	-	-
8.0	11.0	5.0	81.0	17.0	27.0	2.0	13.0	25.5	10.9	5.6
8.0	11.0	6.0	478.0	70.0	28.0	2.0	162.7	31.2	108.7	101.4
8.0	11.0	7.0	667.0	96.0	29.0	2.0	390.5	39.7	288.6	276.8
8.0	11.0	8.0	767.0	111.0	30.0	2.0	616.4	48.2	456.8	439.6
8.0	11.0	9.0	502.0	291.0	31.0	2.0	713.2	52.7	522.9	503.3
8.0	11.0	10.0	27.0	335.0	32.0	2.0	355.5	44.0	273.6	262.2
8.0	11.0	11.0	378.0	406.0	32.0	2.0	795.3	55.0	577.3	555.6
8.0	11.0	12.0	851.0	138.0	33.0	2.0	986.8	62.7	686.0	659.8
8.0	11.0	13.0	833.0	135.0	33.0	2.0	907.4	61.3	635.5	611.5
8.0	11.0	14.0	794.0	129.0	32.0	2.0	765.3	56.2	549.2	528.6
8.0	11.0	15.0	729.0	117.0	31.0	2.0	567.0	49.2	415.8	400.0
8.0	11.0	16.0	619.0	96.0	30.0	2.0	338.6	40.9	244.5	233.9
8.0	11.0	17.0	411.0	63.0	29.0	2.0	120.1	32.4	77.0	70.4
8.0	11.0	18.0	-	-	28.0	2.0	-	28.0	-	-
8.0	11.0	19.0	-	-	28.0	2.0	-	28.0	-	-
8.0	11.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	11.0	21.0	-	-	28.0	2.0	-	28.0	-	-
8.0	11.0	22.0	-	-	28.0	2.0	-	28.0	-	-
8.0	11.0	23.0	-	-	27.0	2.0	-	27.0	-	-
8.0	12.0	-	-	-	27.0	2.0	-	27.0	-	-
8.0	12.0	1.0	-	-	27.0	2.0	-	27.0	-	-
8.0	12.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	12.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	12.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	12.0	5.0	73.0	16.0	27.0	1.0	12.2	25.1	10.3	5.0
8.0	12.0	6.0	461.0	71.0	28.0	2.0	160.4	31.2	107.7	100.5
8.0	12.0	7.0	473.0	146.0	30.0	2.0	353.0	39.6	264.7	253.5
8.0	12.0	8.0	750.0	115.0	31.0	2.0	609.9	48.8	450.5	433.5
8.0	12.0	9.0	806.0	126.0	32.0	2.0	798.2	56.0	574.2	552.7
8.0	12.0	10.0	536.0	292.0	32.0	2.0	811.5	57.1	582.1	560.3
8.0	12.0	11.0	454.0	404.0	33.0	1.0	876.0	64.2	603.8	581.0
8.0	12.0	12.0	843.0	139.0	33.0	1.0	980.3	67.6	662.6	637.4
8.0	12.0	13.0	832.0	131.0	33.0	2.0	902.7	61.1	632.7	608.8
8.0	12.0	14.0	799.0	122.0	33.0	2.0	761.9	57.1	544.2	523.8
8.0	12.0	15.0	727.0	114.0	32.0	2.0	562.4	50.1	410.5	394.8
8.0	12.0	16.0	610.0	96.0	31.0	2.0	334.6	41.8	240.5	230.0
8.0	12.0	17.0	391.0	63.0	30.0	2.0	115.6	33.3	74.1	67.5
8.0	12.0	18.0	-	-	29.0	2.0	-	29.0	-	-
8.0	12.0	19.0	-	-	29.0	2.0	-	29.0	-	-
8.0	12.0	20.0	-	-	28.0	2.0	-	28.0	-	-
8.0	12.0	21.0	-	-	28.0	1.0	-	28.0	-	-
8.0	12.0	22.0	-	-	28.0	1.0	-	28.0	-	-
8.0	12.0	23.0	-	-	28.0	1.0	-	28.0	-	-
8.0	13.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	13.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	13.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	13.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	13.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	13.0	5.0	50.0	15.0	27.0	1.0	12.8	25.1	10.8	5.5
8.0	13.0	6.0	419.0	76.0	28.0	1.0	155.8	31.5	105.9	98.7
8.0	13.0	7.0	618.0	106.0	29.0	1.0	379.7	41.3	279.3	267.7
8.0	13.0	8.0	725.0	123.0	30.0	-	602.2	55.8	428.6	412.4
8.0	13.0	9.0	784.0	134.0	31.0	-	788.9	64.5	541.1	520.8
8.0	13.0	10.0	817.0	141.0	32.0	-	916.0	70.6	608.0	585.1
8.0	13.0	11.0	830.0	145.0	33.0	1.0	979.6	67.7	661.5	636.4
8.0	13.0	12.0	806.0	161.0	33.0	1.0	973.3	67.8	656.9	631.9
8.0	13.0	13.0	781.0	161.0	32.0	1.0	891.7	64.5	613.2	590.0
8.0	13.0	14.0	738.0	153.0	32.0	1.0	745.1	59.8	524.4	504.7
8.0	13.0	15.0	659.0	141.0	31.0	1.0	548.0	52.0	396.3	381.2
8.0	13.0	16.0	477.0	126.0	30.0	1.0	310.0	42.2	225.1	215.0
8.0	13.0	17.0	27.0	74.0	29.0	1.0	73.0	31.6	58.4	52.2
8.0	13.0	18.0	-	-	29.0	1.0	-	29.0	-	-
8.0	13.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	13.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	13.0	21.0	-	-	28.0	-	-	28.0	-	-
8.0	13.0	22.0	-	-	28.0	-	-	28.0	-	-
8.0	13.0	23.0	-	-	28.0	-	-	28.0	-	-

8.0	14.0	-	-	-	27.0	-	-	27.0	-	-
8.0	14.0	1.0	-	-	27.0	-	-	27.0	-	-
8.0	14.0	2.0	-	-	27.0	-	-	27.0	-	-
8.0	14.0	3.0	-	-	27.0	-	-	27.0	-	-
8.0	14.0	4.0	-	-	27.0	-	-	27.0	-	-
8.0	14.0	5.0	-	15.0	27.0	-	14.2	24.1	12.1	6.7
8.0	14.0	6.0	373.0	83.0	29.0	-	153.3	33.7	105.2	98.0
8.0	14.0	7.0	562.0	123.0	30.0	-	372.2	45.5	269.1	257.8
8.0	14.0	8.0	85.0	288.0	30.0	-	335.6	46.1	254.7	243.8
8.0	14.0	9.0	725.0	167.0	31.0	-	776.4	62.4	539.1	518.9
8.0	14.0	10.0	237.0	444.0	32.0	-	671.1	62.7	466.5	449.0
8.0	14.0	11.0	558.0	299.0	33.0	1.0	876.1	63.6	606.0	583.2
8.0	14.0	12.0	242.0	472.0	32.0	1.0	718.6	58.9	510.5	491.4
8.0	14.0	13.0	256.0	429.0	31.0	1.0	674.2	55.8	487.1	468.8
8.0	14.0	14.0	668.0	190.0	31.0	1.0	728.9	57.3	520.3	500.8
8.0	14.0	15.0	493.0	202.0	30.0	1.0	505.1	49.6	371.4	357.1
8.0	14.0	16.0	243.0	165.0	29.0	1.0	254.8	39.1	192.9	183.6
8.0	14.0	17.0	7.0	70.0	28.0	1.0	66.6	29.9	54.6	48.5
8.0	14.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	14.0	19.0	-	-	28.0	-	-	28.0	-	-
8.0	14.0	20.0	-	-	27.0	-	-	27.0	-	-
8.0	14.0	21.0	-	-	27.0	-	-	27.0	-	-
8.0	14.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	14.0	23.0	-	-	27.0	-	-	27.0	-	-
8.0	15.0	-	-	-	27.0	-	-	27.0	-	-
8.0	15.0	1.0	-	-	26.0	-	-	26.0	-	-
8.0	15.0	2.0	-	-	26.0	-	-	26.0	-	-
8.0	15.0	3.0	-	-	26.0	-	-	26.0	-	-
8.0	15.0	4.0	-	-	26.0	-	-	26.0	-	-
8.0	15.0	5.0	-	11.0	27.0	-	10.4	23.9	8.8	3.6
8.0	15.0	6.0	167.0	98.0	28.0	-	125.9	31.3	94.6	87.7
8.0	15.0	7.0	561.0	125.0	30.0	-	374.1	45.4	270.9	259.5
8.0	15.0	8.0	672.0	148.0	31.0	1.0	594.4	51.5	433.4	417.0
8.0	15.0	9.0	736.0	163.0	32.0	1.0	780.0	59.4	550.9	530.3
8.0	15.0	10.0	770.0	174.0	32.0	1.0	912.5	64.2	628.6	604.9
8.0	15.0	11.0	785.0	179.0	33.0	1.0	977.6	67.7	660.5	635.4
8.0	15.0	12.0	735.0	212.0	33.0	1.0	960.2	67.4	649.5	624.9
8.0	15.0	13.0	715.0	205.0	33.0	1.0	879.3	65.0	602.9	580.2
8.0	15.0	14.0	669.0	192.0	32.0	1.0	731.6	59.3	516.4	497.0
8.0	15.0	15.0	590.0	171.0	31.0	1.0	535.2	51.5	388.7	373.8
8.0	15.0	16.0	459.0	137.0	30.0	1.0	312.8	42.3	227.7	217.6
8.0	15.0	17.0	228.0	79.0	29.0	1.0	105.5	32.8	74.4	67.9
8.0	15.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	15.0	19.0	-	-	27.0	1.0	-	27.0	-	-
8.0	15.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	15.0	21.0	-	-	27.0	-	-	27.0	-	-
8.0	15.0	22.0	-	-	27.0	-	-	27.0	-	-
8.0	15.0	23.0	-	-	26.0	-	-	26.0	-	-
8.0	16.0	-	-	-	26.0	-	-	26.0	-	-
8.0	16.0	1.0	-	-	26.0	-	-	26.0	-	-
8.0	16.0	2.0	-	-	25.0	-	-	25.0	-	-
8.0	16.0	3.0	-	-	25.0	-	-	25.0	-	-
8.0	16.0	4.0	-	-	25.0	-	-	25.0	-	-
8.0	16.0	5.0	-	9.0	25.0	1.0	8.5	22.9	7.3	2.0
8.0	16.0	6.0	201.0	91.0	26.0	1.0	126.4	28.4	94.5	87.6
8.0	16.0	7.0	221.0	194.0	28.0	1.0	285.4	36.9	221.6	211.6
8.0	16.0	8.0	617.0	173.0	29.0	-	584.1	53.5	421.8	405.8
8.0	16.0	9.0	725.0	169.0	30.0	-	779.8	63.2	539.1	518.9
8.0	16.0	10.0	767.0	176.0	31.0	-	912.3	69.5	609.5	586.5
8.0	16.0	11.0	786.0	178.0	31.0	-	978.2	72.3	642.9	618.6
8.0	16.0	12.0	767.0	189.0	32.0	-	964.2	73.1	630.5	606.6
8.0	16.0	13.0	199.0	436.0	32.0	1.0	622.8	56.4	448.5	431.6
8.0	16.0	14.0	207.0	364.0	31.0	1.0	526.4	50.7	390.4	375.4
8.0	16.0	15.0	39.0	242.0	31.0	1.0	258.4	41.4	201.0	191.6
8.0	16.0	16.0	96.0	171.0	30.0	1.0	200.3	36.8	156.7	148.3
8.0	16.0	17.0	285.0	71.0	29.0	1.0	105.9	32.0	72.2	65.7
8.0	16.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	16.0	19.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	16.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	17.0	-	-	-	26.0	1.0	-	26.0	-	-
8.0	17.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	17.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	17.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	17.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	17.0	5.0	35.0	12.0	26.0	1.0	10.3	24.0	8.8	3.5
8.0	17.0	6.0	384.0	80.0	28.0	1.0	153.2	31.4	105.7	98.5
8.0	17.0	7.0	595.0	113.0	29.0	1.0	378.0	41.2	278.8	267.3
8.0	17.0	8.0	711.0	131.0	30.0	1.0	603.8	50.9	441.5	424.9

8.0	17.0	9.0	408.0	326.0	31.0	1.0	674.1	55.2	487.7	469.4
8.0	17.0	10.0	813.0	150.0	32.0	2.0	929.9	59.8	656.9	631.9
8.0	17.0	11.0	829.0	154.0	32.0	2.0	989.6	62.3	689.5	663.2
8.0	17.0	12.0	819.0	160.0	33.0	2.0	986.6	63.4	683.2	657.1
8.0	17.0	13.0	803.0	153.0	33.0	2.0	904.2	61.2	633.5	609.6
8.0	17.0	14.0	765.0	143.0	32.0	2.0	755.5	55.9	543.0	522.7
8.0	17.0	15.0	677.0	135.0	32.0	2.0	551.1	49.7	403.2	387.8
8.0	17.0	16.0	556.0	108.0	31.0	2.0	322.5	41.4	233.0	222.7
8.0	17.0	17.0	327.0	65.0	29.0	1.0	105.7	32.8	69.7	63.2
8.0	17.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	17.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	17.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	17.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	17.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	17.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	18.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	18.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	18.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	18.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	18.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	18.0	5.0	30.0	11.0	26.0	1.0	9.5	24.0	8.1	2.8
8.0	18.0	6.0	387.0	78.0	28.0	2.0	152.1	30.9	104.9	97.7
8.0	18.0	7.0	592.0	112.0	29.0	2.0	376.1	39.3	280.2	268.6
8.0	18.0	8.0	700.0	132.0	30.0	2.0	598.2	47.6	445.2	428.4
8.0	18.0	9.0	734.0	162.0	31.0	2.0	779.3	54.5	565.6	544.3
8.0	18.0	10.0	762.0	176.0	32.0	2.0	908.9	59.6	642.7	618.4
8.0	18.0	11.0	765.0	189.0	32.0	2.0	969.4	61.7	677.8	651.9
8.0	18.0	12.0	421.0	399.0	32.0	2.0	837.7	58.4	596.7	574.3
8.0	18.0	13.0	597.0	265.0	31.0	2.0	831.5	56.8	597.3	574.8
8.0	18.0	14.0	5.0	189.0	31.0	2.0	184.9	38.5	146.3	138.2
8.0	18.0	15.0	150.0	270.0	30.0	1.0	356.7	41.7	275.8	264.3
8.0	18.0	16.0	462.0	132.0	30.0	1.0	307.6	41.0	224.8	214.7
8.0	18.0	17.0	232.0	65.0	29.0	1.0	92.3	32.2	63.7	57.4
8.0	18.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	18.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	18.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	18.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	18.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	18.0	23.0	-	-	27.0	-	-	27.0	-	-
8.0	19.0	-	-	-	27.0	-	-	27.0	-	-
8.0	19.0	1.0	-	-	27.0	-	-	27.0	-	-
8.0	19.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	19.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	19.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	19.0	5.0	-	11.0	26.0	1.0	10.4	24.0	8.8	3.6
8.0	19.0	6.0	365.0	83.0	28.0	1.0	152.6	31.4	106.2	99.0
8.0	19.0	7.0	574.0	122.0	30.0	1.0	378.5	42.2	278.4	266.8
8.0	19.0	8.0	701.0	139.0	31.0	1.0	606.6	52.0	441.2	424.5
8.0	19.0	9.0	780.0	145.0	32.0	1.0	800.7	60.1	563.3	542.2
8.0	19.0	10.0	341.0	388.0	33.0	1.0	722.1	59.6	510.9	491.7
8.0	19.0	11.0	328.0	451.0	33.0	-	795.7	67.3	538.6	518.5
8.0	19.0	12.0	761.0	200.0	34.0	-	970.2	74.1	630.6	606.7
8.0	19.0	13.0	742.0	192.0	33.0	-	891.2	71.7	587.2	565.1
8.0	19.0	14.0	704.0	175.0	33.0	-	741.2	66.6	501.6	482.8
8.0	19.0	15.0	637.0	151.0	33.0	-	542.1	59.2	376.9	362.4
8.0	19.0	16.0	507.0	120.0	32.0	1.0	312.5	44.3	223.3	213.2
8.0	19.0	17.0	274.0	69.0	31.0	1.0	101.3	34.7	68.2	61.8
8.0	19.0	18.0	-	-	29.0	1.0	-	29.0	-	-
8.0	19.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	19.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	19.0	21.0	-	-	28.0	1.0	-	28.0	-	-
8.0	19.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	19.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	20.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	20.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	20.0	5.0	35.0	10.0	27.0	1.0	8.6	25.0	7.3	2.1
8.0	20.0	6.0	396.0	77.0	28.0	1.0	153.4	31.4	105.2	98.0
8.0	20.0	7.0	600.0	112.0	30.0	1.0	380.5	42.3	279.1	267.6
8.0	20.0	8.0	709.0	133.0	31.0	1.0	606.3	52.0	440.9	424.3
8.0	20.0	9.0	721.0	175.0	32.0	-	785.3	65.3	536.2	516.1
8.0	20.0	10.0	750.0	190.0	33.0	-	912.9	71.4	603.0	580.3
8.0	20.0	11.0	759.0	200.0	34.0	-	975.4	74.9	630.9	607.0
8.0	20.0	12.0	696.0	241.0	34.0	-	953.1	74.6	617.7	594.4
8.0	20.0	13.0	661.0	241.0	34.0	-	866.7	71.8	570.8	549.4
8.0	20.0	14.0	596.0	232.0	34.0	-	713.2	66.5	483.2	465.0
8.0	20.0	15.0	495.0	210.0	33.0	1.0	512.4	52.7	370.5	356.2
8.0	20.0	16.0	348.0	163.0	32.0	1.0	291.3	43.4	213.1	203.4
8.0	20.0	17.0	144.0	78.0	31.0	1.0	91.5	34.2	66.9	60.5

8.0	20.0	18.0	-	-	30.0	1.0	-	30.0	-	-
8.0	20.0	19.0	-	-	30.0	1.0	-	30.0	-	-
8.0	20.0	20.0	-	-	29.0	1.0	-	29.0	-	-
8.0	20.0	21.0	-	-	29.0	1.0	-	29.0	-	-
8.0	20.0	22.0	-	-	29.0	1.0	-	29.0	-	-
8.0	20.0	23.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	-	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	1.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	2.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	3.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	4.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	5.0	-	3.0	28.0	1.0	2.8	25.8	2.4	-
8.0	21.0	6.0	-	24.0	29.0	1.0	22.7	27.6	19.0	13.5
8.0	21.0	7.0	-	8.0	29.0	-	7.6	26.2	6.4	1.2
8.0	21.0	8.0	-	20.0	30.0	-	19.0	27.6	15.9	10.5
8.0	21.0	9.0	321.0	355.0	31.0	-	628.3	55.0	455.3	438.2
8.0	21.0	10.0	606.0	281.0	32.0	-	873.4	68.3	587.7	565.6
8.0	21.0	11.0	621.0	293.0	33.0	-	937.3	72.6	614.8	591.6
8.0	21.0	12.0	407.0	401.0	33.0	-	827.1	69.6	552.4	531.7
8.0	21.0	13.0	591.0	282.0	33.0	-	843.1	69.4	563.3	542.1
8.0	21.0	14.0	204.0	357.0	32.0	1.0	517.7	52.5	380.1	365.5
8.0	21.0	15.0	-	85.0	31.0	1.0	80.8	35.2	65.0	58.7
8.0	21.0	16.0	-	114.0	30.0	1.0	108.4	32.4	88.4	81.6
8.0	21.0	17.0	-	49.0	29.0	1.0	46.3	29.2	38.4	32.5
8.0	21.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	21.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	21.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	22.0	-	-	-	27.0	-	-	27.0	-	-
8.0	22.0	1.0	-	-	27.0	-	-	27.0	-	-
8.0	22.0	2.0	-	-	27.0	-	-	27.0	-	-
8.0	22.0	3.0	-	-	27.0	-	-	27.0	-	-
8.0	22.0	4.0	-	-	27.0	-	-	27.0	-	-
8.0	22.0	5.0	-	4.0	27.0	-	3.8	23.5	3.2	-
8.0	22.0	6.0	124.0	90.0	28.0	-	110.4	30.4	84.5	77.7
8.0	22.0	7.0	354.0	164.0	29.0	-	319.0	42.0	238.4	228.0
8.0	22.0	8.0	4.0	185.0	30.0	-	179.7	39.5	141.5	133.4
8.0	22.0	9.0	281.0	364.0	31.0	-	604.9	55.4	437.5	420.9
8.0	22.0	10.0	57.0	405.0	31.0	1.0	457.2	48.4	343.8	330.3
8.0	22.0	11.0	114.0	445.0	31.0	1.0	568.5	51.2	421.3	405.3
8.0	22.0	12.0	119.0	438.0	30.0	1.0	564.8	50.6	419.7	403.8
8.0	22.0	13.0	99.0	419.0	30.0	1.0	508.0	48.8	381.1	366.5
8.0	22.0	14.0	152.0	357.0	30.0	1.0	477.1	47.5	360.0	346.0
8.0	22.0	15.0	230.0	257.0	29.0	1.0	391.8	43.6	299.1	287.0
8.0	22.0	16.0	79.0	158.0	29.0	-	181.2	39.3	140.1	132.2
8.0	22.0	17.0	138.0	67.0	28.0	-	80.4	31.6	59.0	52.8
8.0	22.0	18.0	-	-	28.0	-	-	28.0	-	-
8.0	22.0	19.0	-	-	27.0	-	-	27.0	-	-
8.0	22.0	20.0	-	-	27.0	-	-	27.0	-	-
8.0	22.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	22.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	22.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	23.0	-	-	-	26.0	1.0	-	26.0	-	-
8.0	23.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	23.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	23.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	23.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	23.0	5.0	-	7.0	26.0	1.0	6.6	23.9	5.6	0.4
8.0	23.0	6.0	296.0	86.0	27.0	1.0	142.6	30.0	102.3	95.1
8.0	23.0	7.0	183.0	187.0	28.0	1.0	263.8	36.2	206.1	196.5
8.0	23.0	8.0	96.0	285.0	29.0	1.0	342.0	40.7	266.8	255.6
8.0	23.0	9.0	25.0	298.0	30.0	1.0	308.4	41.0	241.0	230.5
8.0	23.0	10.0	24.0	337.0	30.0	1.0	349.4	42.2	271.4	260.0
8.0	23.0	11.0	84.0	455.0	30.0	1.0	540.2	48.7	405.7	390.2
8.0	23.0	12.0	92.0	455.0	30.0	1.0	547.1	49.9	408.1	392.6
8.0	23.0	13.0	162.0	429.0	30.0	1.0	583.7	51.1	432.5	416.2
8.0	23.0	14.0	357.0	321.0	30.0	1.0	607.1	52.1	446.5	429.6
8.0	23.0	15.0	582.0	164.0	29.0	2.0	519.8	45.3	389.7	374.7
8.0	23.0	16.0	444.0	129.0	29.0	1.0	295.1	40.6	215.7	205.9
8.0	23.0	17.0	210.0	67.0	28.0	1.0	89.2	31.0	62.9	56.6
8.0	23.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	23.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	23.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	23.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	23.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	23.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	2.0	-	-	27.0	1.0	-	27.0	-	-

8.0	24.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	5.0	-	5.0	27.0	1.0	4.7	24.8	4.0	-
8.0	24.0	6.0	201.0	85.0	27.0	1.0	122.0	29.2	90.6	83.7
8.0	24.0	7.0	23.0	165.0	28.0	1.0	167.6	32.7	135.9	128.0
8.0	24.0	8.0	318.0	267.0	29.0	1.0	479.0	44.7	364.3	350.2
8.0	24.0	9.0	197.0	378.0	30.0	1.0	544.2	49.5	406.4	390.9
8.0	24.0	10.0	459.0	321.0	30.0	1.0	775.6	57.1	556.4	535.5
8.0	24.0	11.0	110.0	467.0	30.0	1.0	579.0	52.2	426.8	410.6
8.0	24.0	12.0	790.0	166.0	30.0	2.0	965.6	58.5	687.3	661.1
8.0	24.0	13.0	774.0	157.0	30.0	2.0	881.0	57.6	629.8	606.0
8.0	24.0	14.0	54.0	323.0	29.0	2.0	360.7	41.9	280.4	268.8
8.0	24.0	15.0	202.0	258.0	28.0	2.0	375.9	39.1	293.8	281.8
8.0	24.0	16.0	17.0	139.0	28.0	2.0	138.6	32.1	112.6	105.2
8.0	24.0	17.0	-	50.0	27.0	2.0	47.2	27.2	39.4	33.6
8.0	24.0	18.0	-	-	27.0	2.0	-	27.0	-	-
8.0	24.0	19.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	24.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	25.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	25.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	25.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	25.0	5.0	-	-	26.0	1.0	-	26.0	-	-
8.0	25.0	6.0	64.0	87.0	27.0	1.0	95.3	28.2	75.9	69.4
8.0	25.0	7.0	32.0	170.0	27.0	1.0	178.4	31.9	145.0	136.9
8.0	25.0	8.0	751.0	106.0	28.0	-	608.6	52.6	440.9	424.3
8.0	25.0	9.0	374.0	336.0	28.0	-	655.1	57.3	468.7	451.1
8.0	25.0	10.0	487.0	349.0	29.0	-	830.9	64.3	572.2	550.7
8.0	25.0	11.0	568.0	287.0	29.0	1.0	880.3	60.7	619.0	595.7
8.0	25.0	12.0	313.0	442.0	29.0	1.0	770.7	57.6	551.3	530.7
8.0	25.0	13.0	34.0	352.0	29.0	1.0	380.7	44.8	291.6	279.7
8.0	25.0	14.0	23.0	275.0	29.0	1.0	283.2	39.4	223.0	213.0
8.0	25.0	15.0	489.0	191.0	28.0	1.0	487.9	44.6	367.7	353.4
8.0	25.0	16.0	437.0	119.0	28.0	1.0	281.5	38.9	206.9	197.2
8.0	25.0	17.0	60.0	60.0	27.0	1.0	63.7	29.0	49.9	43.8
8.0	25.0	18.0	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	19.0	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	25.0	21.0	-	-	26.0	1.0	-	26.0	-	-
8.0	25.0	22.0	-	-	26.0	1.0	-	26.0	-	-
8.0	25.0	23.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	-	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	5.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	6.0	-	3.0	27.0	1.0	2.8	24.8	2.4	-
8.0	26.0	7.0	38.0	172.0	28.0	1.0	183.1	32.5	148.3	140.1
8.0	26.0	8.0	-	98.0	28.0	1.0	93.3	30.4	76.8	70.2
8.0	26.0	9.0	177.0	377.0	28.0	1.0	527.5	44.9	403.7	388.3
8.0	26.0	10.0	39.0	375.0	28.0	1.0	410.5	43.5	316.8	304.1
8.0	26.0	11.0	59.0	431.0	28.0	1.0	491.3	45.5	375.2	360.7
8.0	26.0	12.0	261.0	455.0	28.0	1.0	732.9	53.6	536.1	516.0
8.0	26.0	13.0	508.0	325.0	28.0	1.0	809.6	57.2	580.4	558.6
8.0	26.0	14.0	492.0	245.0	28.0	1.0	641.5	52.4	470.5	452.8
8.0	26.0	15.0	601.0	152.0	28.0	1.0	517.3	47.6	382.7	368.0
8.0	26.0	16.0	569.0	91.0	27.0	1.0	303.5	38.9	219.6	209.6
8.0	26.0	17.0	315.0	52.0	27.0	1.0	86.9	30.0	56.3	50.2
8.0	26.0	18.0	-	-	27.0	1.0	-	27.0	-	-
8.0	26.0	19.0	-	-	27.0	1.0	-	27.0	-	-
8.0	26.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	26.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	26.0	22.0	-	-	26.0	1.0	-	26.0	-	-
8.0	26.0	23.0	-	-	26.0	1.0	-	26.0	-	-
8.0	27.0	-	-	-	26.0	-	-	26.0	-	-
8.0	27.0	1.0	-	-	26.0	-	-	26.0	-	-
8.0	27.0	2.0	-	-	26.0	-	-	26.0	-	-
8.0	27.0	3.0	-	-	26.0	-	-	26.0	-	-
8.0	27.0	4.0	-	-	26.0	-	-	26.0	-	-
8.0	27.0	5.0	-	-	26.0	-	-	26.0	-	-
8.0	27.0	6.0	494.0	55.0	27.0	-	154.8	31.5	101.3	94.2
8.0	27.0	7.0	689.0	78.0	28.0	-	389.2	44.2	281.0	269.4
8.0	27.0	8.0	785.0	93.0	29.0	-	618.6	55.5	441.0	424.3
8.0	27.0	9.0	138.0	360.0	30.0	-	478.3	53.2	350.2	336.5
8.0	27.0	10.0	141.0	415.0	31.0	-	556.7	55.9	402.1	386.8
8.0	27.0	11.0	864.0	119.0	32.0	-	993.1	71.6	655.2	630.4

8.0	27.0	12.0	447.0	381.0	32.0	1.0	848.8	63.3	588.0	565.9
8.0	27.0	13.0	526.0	275.0	31.0	1.0	775.3	59.5	548.5	527.9
8.0	27.0	14.0	711.0	158.0	31.0	1.0	726.0	57.7	516.7	497.3
8.0	27.0	15.0	633.0	139.0	30.0	1.0	522.4	50.1	380.9	366.3
8.0	27.0	16.0	496.0	109.0	29.0	1.0	291.8	40.5	211.1	201.4
8.0	27.0	17.0	241.0	57.0	28.0	1.0	82.3	30.8	56.0	49.8
8.0	27.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	27.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	27.0	20.0	-	-	27.0	1.0	-	27.0	-	-
8.0	27.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	27.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	27.0	23.0	-	-	27.0	1.0	-	27.0	-	-
8.0	28.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	28.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	28.0	2.0	-	-	26.0	1.0	-	26.0	-	-
8.0	28.0	3.0	-	-	26.0	1.0	-	26.0	-	-
8.0	28.0	4.0	-	-	26.0	1.0	-	26.0	-	-
8.0	28.0	5.0	-	-	26.0	1.0	-	26.0	-	-
8.0	28.0	6.0	360.0	75.0	27.0	1.0	146.3	30.1	102.0	94.8
8.0	28.0	7.0	280.0	172.0	29.0	-	296.2	41.4	223.5	213.4
8.0	28.0	8.0	684.0	137.0	30.0	-	598.8	55.1	428.5	412.3
8.0	28.0	9.0	747.0	152.0	31.0	-	786.0	64.4	539.7	519.5
8.0	28.0	10.0	784.0	160.0	31.0	-	918.9	69.7	613.0	589.9
8.0	28.0	11.0	104.0	461.0	32.0	-	568.1	60.3	400.5	385.2
8.0	28.0	12.0	457.0	379.0	32.0	1.0	857.0	61.6	599.6	577.0
8.0	28.0	13.0	811.0	136.0	32.0	1.0	891.9	64.0	615.1	591.9
8.0	28.0	14.0	770.0	127.0	32.0	1.0	737.6	59.5	519.3	499.9
8.0	28.0	15.0	697.0	113.0	31.0	1.0	532.8	51.5	384.9	370.1
8.0	28.0	16.0	561.0	91.0	30.0	1.0	298.7	41.8	212.7	202.9
8.0	28.0	17.0	292.0	51.0	29.0	1.0	82.1	31.8	53.2	47.0
8.0	28.0	18.0	-	-	29.0	1.0	-	29.0	-	-
8.0	28.0	19.0	-	-	29.0	1.0	-	29.0	-	-
8.0	28.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	28.0	21.0	-	-	28.0	1.0	-	28.0	-	-
8.0	28.0	22.0	-	-	28.0	1.0	-	28.0	-	-
8.0	28.0	23.0	-	-	28.0	1.0	-	28.0	-	-
8.0	29.0	-	-	-	28.0	1.0	-	28.0	-	-
8.0	29.0	1.0	-	-	28.0	1.0	-	28.0	-	-
8.0	29.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	29.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	29.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	29.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	29.0	6.0	372.0	72.0	28.0	1.0	146.1	31.1	100.7	93.6
8.0	29.0	7.0	582.0	110.0	28.0	1.0	374.8	40.1	278.6	267.0
8.0	29.0	8.0	450.0	228.0	29.0	1.0	534.2	47.7	399.3	384.0
8.0	29.0	9.0	319.0	350.0	30.0	1.0	625.9	52.4	460.1	442.8
8.0	29.0	10.0	282.0	422.0	31.0	-	706.6	62.0	493.3	474.8
8.0	29.0	11.0	417.0	395.0	32.0	-	839.4	67.7	567.0	545.7
8.0	29.0	12.0	283.0	446.0	32.0	-	746.6	65.5	510.6	491.5
8.0	29.0	13.0	420.0	351.0	32.0	-	755.4	65.3	517.3	497.9
8.0	29.0	14.0	6.0	195.0	32.0	1.0	191.8	41.5	149.5	141.3
8.0	29.0	15.0	182.0	255.0	31.0	1.0	360.8	42.9	276.7	265.2
8.0	29.0	16.0	394.0	133.0	30.0	1.0	276.9	40.0	203.3	193.8
8.0	29.0	17.0	148.0	61.0	29.0	1.0	74.2	31.4	53.8	47.7
8.0	29.0	18.0	-	-	29.0	1.0	-	29.0	-	-
8.0	29.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	29.0	20.0	-	-	28.0	1.0	-	28.0	-	-
8.0	29.0	21.0	-	-	28.0	1.0	-	28.0	-	-
8.0	29.0	22.0	-	-	28.0	1.0	-	28.0	-	-
8.0	29.0	23.0	-	-	28.0	1.0	-	28.0	-	-
8.0	30.0	-	-	-	27.0	1.0	-	27.0	-	-
8.0	30.0	1.0	-	-	27.0	1.0	-	27.0	-	-
8.0	30.0	2.0	-	-	27.0	1.0	-	27.0	-	-
8.0	30.0	3.0	-	-	27.0	1.0	-	27.0	-	-
8.0	30.0	4.0	-	-	27.0	1.0	-	27.0	-	-
8.0	30.0	5.0	-	-	27.0	1.0	-	27.0	-	-
8.0	30.0	6.0	266.0	87.0	27.0	1.0	138.3	29.8	100.4	93.3
8.0	30.0	7.0	499.0	135.0	28.0	-	361.0	42.9	266.1	254.9
8.0	30.0	8.0	636.0	157.0	28.0	-	588.7	53.3	425.8	409.7
8.0	30.0	9.0	694.0	181.0	29.0	-	775.4	62.1	539.5	519.3
8.0	30.0	10.0	744.0	185.0	30.0	-	907.4	68.4	610.2	587.2
8.0	30.0	11.0	765.0	186.0	31.0	-	970.9	72.0	639.1	614.9
8.0	30.0	12.0	765.0	182.0	31.0	-	957.3	72.0	630.4	606.6
8.0	30.0	13.0	746.0	174.0	31.0	-	871.0	69.2	582.5	560.6
8.0	30.0	14.0	703.0	160.0	31.0	-	720.0	64.0	494.5	475.9
8.0	30.0	15.0	590.0	153.0	30.0	-	508.8	55.0	361.5	347.4
8.0	30.0	16.0	442.0	118.0	30.0	1.0	278.8	41.0	202.0	192.5
8.0	30.0	17.0	187.0	56.0	29.0	1.0	73.6	31.4	51.5	45.4
8.0	30.0	18.0	-	-	28.0	1.0	-	28.0	-	-
8.0	30.0	19.0	-	-	28.0	1.0	-	28.0	-	-
8.0	30.0	20.0	-	-	27.0	1.0	-	27.0	-	-

8.0	30.0	21.0	-	-	27.0	1.0	-	27.0	-	-
8.0	30.0	22.0	-	-	27.0	1.0	-	27.0	-	-
8.0	30.0	23.0	-	-	26.0	1.0	-	26.0	-	-
8.0	31.0	-	-	-	26.0	1.0	-	26.0	-	-
8.0	31.0	1.0	-	-	26.0	1.0	-	26.0	-	-
8.0	31.0	2.0	-	-	25.0	1.0	-	25.0	-	-
8.0	31.0	3.0	-	-	25.0	1.0	-	25.0	-	-
8.0	31.0	4.0	-	-	25.0	1.0	-	25.0	-	-
8.0	31.0	5.0	-	-	25.0	1.0	-	25.0	-	-
8.0	31.0	6.0	384.0	71.0	25.0	1.0	148.2	28.1	103.3	96.1
8.0	31.0	7.0	162.0	182.0	26.0	1.0	251.8	33.8	199.5	190.0
8.0	31.0	8.0	706.0	132.0	27.0	1.0	609.9	47.5	454.5	437.4
8.0	31.0	9.0	773.0	145.0	28.0	1.0	802.1	56.3	576.3	554.7
8.0	31.0	10.0	816.0	149.0	28.0	1.0	939.1	61.4	657.6	632.6
8.0	31.0	11.0	294.0	447.0	29.0	1.0	763.5	57.7	545.9	525.5
8.0	31.0	12.0	811.0	163.0	30.0	-	983.2	70.7	652.4	627.7
8.0	31.0	13.0	437.0	325.0	30.0	-	744.7	64.5	512.1	492.9
8.0	31.0	14.0	365.0	306.0	30.0	-	597.3	58.2	424.6	408.5
8.0	31.0	15.0	198.0	245.0	30.0	-	360.0	48.9	267.3	256.1
8.0	31.0	16.0	-	10.0	29.0	-	9.5	31.9	7.7	2.5
8.0	31.0	17.0	114.0	53.0	28.0	-	62.6	27.9	46.7	40.7
8.0	31.0	18.0	-	-	27.0	2.0	-	27.0	-	-
8.0	31.0	19.0	-	-	26.0	2.0	-	26.0	-	-
8.0	31.0	20.0	-	-	26.0	2.0	-	26.0	-	-
8.0	31.0	21.0	-	-	26.0	1.0	-	26.0	-	-
8.0	31.0	22.0	-	-	26.0	1.0	-	26.0	-	-
8.0	31.0	23.0	-	-	26.0	1.0	-	26.0	-	-
9.0	1.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	1.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	1.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	1.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	1.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	1.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	1.0	6.0	399.0	66.0	26.0	1.0	146.7	29.1	100.8	93.7
9.0	1.0	7.0	468.0	135.0	27.0	2.0	348.1	36.4	265.6	254.5
9.0	1.0	8.0	205.0	280.0	28.0	2.0	416.3	40.3	324.6	311.7
9.0	1.0	9.0	287.0	355.0	28.0	2.0	606.0	46.0	460.9	443.5
9.0	1.0	10.0	95.0	423.0	29.0	2.0	514.8	45.2	393.8	378.7
9.0	1.0	11.0	151.0	466.0	30.0	3.0	631.2	47.0	478.3	460.4
9.0	1.0	12.0	187.0	459.0	30.0	3.0	657.1	48.0	495.3	476.7
9.0	1.0	13.0	111.0	409.0	30.0	3.0	510.9	44.3	392.4	377.4
9.0	1.0	14.0	130.0	339.0	30.0	3.0	443.2	42.1	343.9	330.4
9.0	1.0	15.0	307.0	227.0	29.0	3.0	409.5	40.0	317.2	304.5
9.0	1.0	16.0	384.0	114.0	28.0	2.0	252.7	35.7	188.5	179.3
9.0	1.0	17.0	217.0	45.0	27.0	2.0	66.1	28.3	44.7	38.8
9.0	1.0	18.0	-	-	27.0	2.0	-	27.0	-	-
9.0	1.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	21.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	22.0	-	-	26.0	2.0	-	26.0	-	-
9.0	1.0	23.0	-	-	26.0	2.0	-	26.0	-	-
9.0	2.0	-	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	1.0	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	2.0	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	3.0	-	-	25.0	2.0	-	25.0	-	-
9.0	2.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	2.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	2.0	6.0	374.0	69.0	26.0	1.0	144.8	29.0	100.6	93.5
9.0	2.0	7.0	587.0	108.0	27.0	1.0	376.9	39.1	281.6	269.9
9.0	2.0	8.0	699.0	131.0	28.0	1.0	605.3	49.0	447.6	430.8
9.0	2.0	9.0	760.0	146.0	29.0	1.0	793.3	57.0	567.9	546.6
9.0	2.0	10.0	791.0	157.0	30.0	1.0	924.4	62.8	642.2	617.9
9.0	2.0	11.0	212.0	462.0	31.0	1.0	688.5	57.3	493.6	475.1
9.0	2.0	12.0	173.0	457.0	31.0	1.0	641.5	54.6	466.5	449.0
9.0	2.0	13.0	784.0	152.0	31.0	1.0	881.6	61.7	615.8	592.6
9.0	2.0	14.0	288.0	322.0	31.0	1.0	554.0	52.9	405.6	390.2
9.0	2.0	15.0	652.0	126.0	31.0	1.0	515.0	50.0	375.0	360.5
9.0	2.0	16.0	499.0	100.0	30.0	1.0	278.7	41.0	199.5	190.1
9.0	2.0	17.0	218.0	47.0	29.0	1.0	67.6	31.2	45.4	39.5
9.0	2.0	18.0	-	-	28.0	1.0	-	28.0	-	-
9.0	2.0	19.0	-	-	28.0	1.0	-	28.0	-	-
9.0	2.0	20.0	-	-	28.0	1.0	-	28.0	-	-
9.0	2.0	21.0	-	-	28.0	1.0	-	28.0	-	-
9.0	2.0	22.0	-	-	28.0	1.0	-	28.0	-	-
9.0	2.0	23.0	-	-	27.0	1.0	-	27.0	-	-
9.0	3.0	-	-	-	27.0	1.0	-	27.0	-	-
9.0	3.0	1.0	-	-	27.0	1.0	-	27.0	-	-
9.0	3.0	2.0	-	-	27.0	-	-	27.0	-	-
9.0	3.0	3.0	-	-	27.0	-	-	27.0	-	-
9.0	3.0	4.0	-	-	26.0	-	-	26.0	-	-
9.0	3.0	5.0	-	-	26.0	-	-	26.0	-	-

9.0	3.0	6.0	-	15.0	27.0	-	14.2	24.0	12.1	6.7
9.0	3.0	7.0	231.0	173.0	27.0	-	277.6	37.2	214.8	205.0
9.0	3.0	8.0	672.0	140.0	28.0	1.0	597.4	48.2	443.8	427.0
9.0	3.0	9.0	707.0	173.0	28.0	1.0	780.1	55.6	562.9	541.8
9.0	3.0	10.0	740.0	186.0	28.0	1.0	910.3	60.4	640.9	616.7
9.0	3.0	11.0	752.0	193.0	28.0	1.0	965.6	62.7	671.5	645.9
9.0	3.0	12.0	769.0	178.0	28.0	1.0	956.6	62.6	665.3	640.0
9.0	3.0	13.0	333.0	380.0	28.0	1.0	699.2	54.9	507.5	488.5
9.0	3.0	14.0	357.0	302.0	28.0	1.0	586.5	50.1	435.7	419.2
9.0	3.0	15.0	366.0	210.0	27.0	1.0	425.9	43.3	323.5	310.6
9.0	3.0	16.0	178.0	138.0	27.0	1.0	198.0	34.7	153.0	144.7
9.0	3.0	17.0	70.0	45.0	26.0	1.0	49.8	26.9	38.5	32.6
9.0	3.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	3.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	3.0	20.0	-	-	26.0	1.0	-	26.0	-	-
9.0	3.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	3.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	3.0	23.0	-	-	26.0	1.0	-	26.0	-	-
9.0	4.0	-	-	-	26.0	1.0	-	26.0	-	-
9.0	4.0	1.0	-	-	26.0	1.0	-	26.0	-	-
9.0	4.0	2.0	-	-	26.0	1.0	-	26.0	-	-
9.0	4.0	3.0	-	-	26.0	1.0	-	26.0	-	-
9.0	4.0	4.0	-	-	26.0	1.0	-	26.0	-	-
9.0	4.0	5.0	-	-	26.0	1.0	-	26.0	-	-
9.0	4.0	6.0	14.0	76.0	26.0	1.0	75.0	26.4	62.2	55.9
9.0	4.0	7.0	2.0	140.0	27.0	1.0	134.8	30.2	111.1	103.8
9.0	4.0	8.0	11.0	206.0	27.0	1.0	205.5	33.1	166.9	158.3
9.0	4.0	9.0	116.0	364.0	28.0	2.0	467.3	41.2	364.6	350.5
9.0	4.0	10.0	205.0	429.0	27.0	2.0	635.2	46.1	483.6	465.4
9.0	4.0	11.0	24.0	343.0	27.0	2.0	367.6	39.0	290.1	278.2
9.0	4.0	12.0	8.0	201.0	27.0	2.0	201.5	33.0	163.9	155.3
9.0	4.0	13.0	1.0	153.0	27.0	2.0	147.5	30.6	121.4	113.8
9.0	4.0	14.0	-	64.0	26.0	2.0	60.9	26.7	51.0	45.0
9.0	4.0	15.0	-	10.0	26.0	2.0	9.5	24.6	8.0	2.8
9.0	4.0	16.0	-	5.0	26.0	1.0	4.7	23.8	4.0	-
9.0	4.0	17.0	-	1.0	25.0	1.0	0.9	22.6	0.8	-
9.0	4.0	18.0	-	-	25.0	1.0	-	25.0	-	-
9.0	4.0	19.0	-	-	25.0	1.0	-	25.0	-	-
9.0	4.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	4.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	4.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	4.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	5.0	-	-	25.0	2.0	-	25.0	-	-
9.0	5.0	6.0	428.0	59.0	25.0	2.0	148.3	27.6	101.3	94.2
9.0	5.0	7.0	644.0	88.0	26.0	2.0	383.5	36.4	289.2	277.3
9.0	5.0	8.0	30.0	238.0	26.0	2.0	254.3	33.6	205.9	196.3
9.0	5.0	9.0	299.0	347.0	27.0	2.0	609.8	44.5	467.4	449.9
9.0	5.0	10.0	80.0	410.0	27.0	2.0	488.4	42.4	378.8	364.2
9.0	5.0	11.0	77.0	435.0	28.0	2.0	516.4	43.7	397.9	382.7
9.0	5.0	12.0	464.0	362.0	28.0	1.0	848.0	57.3	607.8	584.9
9.0	5.0	13.0	496.0	310.0	28.0	1.0	782.5	56.9	561.7	540.6
9.0	5.0	14.0	66.0	312.0	28.0	1.0	360.6	43.3	278.2	266.7
9.0	5.0	15.0	124.0	236.0	28.0	1.0	307.8	39.1	241.0	230.5
9.0	5.0	16.0	185.0	132.0	27.0	1.0	194.0	33.8	150.0	141.8
9.0	5.0	17.0	75.0	41.0	26.0	1.0	46.3	26.7	35.4	29.6
9.0	5.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	5.0	19.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	5.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	1.0	-	-	24.0	1.0	-	24.0	-	-
9.0	6.0	2.0	-	-	24.0	1.0	-	24.0	-	-
9.0	6.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	6.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	6.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	6.0	6.0	440.0	60.0	25.0	1.0	152.1	28.2	103.5	96.4
9.0	6.0	7.0	653.0	91.0	27.0	1.0	391.1	39.6	290.3	278.4
9.0	6.0	8.0	246.0	269.0	28.0	1.0	439.6	43.7	336.6	323.4
9.0	6.0	9.0	94.0	356.0	29.0	1.0	434.2	44.7	332.6	319.5
9.0	6.0	10.0	105.0	420.0	29.0	2.0	522.8	44.7	400.9	385.6
9.0	6.0	11.0	861.0	133.0	29.0	2.0	1,004.9	58.4	715.8	688.3
9.0	6.0	12.0	862.0	130.0	29.0	2.0	990.2	59.8	700.0	673.2
9.0	6.0	13.0	843.0	124.0	29.0	1.0	897.6	62.0	626.1	602.5
9.0	6.0	14.0	802.0	115.0	29.0	1.0	741.5	56.8	529.5	509.7

9.0	6.0	15.0	721.0	103.0	29.0	1.0	526.4	49.4	383.3	368.6
9.0	6.0	16.0	586.0	79.0	28.0	1.0	285.6	39.3	202.9	193.4
9.0	6.0	17.0	288.0	37.0	27.0	1.0	63.5	29.0	39.8	34.0
9.0	6.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	6.0	19.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	6.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	-	-	-	25.0	-	-	25.0	-	-
9.0	7.0	1.0	-	-	25.0	-	-	25.0	-	-
9.0	7.0	2.0	-	-	24.0	-	-	24.0	-	-
9.0	7.0	3.0	-	-	23.0	1.0	-	23.0	-	-
9.0	7.0	4.0	-	-	23.0	1.0	-	23.0	-	-
9.0	7.0	5.0	-	-	23.0	1.0	-	23.0	-	-
9.0	7.0	6.0	463.0	58.0	24.0	1.0	155.1	27.3	105.3	98.1
9.0	7.0	7.0	675.0	89.0	26.0	2.0	399.4	36.9	300.3	288.2
9.0	7.0	8.0	782.0	107.0	27.0	2.0	637.1	45.8	478.6	460.6
9.0	7.0	9.0	833.0	123.0	28.0	1.0	832.1	57.4	594.4	572.1
9.0	7.0	10.0	863.0	131.0	28.0	1.0	960.2	62.1	669.5	644.0
9.0	7.0	11.0	875.0	134.0	29.0	1.0	1,019.8	65.4	698.1	671.4
9.0	7.0	12.0	872.0	132.0	29.0	1.0	1,001.6	65.1	686.7	660.5
9.0	7.0	13.0	849.0	128.0	29.0	1.0	906.3	62.3	631.0	607.2
9.0	7.0	14.0	804.0	119.0	29.0	1.0	746.1	57.0	532.2	512.3
9.0	7.0	15.0	725.0	105.0	28.0	1.0	529.5	48.5	387.2	372.4
9.0	7.0	16.0	577.0	81.0	27.0	1.0	283.3	38.3	202.3	192.8
9.0	7.0	17.0	253.0	38.0	26.0	1.0	59.9	27.8	38.8	32.9
9.0	7.0	18.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	19.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	7.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	8.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	8.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	8.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	8.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	8.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	8.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	8.0	6.0	420.0	63.0	25.0	1.0	151.6	28.2	104.2	97.0
9.0	8.0	7.0	644.0	97.0	26.0	1.0	394.2	38.7	294.4	282.4
9.0	8.0	8.0	755.0	117.0	27.0	1.0	630.0	48.9	465.9	448.4
9.0	8.0	9.0	816.0	130.0	28.0	1.0	825.7	57.1	590.6	568.4
9.0	8.0	10.0	847.0	139.0	29.0	1.0	953.4	62.8	662.1	636.9
9.0	8.0	11.0	856.0	144.0	29.0	1.0	1,010.9	65.1	693.2	666.7
9.0	8.0	12.0	882.0	125.0	29.0	1.0	1,003.7	65.1	688.0	661.7
9.0	8.0	13.0	856.0	123.0	29.0	1.0	906.5	62.3	631.1	607.3
9.0	8.0	14.0	811.0	116.0	29.0	1.0	747.1	57.1	532.8	512.8
9.0	8.0	15.0	736.0	101.0	28.0	1.0	530.2	48.6	387.4	372.6
9.0	8.0	16.0	594.0	77.0	27.0	1.0	283.8	38.3	201.9	192.4
9.0	8.0	17.0	270.0	35.0	26.0	1.0	59.5	27.8	37.7	31.9
9.0	8.0	18.0	-	-	25.0	1.0	-	25.0	-	-
9.0	8.0	19.0	-	-	25.0	1.0	-	25.0	-	-
9.0	8.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	8.0	21.0	-	-	24.0	1.0	-	24.0	-	-
9.0	8.0	22.0	-	-	24.0	1.0	-	24.0	-	-
9.0	8.0	23.0	-	-	24.0	1.0	-	24.0	-	-
9.0	9.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	9.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	9.0	2.0	-	-	24.0	1.0	-	24.0	-	-
9.0	9.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	9.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	9.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	9.0	6.0	447.0	58.0	25.0	1.0	152.6	28.2	103.6	96.4
9.0	9.0	7.0	663.0	88.0	26.0	1.0	393.9	38.7	293.7	281.7
9.0	9.0	8.0	769.0	106.0	27.0	1.0	628.3	48.8	464.7	447.2
9.0	9.0	9.0	821.0	119.0	28.0	1.0	818.6	56.9	586.2	564.2
9.0	9.0	10.0	840.0	133.0	29.0	1.0	940.7	62.4	654.8	629.9
9.0	9.0	11.0	834.0	147.0	29.0	1.0	999.5	64.7	687.0	660.7
9.0	9.0	12.0	866.0	123.0	30.0	1.0	985.3	65.5	674.1	648.4
9.0	9.0	13.0	821.0	132.0	29.0	1.0	889.0	61.7	621.1	597.6
9.0	9.0	14.0	760.0	129.0	29.0	1.0	720.8	56.2	516.6	497.2
9.0	9.0	15.0	675.0	113.0	28.0	1.0	506.9	47.7	372.4	358.1
9.0	9.0	16.0	526.0	84.0	27.0	1.0	266.7	37.6	191.5	182.3
9.0	9.0	17.0	213.0	35.0	26.0	1.0	53.7	27.5	35.4	29.7
9.0	9.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	9.0	19.0	-	-	25.0	1.0	-	25.0	-	-
9.0	9.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	9.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	9.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	9.0	23.0	-	-	25.0	1.0	-	25.0	-	-

9.0	10.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	10.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	10.0	2.0	-	-	26.0	1.0	-	26.0	-	-
9.0	10.0	3.0	-	-	26.0	1.0	-	26.0	-	-
9.0	10.0	4.0	-	-	26.0	-	-	26.0	-	-
9.0	10.0	5.0	-	-	26.0	-	-	26.0	-	-
9.0	10.0	6.0	379.0	63.0	27.0	-	142.5	30.9	97.5	90.5
9.0	10.0	7.0	606.0	98.0	28.0	-	379.1	43.7	276.5	265.0
9.0	10.0	8.0	166.0	270.0	29.0	-	383.6	46.9	289.2	277.4
9.0	10.0	9.0	247.0	353.0	29.0	-	575.0	53.9	419.3	403.4
9.0	10.0	10.0	-	67.0	30.0	-	63.8	37.5	50.8	44.7
9.0	10.0	11.0	91.0	436.0	30.0	-	532.9	50.9	395.5	380.4
9.0	10.0	12.0	132.0	440.0	30.0	-	585.6	56.3	422.0	406.0
9.0	10.0	13.0	829.0	120.0	29.0	1.0	877.2	59.4	620.5	597.1
9.0	10.0	14.0	783.0	112.0	29.0	1.0	719.2	56.1	515.6	496.3
9.0	10.0	15.0	130.0	226.0	28.0	1.0	300.9	41.0	233.2	222.9
9.0	10.0	16.0	124.0	125.0	27.0	1.0	165.3	32.7	129.6	121.9
9.0	10.0	17.0	28.0	32.0	27.0	1.0	33.1	27.1	26.4	20.8
9.0	10.0	18.0	-	-	27.0	1.0	-	27.0	-	-
9.0	10.0	19.0	-	-	27.0	-	-	27.0	-	-
9.0	10.0	20.0	-	-	26.0	-	-	26.0	-	-
9.0	10.0	21.0	-	-	26.0	-	-	26.0	-	-
9.0	10.0	22.0	-	-	26.0	-	-	26.0	-	-
9.0	10.0	23.0	-	-	26.0	-	-	26.0	-	-
9.0	11.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	11.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	11.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	11.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	11.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	11.0	5.0	-	-	25.0	-	-	25.0	-	-
9.0	11.0	6.0	21.0	72.0	26.0	-	73.7	26.0	60.9	54.7
9.0	11.0	7.0	162.0	172.0	27.0	-	244.9	36.5	191.4	182.2
9.0	11.0	8.0	314.0	252.0	28.0	-	469.4	48.0	350.9	337.2
9.0	11.0	9.0	205.0	358.0	29.0	-	538.0	53.2	393.8	378.7
9.0	11.0	10.0	249.0	414.0	30.0	-	673.2	59.3	477.0	459.1
9.0	11.0	11.0	159.0	451.0	30.0	-	627.1	58.7	446.0	429.2
9.0	11.0	12.0	115.0	435.0	30.0	-	563.9	56.3	406.5	391.0
9.0	11.0	13.0	156.0	396.0	30.0	-	548.2	55.3	397.2	382.1
9.0	11.0	14.0	238.0	313.0	30.0	1.0	499.1	48.4	374.2	359.7
9.0	11.0	15.0	399.0	187.0	29.0	-	421.8	49.3	309.6	297.1
9.0	11.0	16.0	277.0	113.0	28.0	-	206.2	39.6	151.5	143.2
9.0	11.0	17.0	88.0	32.0	27.0	-	39.3	29.0	28.7	23.0
9.0	11.0	18.0	-	-	27.0	-	-	27.0	-	-
9.0	11.0	19.0	-	-	27.0	-	-	27.0	-	-
9.0	11.0	20.0	-	-	26.0	-	-	26.0	-	-
9.0	11.0	21.0	-	-	26.0	-	-	26.0	-	-
9.0	11.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	11.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	12.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	12.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	12.0	2.0	-	-	24.0	1.0	-	24.0	-	-
9.0	12.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	12.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	12.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	12.0	6.0	-	44.0	25.0	1.0	41.8	24.1	35.4	29.7
9.0	12.0	7.0	612.0	95.0	26.0	1.0	379.6	37.6	285.4	273.7
9.0	12.0	8.0	724.0	115.0	27.0	1.0	609.9	48.2	452.9	435.9
9.0	12.0	9.0	85.0	346.0	27.0	1.0	418.1	43.2	322.9	310.0
9.0	12.0	10.0	186.0	421.0	28.0	1.0	612.0	49.4	457.7	440.5
9.0	12.0	11.0	34.0	369.0	28.0	1.0	406.2	43.8	312.9	300.4
9.0	12.0	12.0	830.0	136.0	28.0	1.0	961.5	60.2	678.1	652.2
9.0	12.0	13.0	803.0	133.0	28.0	1.0	871.1	60.1	613.9	590.8
9.0	12.0	14.0	751.0	126.0	28.0	1.0	707.3	54.7	510.8	491.6
9.0	12.0	15.0	275.0	209.0	27.0	1.0	369.3	42.2	282.5	270.8
9.0	12.0	16.0	501.0	83.0	27.0	1.0	254.0	36.3	183.2	174.1
9.0	12.0	17.0	168.0	31.0	26.0	1.0	46.3	27.1	31.2	25.6
9.0	12.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	12.0	19.0	-	-	26.0	2.0	-	26.0	-	-
9.0	12.0	20.0	-	-	26.0	2.0	-	26.0	-	-
9.0	12.0	21.0	-	-	25.0	2.0	-	25.0	-	-
9.0	12.0	22.0	-	-	25.0	2.0	-	25.0	-	-
9.0	12.0	23.0	-	-	25.0	2.0	-	25.0	-	-
9.0	13.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	13.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	13.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	13.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	13.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	13.0	5.0	-	-	24.0	2.0	-	24.0	-	-
9.0	13.0	6.0	364.0	62.0	25.0	2.0	139.4	27.4	97.4	90.4
9.0	13.0	7.0	597.0	97.0	25.0	2.0	375.3	35.1	285.9	274.1
9.0	13.0	8.0	717.0	116.0	26.0	2.0	606.7	43.9	460.7	443.4

9.0	13.0	9.0	531.0	235.0	27.0	2.0	698.3	48.4	524.1	504.4
9.0	13.0	10.0	353.0	388.0	27.0	2.0	745.1	50.0	555.4	534.6
9.0	13.0	11.0	232.0	442.0	28.0	2.0	691.0	49.7	516.1	496.8
9.0	13.0	12.0	250.0	429.0	28.0	2.0	700.1	49.7	522.8	503.2
9.0	13.0	13.0	274.0	378.0	28.0	2.0	644.0	48.2	484.6	466.4
9.0	13.0	14.0	230.0	310.0	28.0	2.0	489.7	43.6	376.5	362.0
9.0	13.0	15.0	721.0	89.0	28.0	2.0	501.8	43.3	375.8	361.3
9.0	13.0	16.0	240.0	111.0	27.0	1.0	191.1	34.9	144.2	136.1
9.0	13.0	17.0	85.0	28.0	26.0	1.0	35.3	26.3	25.9	20.3
9.0	13.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	13.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	13.0	20.0	-	-	26.0	1.0	-	26.0	-	-
9.0	13.0	21.0	-	-	25.0	2.0	-	25.0	-	-
9.0	13.0	22.0	-	-	25.0	2.0	-	25.0	-	-
9.0	13.0	23.0	-	-	25.0	2.0	-	25.0	-	-
9.0	14.0	-	-	-	24.0	2.0	-	24.0	-	-
9.0	14.0	1.0	-	-	24.0	2.0	-	24.0	-	-
9.0	14.0	2.0	-	-	24.0	2.0	-	24.0	-	-
9.0	14.0	3.0	-	-	24.0	2.0	-	24.0	-	-
9.0	14.0	4.0	-	-	23.0	1.0	-	23.0	-	-
9.0	14.0	5.0	-	-	23.0	1.0	-	23.0	-	-
9.0	14.0	6.0	482.0	47.0	24.0	2.0	150.5	26.7	100.8	93.7
9.0	14.0	7.0	701.0	70.0	25.0	2.0	394.4	35.8	297.6	285.5
9.0	14.0	8.0	803.0	82.0	26.0	2.0	624.8	44.5	472.4	454.7
9.0	14.0	9.0	838.0	101.0	27.0	2.0	810.3	51.6	597.4	574.9
9.0	14.0	10.0	865.0	108.0	28.0	2.0	937.9	56.7	674.1	648.5
9.0	14.0	11.0	873.0	112.0	28.0	2.0	992.5	58.6	706.1	679.0
9.0	14.0	12.0	859.0	118.0	29.0	2.0	969.6	59.2	687.6	661.4
9.0	14.0	13.0	170.0	390.0	29.0	2.0	554.9	47.7	418.6	402.7
9.0	14.0	14.0	776.0	112.0	29.0	2.0	708.7	50.4	523.6	504.0
9.0	14.0	15.0	689.0	98.0	29.0	1.0	492.4	48.1	359.8	345.9
9.0	14.0	16.0	531.0	74.0	28.0	1.0	252.3	38.0	178.8	169.9
9.0	14.0	17.0	182.0	27.0	27.0	1.0	43.9	28.1	28.5	22.9
9.0	14.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	14.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	14.0	20.0	-	-	26.0	1.0	-	26.0	-	-
9.0	14.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	14.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	14.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	15.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	15.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	15.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	15.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	15.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	15.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	15.0	6.0	485.0	46.0	25.0	2.0	150.4	27.7	100.1	93.0
9.0	15.0	7.0	706.0	68.0	27.0	2.0	394.9	37.8	294.9	282.8
9.0	15.0	8.0	808.0	80.0	28.0	2.0	626.2	46.5	468.6	451.0
9.0	15.0	9.0	863.0	88.0	29.0	2.0	817.3	53.7	595.6	573.2
9.0	15.0	10.0	891.0	93.0	29.0	2.0	946.3	57.9	675.6	649.9
9.0	15.0	11.0	902.0	95.0	30.0	2.0	1,002.7	60.8	704.6	677.6
9.0	15.0	12.0	882.0	105.0	30.0	2.0	977.4	60.4	688.6	662.3
9.0	15.0	13.0	863.0	100.0	30.0	2.0	881.0	57.7	629.2	605.5
9.0	15.0	14.0	823.0	92.0	30.0	2.0	717.8	52.9	523.1	503.5
9.0	15.0	15.0	760.0	75.0	29.0	1.0	505.4	48.6	367.5	353.3
9.0	15.0	16.0	614.0	58.0	28.0	1.0	261.3	38.4	182.1	173.1
9.0	15.0	17.0	253.0	23.0	27.0	1.0	47.2	28.2	28.1	22.5
9.0	15.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	15.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	15.0	20.0	-	-	26.0	1.0	-	26.0	-	-
9.0	15.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	15.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	15.0	23.0	-	-	26.0	1.0	-	26.0	-	-
9.0	16.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	6.0	34.0	68.0	25.0	1.0	73.0	25.3	59.8	53.6
9.0	16.0	7.0	70.0	162.0	26.0	2.0	191.1	30.3	155.5	147.2
9.0	16.0	8.0	-	80.0	27.0	2.0	76.1	28.4	63.3	57.0
9.0	16.0	9.0	-	65.0	27.0	2.0	61.8	27.4	51.7	45.6
9.0	16.0	10.0	-	136.0	28.0	1.0	130.3	30.9	107.0	99.8
9.0	16.0	11.0	-	70.0	28.0	1.0	66.7	29.1	55.3	49.1
9.0	16.0	12.0	11.0	244.0	28.0	1.0	247.1	35.2	198.8	189.4
9.0	16.0	13.0	49.0	343.0	28.0	1.0	389.1	41.1	303.8	291.5
9.0	16.0	14.0	3.0	183.0	27.0	1.0	178.4	33.8	144.5	136.4
9.0	16.0	15.0	552.0	139.0	27.0	1.0	453.6	41.9	343.5	330.1
9.0	16.0	16.0	559.0	64.0	26.0	1.0	248.5	35.6	176.5	167.6
9.0	16.0	17.0	186.0	23.0	26.0	1.0	41.3	26.9	26.3	20.7

9.0	16.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	16.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	16.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	16.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	17.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	17.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	17.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	17.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	17.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	17.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	17.0	6.0	-	39.0	26.0	1.0	37.0	25.0	31.3	25.6
9.0	17.0	7.0	21.0	148.0	26.0	1.0	152.1	29.5	125.2	117.6
9.0	17.0	8.0	171.0	266.0	27.0	1.0	385.2	39.4	301.8	289.6
9.0	17.0	9.0	2.0	168.0	27.0	1.0	163.1	33.2	132.5	124.7
9.0	17.0	10.0	10.0	229.0	27.0	1.0	231.0	34.2	186.8	177.6
9.0	17.0	11.0	472.0	350.0	27.0	1.0	852.5	55.0	618.7	595.3
9.0	17.0	12.0	258.0	419.0	27.0	1.0	697.9	53.4	511.0	491.9
9.0	17.0	13.0	306.0	362.0	27.0	1.0	655.4	51.3	485.1	466.9
9.0	17.0	14.0	276.0	293.0	27.0	1.0	512.6	46.5	387.9	373.0
9.0	17.0	15.0	367.0	182.0	26.0	1.0	390.0	40.7	298.9	286.8
9.0	17.0	16.0	320.0	94.0	26.0	1.0	200.3	33.5	149.1	140.9
9.0	17.0	17.0	87.0	22.0	26.0	1.0	30.0	26.1	21.3	15.8
9.0	17.0	18.0	-	-	26.0	-	-	26.0	-	-
9.0	17.0	19.0	-	-	26.0	-	-	26.0	-	-
9.0	17.0	20.0	-	-	26.0	-	-	26.0	-	-
9.0	17.0	21.0	-	-	26.0	-	-	26.0	-	-
9.0	17.0	22.0	-	-	26.0	-	-	26.0	-	-
9.0	17.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	18.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	18.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	18.0	2.0	-	-	25.0	-	-	25.0	-	-
9.0	18.0	3.0	-	-	25.0	-	-	25.0	-	-
9.0	18.0	4.0	-	-	25.0	-	-	25.0	-	-
9.0	18.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	18.0	6.0	446.0	48.0	26.0	1.0	145.3	29.0	97.3	90.3
9.0	18.0	7.0	110.0	166.0	27.0	1.0	217.3	33.6	173.2	164.4
9.0	18.0	8.0	63.0	251.0	28.0	1.0	292.2	37.7	231.7	221.4
9.0	18.0	9.0	-	151.0	28.0	1.0	144.8	33.0	117.8	110.3
9.0	18.0	10.0	296.0	393.0	28.0	1.0	698.0	50.7	518.4	499.0
9.0	18.0	11.0	280.0	423.0	28.0	2.0	730.0	50.6	542.6	522.3
9.0	18.0	12.0	351.0	396.0	28.0	2.0	764.1	51.7	564.7	543.5
9.0	18.0	13.0	503.0	285.0	28.0	2.0	757.8	51.6	559.7	538.7
9.0	18.0	14.0	239.0	297.0	27.0	2.0	482.1	42.9	371.9	357.6
9.0	18.0	15.0	187.0	207.0	27.0	2.0	312.2	36.8	245.9	235.3
9.0	18.0	16.0	518.0	69.0	26.0	1.0	238.2	34.4	170.6	161.9
9.0	18.0	17.0	127.0	22.0	26.0	1.0	34.5	26.6	23.3	17.8
9.0	18.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	18.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	18.0	20.0	-	-	26.0	1.0	-	26.0	-	-
9.0	18.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	18.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	18.0	23.0	-	-	26.0	1.0	-	26.0	-	-
9.0	19.0	-	-	-	26.0	1.0	-	26.0	-	-
9.0	19.0	1.0	-	-	26.0	1.0	-	26.0	-	-
9.0	19.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	19.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	19.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	19.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	19.0	6.0	405.0	53.0	25.0	1.0	142.1	27.8	97.3	90.3
9.0	19.0	7.0	648.0	83.0	25.0	1.0	386.0	37.4	290.0	278.1
9.0	19.0	8.0	771.0	96.0	27.0	1.0	622.1	48.6	460.7	443.4
9.0	19.0	9.0	831.0	108.0	28.0	1.0	811.9	56.7	582.1	560.2
9.0	19.0	10.0	868.0	111.0	29.0	1.0	942.5	62.5	655.9	631.0
9.0	19.0	11.0	120.0	432.0	30.0	-	570.7	58.6	406.0	390.6
9.0	19.0	12.0	213.0	423.0	30.0	-	648.5	58.7	461.1	443.7
9.0	19.0	13.0	844.0	115.0	30.0	-	874.8	66.6	593.8	571.4
9.0	19.0	14.0	796.0	106.0	30.0	-	710.0	62.7	489.7	471.3
9.0	19.0	15.0	705.0	93.0	30.0	-	488.4	54.3	344.4	330.9
9.0	19.0	16.0	529.0	69.0	29.0	-	240.4	42.5	164.9	156.3
9.0	19.0	17.0	131.0	20.0	28.0	-	32.9	30.3	21.4	15.9
9.0	19.0	18.0	-	-	27.0	-	-	27.0	-	-
9.0	19.0	19.0	-	-	27.0	-	-	27.0	-	-
9.0	19.0	20.0	-	-	27.0	-	-	27.0	-	-
9.0	19.0	21.0	-	-	26.0	-	-	26.0	-	-
9.0	19.0	22.0	-	-	26.0	-	-	26.0	-	-
9.0	19.0	23.0	-	-	26.0	-	-	26.0	-	-
9.0	20.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	20.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	20.0	2.0	-	-	24.0	1.0	-	24.0	-	-

9.0	20.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	20.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	20.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	20.0	6.0	408.0	54.0	24.0	1.0	144.0	26.9	99.2	92.1
9.0	20.0	7.0	649.0	84.0	26.0	1.0	387.8	38.5	289.8	278.0
9.0	20.0	8.0	767.0	100.0	28.0	1.0	623.9	49.6	459.5	442.2
9.0	20.0	9.0	830.0	110.0	29.0	1.0	813.1	57.7	579.8	558.0
9.0	20.0	10.0	864.0	115.0	30.0	1.0	942.6	63.4	652.5	627.7
9.0	20.0	11.0	877.0	117.0	31.0	1.0	998.0	66.5	678.7	652.8
9.0	20.0	12.0	870.0	117.0	31.0	-	973.5	72.6	638.5	614.3
9.0	20.0	13.0	378.0	338.0	31.0	-	693.2	63.7	478.7	460.7
9.0	20.0	14.0	805.0	102.0	31.0	-	710.7	62.5	490.7	472.3
9.0	20.0	15.0	720.0	88.0	30.0	-	489.2	54.3	344.5	331.0
9.0	20.0	16.0	548.0	65.0	29.0	-	240.9	42.6	164.3	155.8
9.0	20.0	17.0	-	26.0	28.0	-	24.7	29.9	20.4	14.9
9.0	20.0	18.0	-	-	28.0	-	-	28.0	-	-
9.0	20.0	19.0	-	-	27.0	-	-	27.0	-	-
9.0	20.0	20.0	-	-	27.0	-	-	27.0	-	-
9.0	20.0	21.0	-	-	26.0	-	-	26.0	-	-
9.0	20.0	22.0	-	-	26.0	-	-	26.0	-	-
9.0	20.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	21.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	21.0	1.0	-	-	24.0	1.0	-	24.0	-	-
9.0	21.0	2.0	-	-	24.0	1.0	-	24.0	-	-
9.0	21.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	21.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	21.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	21.0	6.0	390.0	54.0	26.0	1.0	140.5	28.8	96.3	89.3
9.0	21.0	7.0	632.0	87.0	27.0	1.0	383.6	39.3	285.7	274.0
9.0	21.0	8.0	750.0	105.0	28.0	1.0	618.1	49.4	455.8	438.6
9.0	21.0	9.0	817.0	115.0	29.0	2.0	812.2	53.5	592.5	570.2
9.0	21.0	10.0	849.0	122.0	30.0	2.0	935.4	58.6	665.5	640.2
9.0	21.0	11.0	859.0	127.0	30.0	2.0	990.0	60.5	697.1	670.5
9.0	21.0	12.0	849.0	129.0	30.0	1.0	964.7	64.8	662.4	637.2
9.0	21.0	13.0	821.0	126.0	30.0	1.0	869.0	61.9	606.0	583.2
9.0	21.0	14.0	768.0	117.0	30.0	1.0	698.0	56.3	499.0	480.3
9.0	21.0	15.0	527.0	138.0	29.0	1.0	433.5	46.2	320.6	307.9
9.0	21.0	16.0	487.0	74.0	28.0	1.0	230.1	36.9	162.9	154.4
9.0	21.0	17.0	95.0	17.0	27.0	1.0	26.6	27.3	18.0	12.5
9.0	21.0	18.0	-	-	27.0	1.0	-	27.0	-	-
9.0	21.0	19.0	-	-	27.0	1.0	-	27.0	-	-
9.0	21.0	20.0	-	-	27.0	1.0	-	27.0	-	-
9.0	21.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	21.0	23.0	-	-	26.0	-	-	26.0	-	-
9.0	22.0	-	-	-	26.0	-	-	26.0	-	-
9.0	22.0	1.0	-	-	25.0	-	-	25.0	-	-
9.0	22.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	22.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	22.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	22.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	22.0	6.0	343.0	59.0	25.0	1.0	134.8	27.6	94.6	87.6
9.0	22.0	7.0	585.0	100.0	26.0	1.0	376.1	38.0	282.9	271.2
9.0	22.0	8.0	708.0	123.0	27.0	1.0	610.6	48.2	453.6	436.5
9.0	22.0	9.0	776.0	136.0	29.0	1.0	800.4	57.2	572.3	550.8
9.0	22.0	10.0	812.0	143.0	30.0	-	929.2	69.2	621.8	598.3
9.0	22.0	11.0	826.0	145.0	30.0	-	983.4	71.6	648.9	624.3
9.0	22.0	12.0	874.0	111.0	31.0	-	968.7	72.4	636.2	612.1
9.0	22.0	13.0	255.0	362.0	31.0	-	609.8	61.0	427.7	411.5
9.0	22.0	14.0	802.0	99.0	31.0	-	702.1	61.7	486.8	468.5
9.0	22.0	15.0	689.0	93.0	31.0	-	475.2	54.7	333.8	320.6
9.0	22.0	16.0	502.0	69.0	30.0	-	228.4	42.9	156.0	147.6
9.0	22.0	17.0	-	20.0	29.0	-	19.0	30.5	15.6	10.2
9.0	22.0	18.0	-	-	28.0	-	-	28.0	-	-
9.0	22.0	19.0	-	-	27.0	1.0	-	27.0	-	-
9.0	22.0	20.0	-	-	27.0	1.0	-	27.0	-	-
9.0	22.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	22.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	22.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	23.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	23.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	23.0	2.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	23.0	6.0	313.0	61.0	25.0	1.0	130.8	27.4	92.9	85.9
9.0	23.0	7.0	563.0	105.0	27.0	1.0	371.5	38.8	278.7	267.2
9.0	23.0	8.0	697.0	126.0	28.0	1.0	606.7	49.0	448.8	431.9
9.0	23.0	9.0	788.0	129.0	29.0	1.0	802.8	57.3	573.8	552.2
9.0	23.0	10.0	823.0	136.0	30.0	-	931.6	69.3	623.0	599.5
9.0	23.0	11.0	69.0	401.0	31.0	-	477.4	56.4	343.9	330.4

9.0	23.0	12.0	173.0	418.0	32.0	-	604.9	58.5	430.6	414.3
9.0	23.0	13.0	760.0	154.0	32.0	-	842.4	67.2	569.9	548.5
9.0	23.0	14.0	690.0	146.0	32.0	-	670.6	63.1	461.6	444.2
9.0	23.0	15.0	568.0	129.0	31.0	1.0	446.6	48.4	325.8	312.9
9.0	23.0	16.0	366.0	88.0	30.0	1.0	204.0	38.1	146.2	138.1
9.0	23.0	17.0	-	13.0	29.0	1.0	12.3	28.7	10.2	4.9
9.0	23.0	18.0	-	-	27.0	1.0	-	27.0	-	-
9.0	23.0	19.0	-	-	27.0	1.0	-	27.0	-	-
9.0	23.0	20.0	-	-	26.0	1.0	-	26.0	-	-
9.0	23.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	23.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	23.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	24.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	24.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	24.0	2.0	-	-	24.0	1.0	-	24.0	-	-
9.0	24.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	24.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	24.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	24.0	6.0	260.0	64.0	25.0	1.0	122.9	27.1	89.2	82.4
9.0	24.0	7.0	500.0	119.0	26.0	1.0	355.2	37.2	269.6	258.3
9.0	24.0	8.0	638.0	148.0	28.0	1.0	590.7	48.4	438.7	422.2
9.0	24.0	9.0	714.0	165.0	30.0	1.0	782.4	57.5	558.5	537.5
9.0	24.0	10.0	752.0	176.0	31.0	-	911.2	69.5	608.8	585.9
9.0	24.0	11.0	763.0	182.0	32.0	-	958.9	72.6	629.0	605.3
9.0	24.0	12.0	868.0	114.0	32.0	-	963.6	73.0	630.5	606.6
9.0	24.0	13.0	836.0	113.0	32.0	-	858.5	69.8	571.7	550.3
9.0	24.0	14.0	774.0	109.0	32.0	-	689.1	63.8	472.1	454.3
9.0	24.0	15.0	99.0	193.0	31.0	-	245.1	46.4	184.4	175.4
9.0	24.0	16.0	52.0	97.0	30.0	-	111.1	35.9	86.8	80.0
9.0	24.0	17.0	-	7.0	29.0	-	6.6	27.7	5.5	0.3
9.0	24.0	18.0	-	-	28.0	1.0	-	28.0	-	-
9.0	24.0	19.0	-	-	27.0	1.0	-	27.0	-	-
9.0	24.0	20.0	-	-	27.0	1.0	-	27.0	-	-
9.0	24.0	21.0	-	-	26.0	1.0	-	26.0	-	-
9.0	24.0	22.0	-	-	26.0	1.0	-	26.0	-	-
9.0	24.0	23.0	-	-	26.0	1.0	-	26.0	-	-
9.0	25.0	-	-	-	26.0	1.0	-	26.0	-	-
9.0	25.0	1.0	-	-	26.0	1.0	-	26.0	-	-
9.0	25.0	2.0	-	-	26.0	1.0	-	26.0	-	-
9.0	25.0	3.0	-	-	25.0	1.0	-	25.0	-	-
9.0	25.0	4.0	-	-	25.0	1.0	-	25.0	-	-
9.0	25.0	5.0	-	-	25.0	1.0	-	25.0	-	-
9.0	25.0	6.0	288.0	61.0	26.0	1.0	126.1	28.3	89.9	83.0
9.0	25.0	7.0	545.0	106.0	27.0	1.0	364.9	38.6	274.3	262.9
9.0	25.0	8.0	685.0	127.0	28.0	-	600.0	53.7	432.8	416.5
9.0	25.0	9.0	759.0	140.0	29.0	-	790.0	62.7	547.8	527.3
9.0	25.0	10.0	797.0	147.0	30.0	-	918.0	68.8	615.7	592.5
9.0	25.0	11.0	807.0	152.0	31.0	-	969.8	72.0	638.3	614.1
9.0	25.0	12.0	334.0	383.0	31.0	-	733.0	65.0	502.9	484.1
9.0	25.0	13.0	756.0	152.0	31.0	-	834.2	66.8	565.6	544.4
9.0	25.0	14.0	-	67.0	31.0	-	63.7	41.0	49.8	43.7
9.0	25.0	15.0	-	93.0	30.0	-	88.6	32.5	72.2	65.7
9.0	25.0	16.0	-	42.0	29.0	-	39.8	29.2	33.0	27.3
9.0	25.0	17.0	-	2.0	28.0	-	1.9	25.1	1.6	-
9.0	25.0	18.0	-	-	27.0	-	-	27.0	-	-
9.0	25.0	19.0	-	-	27.0	-	-	27.0	-	-
9.0	25.0	20.0	-	-	26.0	-	-	26.0	-	-
9.0	25.0	21.0	-	-	26.0	-	-	26.0	-	-
9.0	25.0	22.0	-	-	26.0	-	-	26.0	-	-
9.0	25.0	23.0	-	-	26.0	-	-	26.0	-	-
9.0	26.0	-	-	-	25.0	-	-	25.0	-	-
9.0	26.0	1.0	-	-	25.0	-	-	25.0	-	-
9.0	26.0	2.0	-	-	24.0	-	-	24.0	-	-
9.0	26.0	3.0	-	-	24.0	-	-	24.0	-	-
9.0	26.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	26.0	5.0	-	-	24.0	-	-	24.0	-	-
9.0	26.0	6.0	310.0	58.0	25.0	-	127.9	28.1	90.4	83.5
9.0	26.0	7.0	564.0	101.0	26.0	-	368.6	41.1	273.2	261.8
9.0	26.0	8.0	72.0	245.0	27.0	-	293.9	41.5	228.4	218.3
9.0	26.0	9.0	405.0	293.0	28.0	-	648.4	54.9	470.1	452.4
9.0	26.0	10.0	819.0	134.0	29.0	-	924.1	67.2	625.5	601.9
9.0	26.0	11.0	829.0	138.0	30.0	-	975.5	71.3	644.7	620.3
9.0	26.0	12.0	26.0	322.0	30.0	-	351.1	51.5	259.8	248.8
9.0	26.0	13.0	34.0	304.0	30.0	-	336.8	46.0	256.5	245.5
9.0	26.0	14.0	-	142.0	30.0	-	136.2	37.9	108.1	100.9
9.0	26.0	15.0	50.0	179.0	29.0	-	204.7	37.6	161.8	153.3
9.0	26.0	16.0	389.0	79.0	28.0	-	199.1	37.0	141.7	133.7
9.0	26.0	17.0	-	9.0	27.0	1.0	8.5	26.4	7.1	1.9
9.0	26.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	26.0	19.0	-	-	25.0	1.0	-	25.0	-	-
9.0	26.0	20.0	-	-	25.0	-	-	25.0	-	-

9.0	26.0	21.0	-	-	25.0	-	-	25.0	-	-
9.0	26.0	22.0	-	-	25.0	-	-	25.0	-	-
9.0	26.0	23.0	-	-	24.0	-	-	24.0	-	-
9.0	27.0	-	-	-	24.0	-	-	24.0	-	-
9.0	27.0	1.0	-	-	24.0	-	-	24.0	-	-
9.0	27.0	2.0	-	-	24.0	-	-	24.0	-	-
9.0	27.0	3.0	-	-	23.0	-	-	23.0	-	-
9.0	27.0	4.0	-	-	23.0	-	-	23.0	-	-
9.0	27.0	5.0	-	-	23.0	-	-	23.0	-	-
9.0	27.0	6.0	330.0	55.0	24.0	-	129.3	27.1	90.9	84.0
9.0	27.0	7.0	506.0	108.0	26.0	-	347.1	40.3	259.1	248.1
9.0	27.0	8.0	696.0	120.0	27.0	-	599.9	52.6	435.2	418.7
9.0	27.0	9.0	759.0	136.0	28.0	-	785.3	61.6	547.9	527.4
9.0	27.0	10.0	793.0	146.0	28.0	-	912.1	66.8	619.1	595.7
9.0	27.0	11.0	407.0	361.0	29.0	-	789.1	64.6	542.8	522.4
9.0	27.0	12.0	321.0	383.0	29.0	-	720.2	61.6	503.8	484.9
9.0	27.0	13.0	256.0	351.0	29.0	-	598.4	57.1	428.9	412.7
9.0	27.0	14.0	-	30.0	29.0	1.0	28.5	31.9	23.3	17.8
9.0	27.0	15.0	-	19.0	28.0	1.0	18.0	26.6	15.1	9.7
9.0	27.0	16.0	-	8.0	27.0	1.0	7.6	25.1	6.4	1.2
9.0	27.0	17.0	-	-	26.0	1.0	-	26.0	-	-
9.0	27.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	27.0	19.0	-	-	25.0	1.0	-	25.0	-	-
9.0	27.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	27.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	27.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	27.0	23.0	-	-	25.0	1.0	-	25.0	-	-
9.0	28.0	-	-	-	25.0	1.0	-	25.0	-	-
9.0	28.0	1.0	-	-	25.0	1.0	-	25.0	-	-
9.0	28.0	2.0	-	-	25.0	1.0	-	25.0	-	-
9.0	28.0	3.0	-	-	24.0	1.0	-	24.0	-	-
9.0	28.0	4.0	-	-	24.0	1.0	-	24.0	-	-
9.0	28.0	5.0	-	-	24.0	1.0	-	24.0	-	-
9.0	28.0	6.0	80.0	63.0	24.0	1.0	80.8	24.5	64.2	57.9
9.0	28.0	7.0	248.0	148.0	26.0	1.0	267.6	33.9	210.0	200.3
9.0	28.0	8.0	643.0	141.0	27.0	1.0	587.0	46.8	439.5	422.9
9.0	28.0	9.0	750.0	142.0	28.0	1.0	783.9	55.7	565.3	544.1
9.0	28.0	10.0	136.0	394.0	29.0	1.0	541.2	50.1	403.4	388.0
9.0	28.0	11.0	357.0	382.0	29.0	1.0	762.5	55.7	551.2	530.6
9.0	28.0	12.0	796.0	152.0	30.0	1.0	937.3	63.0	650.4	625.7
9.0	28.0	13.0	773.0	143.0	29.0	1.0	835.3	59.9	589.2	567.0
9.0	28.0	14.0	723.0	127.0	29.0	2.0	666.9	50.3	492.1	473.6
9.0	28.0	15.0	626.0	105.0	28.0	2.0	445.6	42.4	333.6	320.4
9.0	28.0	16.0	436.0	69.0	27.0	1.0	202.1	35.0	143.3	135.3
9.0	28.0	17.0	-	-	26.0	1.0	-	26.0	-	-
9.0	28.0	18.0	-	-	26.0	1.0	-	26.0	-	-
9.0	28.0	19.0	-	-	26.0	1.0	-	26.0	-	-
9.0	28.0	20.0	-	-	25.0	1.0	-	25.0	-	-
9.0	28.0	21.0	-	-	25.0	1.0	-	25.0	-	-
9.0	28.0	22.0	-	-	25.0	1.0	-	25.0	-	-
9.0	28.0	23.0	-	-	24.0	1.0	-	24.0	-	-
9.0	29.0	-	-	-	24.0	1.0	-	24.0	-	-
9.0	29.0	1.0	-	-	23.0	1.0	-	23.0	-	-
9.0	29.0	2.0	-	-	23.0	1.0	-	23.0	-	-
9.0	29.0	3.0	-	-	22.0	1.0	-	22.0	-	-
9.0	29.0	4.0	-	-	22.0	1.0	-	22.0	-	-
9.0	29.0	5.0	-	-	22.0	1.0	-	22.0	-	-
9.0	29.0	6.0	348.0	54.0	22.0	2.0	132.5	24.1	94.0	87.0
9.0	29.0	7.0	588.0	100.0	24.0	1.0	378.9	36.1	287.8	276.0
9.0	29.0	8.0	708.0	128.0	25.0	1.0	616.3	46.4	462.0	444.7
9.0	29.0	9.0	765.0	149.0	26.0	1.0	806.4	54.6	584.9	562.9
9.0	29.0	10.0	784.0	168.0	27.0	1.0	925.6	60.1	652.9	628.2
9.0	29.0	11.0	776.0	186.0	28.0	1.0	977.1	63.1	677.9	652.0
9.0	29.0	12.0	928.0	95.0	28.0	1.0	993.5	63.8	686.3	660.1
9.0	29.0	13.0	901.0	92.0	28.0	2.0	884.1	55.9	637.2	613.1
9.0	29.0	14.0	849.0	87.0	28.0	2.0	707.2	50.7	520.3	500.8
9.0	29.0	15.0	742.0	79.0	27.0	2.0	475.9	42.5	354.6	340.7
9.0	29.0	16.0	538.0	57.0	26.0	1.0	217.9	34.7	151.5	143.3
9.0	29.0	17.0	-	-	24.0	1.0	-	24.0	-	-
9.0	29.0	18.0	-	-	23.0	2.0	-	23.0	-	-
9.0	29.0	19.0	-	-	22.0	2.0	-	22.0	-	-
9.0	29.0	20.0	-	-	21.0	2.0	-	21.0	-	-
9.0	29.0	21.0	-	-	20.0	2.0	-	20.0	-	-
9.0	29.0	22.0	-	-	20.0	2.0	-	20.0	-	-
9.0	29.0	23.0	-	-	19.0	2.0	-	19.0	-	-
9.0	30.0	-	-	-	19.0	2.0	-	19.0	-	-
9.0	30.0	1.0	-	-	18.0	1.0	-	18.0	-	-
9.0	30.0	2.0	-	-	18.0	1.0	-	18.0	-	-
9.0	30.0	3.0	-	-	18.0	1.0	-	18.0	-	-
9.0	30.0	4.0	-	-	17.0	1.0	-	17.0	-	-
9.0	30.0	5.0	-	-	17.0	1.0	-	17.0	-	-

9.0	30.0	6.0	449.0	47.0	18.0	1.0	148.1	20.8	103.4	96.2
9.0	30.0	7.0	705.0	77.0	20.0	1.0	407.7	33.2	312.2	299.6
9.0	30.0	8.0	826.0	92.0	22.0	1.0	654.3	44.9	493.7	475.2
9.0	30.0	9.0	895.0	98.0	23.0	1.0	850.8	53.3	621.1	597.7
9.0	30.0	10.0	921.0	105.0	24.0	1.0	978.7	59.1	694.2	667.6
9.0	30.0	11.0	923.0	112.0	25.0	1.0	1,027.9	62.0	717.2	689.7
9.0	30.0	12.0	922.0	108.0	25.0	1.0	1,000.4	61.5	700.2	673.4
9.0	30.0	13.0	883.0	109.0	25.0	1.0	885.2	57.9	630.9	607.1
9.0	30.0	14.0	814.0	106.0	25.0	1.0	704.4	51.9	515.0	495.7
9.0	30.0	15.0	695.0	94.0	25.0	1.0	466.6	43.4	346.5	333.0
9.0	30.0	16.0	469.0	66.0	24.0	1.0	206.3	32.2	146.9	138.8
9.0	30.0	17.0	-	-	23.0	1.0	-	23.0	-	-
9.0	30.0	18.0	-	-	24.0	1.0	-	24.0	-	-
9.0	30.0	19.0	-	-	23.0	1.0	-	23.0	-	-
9.0	30.0	20.0	-	-	23.0	1.0	-	23.0	-	-
9.0	30.0	21.0	-	-	22.0	1.0	-	22.0	-	-
9.0	30.0	22.0	-	-	22.0	2.0	-	22.0	-	-
9.0	30.0	23.0	-	-	21.0	2.0	-	21.0	-	-
10.0	1.0	-	-	-	21.0	2.0	-	21.0	-	-
10.0	1.0	1.0	-	-	20.0	2.0	-	20.0	-	-
10.0	1.0	2.0	-	-	20.0	2.0	-	20.0	-	-
10.0	1.0	3.0	-	-	20.0	2.0	-	20.0	-	-
10.0	1.0	4.0	-	-	19.0	2.0	-	19.0	-	-
10.0	1.0	5.0	-	-	19.0	2.0	-	19.0	-	-
10.0	1.0	6.0	375.0	52.0	19.0	2.0	137.6	21.1	98.2	91.1
10.0	1.0	7.0	659.0	87.0	21.0	2.0	397.6	31.8	307.3	294.9
10.0	1.0	8.0	800.0	100.0	22.0	2.0	645.5	41.2	496.6	478.0
10.0	1.0	9.0	897.0	96.0	23.0	2.0	849.6	48.9	635.2	611.2
10.0	1.0	10.0	934.0	98.0	24.0	2.0	982.3	54.3	715.4	687.9
10.0	1.0	11.0	948.0	97.0	25.0	2.0	1,034.6	57.1	742.3	713.6
10.0	1.0	12.0	943.0	95.0	25.0	3.0	1,004.6	53.1	736.4	708.0
10.0	1.0	13.0	920.0	90.0	25.0	3.0	894.6	50.3	664.7	639.4
10.0	1.0	14.0	873.0	81.0	25.0	2.0	713.8	48.0	532.4	512.4
10.0	1.0	15.0	785.0	68.0	24.0	2.0	482.5	39.7	363.5	349.4
10.0	1.0	16.0	597.0	48.0	23.0	2.0	222.0	30.1	155.4	147.0
10.0	1.0	17.0	-	-	21.0	2.0	-	21.0	-	-
10.0	1.0	18.0	-	-	20.0	2.0	-	20.0	-	-
10.0	1.0	19.0	-	-	20.0	2.0	-	20.0	-	-
10.0	1.0	20.0	-	-	19.0	2.0	-	19.0	-	-
10.0	1.0	21.0	-	-	18.0	2.0	-	18.0	-	-
10.0	1.0	22.0	-	-	18.0	2.0	-	18.0	-	-
10.0	1.0	23.0	-	-	17.0	2.0	-	17.0	-	-
10.0	2.0	-	-	-	17.0	2.0	-	17.0	-	-
10.0	2.0	1.0	-	-	17.0	2.0	-	17.0	-	-
10.0	2.0	2.0	-	-	17.0	2.0	-	17.0	-	-
10.0	2.0	3.0	-	-	16.0	1.0	-	16.0	-	-
10.0	2.0	4.0	-	-	16.0	1.0	-	16.0	-	-
10.0	2.0	5.0	-	-	16.0	1.0	-	16.0	-	-
10.0	2.0	6.0	189.0	54.0	18.0	1.0	97.1	18.9	74.1	67.6
10.0	2.0	7.0	724.0	70.0	20.0	1.0	408.3	32.9	312.6	300.0
10.0	2.0	8.0	837.0	85.0	22.0	1.0	653.4	44.9	492.9	474.4
10.0	2.0	9.0	895.0	94.0	24.0	1.0	845.2	54.1	614.5	591.3
10.0	2.0	10.0	924.0	100.0	25.0	-	974.1	66.3	662.8	637.7
10.0	2.0	11.0	932.0	103.0	25.0	-	1,024.3	68.6	687.9	661.7
10.0	2.0	12.0	929.0	100.0	26.0	-	995.1	68.9	667.0	641.7
10.0	2.0	13.0	900.0	97.0	26.0	-	883.1	65.3	603.6	580.9
10.0	2.0	14.0	847.0	90.0	25.0	1.0	706.7	51.9	516.1	496.8
10.0	2.0	15.0	734.0	81.0	25.0	1.0	468.5	43.5	346.8	333.2
10.0	2.0	16.0	519.0	57.0	24.0	1.0	208.8	32.3	146.3	138.2
10.0	2.0	17.0	-	-	22.0	1.0	-	22.0	-	-
10.0	2.0	18.0	-	-	21.0	1.0	-	21.0	-	-
10.0	2.0	19.0	-	-	21.0	1.0	-	21.0	-	-
10.0	2.0	20.0	-	-	20.0	1.0	-	20.0	-	-
10.0	2.0	21.0	-	-	20.0	1.0	-	20.0	-	-
10.0	2.0	22.0	-	-	20.0	1.0	-	20.0	-	-
10.0	2.0	23.0	-	-	20.0	1.0	-	20.0	-	-
10.0	3.0	-	-	-	20.0	1.0	-	20.0	-	-
10.0	3.0	1.0	-	-	20.0	1.0	-	20.0	-	-
10.0	3.0	2.0	-	-	20.0	1.0	-	20.0	-	-
10.0	3.0	3.0	-	-	20.0	1.0	-	20.0	-	-
10.0	3.0	4.0	-	-	19.0	1.0	-	19.0	-	-
10.0	3.0	5.0	-	-	19.0	1.0	-	19.0	-	-
10.0	3.0	6.0	375.0	50.0	21.0	1.0	135.9	23.5	95.7	88.7
10.0	3.0	7.0	642.0	86.0	23.0	1.0	389.0	35.5	295.3	283.3
10.0	3.0	8.0	767.0	106.0	24.0	1.0	629.5	45.9	472.7	454.9
10.0	3.0	9.0	835.0	117.0	25.0	1.0	825.1	54.3	599.2	576.7
10.0	3.0	10.0	866.0	124.0	26.0	1.0	945.1	59.8	667.6	642.2
10.0	3.0	11.0	873.0	129.0	26.0	1.0	993.6	61.8	694.3	667.7
10.0	3.0	12.0	835.0	145.0	26.0	1.0	960.2	61.0	673.6	648.0
10.0	3.0	13.0	795.0	144.0	26.0	1.0	847.6	57.5	605.4	582.6
10.0	3.0	14.0	727.0	133.0	26.0	1.0	668.3	51.5	489.7	471.3

10.0	3.0	15.0	604.0	113.0	25.0	1.0	435.5	42.2	325.9	312.9
10.0	3.0	16.0	375.0	73.0	24.0	1.0	183.1	31.2	132.7	124.9
10.0	3.0	17.0	-	-	23.0	1.0	-	23.0	-	-
10.0	3.0	18.0	-	-	22.0	1.0	-	22.0	-	-
10.0	3.0	19.0	-	-	22.0	1.0	-	22.0	-	-
10.0	3.0	20.0	-	-	21.0	1.0	-	21.0	-	-
10.0	3.0	21.0	-	-	21.0	1.0	-	21.0	-	-
10.0	3.0	22.0	-	-	21.0	1.0	-	21.0	-	-
10.0	3.0	23.0	-	-	21.0	1.0	-	21.0	-	-
10.0	4.0	-	-	-	21.0	1.0	-	21.0	-	-
10.0	4.0	1.0	-	-	21.0	1.0	-	21.0	-	-
10.0	4.0	2.0	-	-	20.0	1.0	-	20.0	-	-
10.0	4.0	3.0	-	-	20.0	1.0	-	20.0	-	-
10.0	4.0	4.0	-	-	20.0	1.0	-	20.0	-	-
10.0	4.0	5.0	-	-	20.0	-	-	20.0	-	-
10.0	4.0	6.0	333.0	53.0	21.0	-	129.4	23.9	92.2	85.3
10.0	4.0	7.0	607.0	94.0	23.0	-	381.6	38.7	285.7	273.9
10.0	4.0	8.0	738.0	117.0	24.0	-	623.6	50.8	456.5	439.3
10.0	4.0	9.0	805.0	132.0	25.0	-	815.9	59.9	574.4	552.8
10.0	4.0	10.0	838.0	141.0	26.0	-	943.3	66.1	642.7	618.4
10.0	4.0	11.0	850.0	144.0	27.0	-	993.8	69.3	664.8	639.5
10.0	4.0	12.0	861.0	132.0	27.0	-	969.1	68.8	649.9	625.2
10.0	4.0	13.0	830.0	127.0	27.0	-	857.6	65.3	586.3	564.3
10.0	4.0	14.0	767.0	117.0	27.0	-	677.5	58.8	476.7	458.8
10.0	4.0	15.0	623.0	107.0	27.0	-	437.4	49.4	314.8	302.2
10.0	4.0	16.0	389.0	70.0	26.0	-	183.0	36.8	128.3	120.6
10.0	4.0	17.0	-	-	24.0	-	-	24.0	-	-
10.0	4.0	18.0	-	-	24.0	-	-	24.0	-	-
10.0	4.0	19.0	-	-	24.0	-	-	24.0	-	-
10.0	4.0	20.0	-	-	24.0	-	-	24.0	-	-
10.0	4.0	21.0	-	-	23.0	-	-	23.0	-	-
10.0	4.0	22.0	-	-	23.0	-	-	23.0	-	-
10.0	4.0	23.0	-	-	22.0	1.0	-	22.0	-	-
10.0	5.0	-	-	-	22.0	1.0	-	22.0	-	-
10.0	5.0	1.0	-	-	21.0	1.0	-	21.0	-	-
10.0	5.0	2.0	-	-	21.0	2.0	-	21.0	-	-
10.0	5.0	3.0	-	-	21.0	2.0	-	21.0	-	-
10.0	5.0	4.0	-	-	21.0	2.0	-	21.0	-	-
10.0	5.0	5.0	-	-	21.0	2.0	-	21.0	-	-
10.0	5.0	6.0	326.0	51.0	22.0	2.0	126.0	23.9	89.7	82.8
10.0	5.0	7.0	598.0	92.0	24.0	2.0	375.4	34.1	287.5	275.7
10.0	5.0	8.0	730.0	113.0	25.0	3.0	613.7	41.1	472.5	454.7
10.0	5.0	9.0	799.0	126.0	26.0	3.0	804.0	47.7	604.7	582.0
10.0	5.0	10.0	837.0	131.0	27.0	3.0	930.6	52.5	684.3	658.2
10.0	5.0	11.0	853.0	132.0	28.0	2.0	982.3	58.3	699.9	673.1
10.0	5.0	12.0	823.0	143.0	28.0	2.0	943.7	57.5	675.4	649.6
10.0	5.0	13.0	182.0	338.0	28.0	2.0	510.6	45.4	389.7	374.8
10.0	5.0	14.0	743.0	119.0	28.0	2.0	661.2	47.9	493.3	474.8
10.0	5.0	15.0	635.0	98.0	27.0	2.0	432.6	41.0	324.6	311.7
10.0	5.0	16.0	412.0	63.0	26.0	2.0	181.1	31.6	128.8	121.1
10.0	5.0	17.0	-	-	24.0	2.0	-	24.0	-	-
10.0	5.0	18.0	-	-	24.0	2.0	-	24.0	-	-
10.0	5.0	19.0	-	-	23.0	2.0	-	23.0	-	-
10.0	5.0	20.0	-	-	23.0	2.0	-	23.0	-	-
10.0	5.0	21.0	-	-	23.0	2.0	-	23.0	-	-
10.0	5.0	22.0	-	-	22.0	2.0	-	22.0	-	-
10.0	5.0	23.0	-	-	22.0	2.0	-	22.0	-	-
10.0	6.0	-	-	-	22.0	2.0	-	22.0	-	-
10.0	6.0	1.0	-	-	22.0	2.0	-	22.0	-	-
10.0	6.0	2.0	-	-	22.0	3.0	-	22.0	-	-
10.0	6.0	3.0	-	-	22.0	3.0	-	22.0	-	-
10.0	6.0	4.0	-	-	22.0	3.0	-	22.0	-	-
10.0	6.0	5.0	-	-	22.0	3.0	-	22.0	-	-
10.0	6.0	6.0	-	38.0	22.0	3.0	36.2	21.2	31.1	25.4
10.0	6.0	7.0	-	64.0	23.0	3.0	60.8	23.0	51.8	45.7
10.0	6.0	8.0	-	159.0	24.0	3.0	153.7	26.7	128.8	121.1
10.0	6.0	9.0	6.0	203.0	26.0	3.0	201.9	30.4	166.2	157.6
10.0	6.0	10.0	34.0	308.0	27.0	2.0	345.2	36.5	275.8	264.3
10.0	6.0	11.0	332.0	354.0	27.0	2.0	706.6	47.6	533.6	513.6
10.0	6.0	12.0	330.0	342.0	28.0	2.0	682.3	49.3	510.6	491.4
10.0	6.0	13.0	18.0	255.0	28.0	2.0	264.7	37.2	210.8	201.0
10.0	6.0	14.0	-	158.0	27.0	2.0	152.5	31.0	125.2	117.5
10.0	6.0	15.0	8.0	140.0	27.0	2.0	140.0	30.1	115.2	107.8
10.0	6.0	16.0	42.0	71.0	26.0	1.0	81.9	27.6	66.4	60.0
10.0	6.0	17.0	-	-	25.0	1.0	-	25.0	-	-
10.0	6.0	18.0	-	-	25.0	1.0	-	25.0	-	-
10.0	6.0	19.0	-	-	24.0	1.0	-	24.0	-	-
10.0	6.0	20.0	-	-	24.0	1.0	-	24.0	-	-
10.0	6.0	21.0	-	-	24.0	2.0	-	24.0	-	-
10.0	6.0	22.0	-	-	24.0	2.0	-	24.0	-	-
10.0	6.0	23.0	-	-	24.0	2.0	-	24.0	-	-

10.0	7.0	-	-	-	24.0	2.0	-	24.0	-	-
10.0	7.0	1.0	-	-	24.0	2.0	-	24.0	-	-
10.0	7.0	2.0	-	-	23.0	2.0	-	23.0	-	-
10.0	7.0	3.0	-	-	23.0	2.0	-	23.0	-	-
10.0	7.0	4.0	-	-	23.0	2.0	-	23.0	-	-
10.0	7.0	5.0	-	-	23.0	2.0	-	23.0	-	-
10.0	7.0	6.0	-	3.0	23.0	2.0	2.8	21.0	2.4	-
10.0	7.0	7.0	-	13.0	23.0	2.0	12.3	21.3	10.6	5.3
10.0	7.0	8.0	-	18.0	24.0	2.0	17.1	22.6	14.6	9.2
10.0	7.0	9.0	-	53.0	24.0	2.0	50.4	23.6	42.9	36.9
10.0	7.0	10.0	-	47.0	24.0	2.0	44.7	23.6	38.0	32.2
10.0	7.0	11.0	-	59.0	25.0	2.0	56.2	25.0	47.5	41.5
10.0	7.0	12.0	-	54.0	25.0	2.0	51.4	24.9	43.4	37.5
10.0	7.0	13.0	4.0	192.0	25.0	2.0	189.3	29.1	156.8	148.4
10.0	7.0	14.0	-	86.0	24.0	2.0	81.8	25.4	69.0	62.5
10.0	7.0	15.0	-	113.0	24.0	2.0	108.8	25.8	91.6	84.7
10.0	7.0	16.0	-	59.0	24.0	2.0	56.8	24.3	48.2	42.2
10.0	7.0	17.0	-	-	24.0	2.0	-	24.0	-	-
10.0	7.0	18.0	-	-	24.0	2.0	-	24.0	-	-
10.0	7.0	19.0	-	-	24.0	2.0	-	24.0	-	-
10.0	7.0	20.0	-	-	24.0	2.0	-	24.0	-	-
10.0	7.0	21.0	-	-	24.0	2.0	-	24.0	-	-
10.0	7.0	22.0	-	-	24.0	2.0	-	24.0	-	-
10.0	7.0	23.0	-	-	24.0	3.0	-	24.0	-	-
10.0	8.0	-	-	-	24.0	2.0	-	24.0	-	-
10.0	8.0	1.0	-	-	24.0	2.0	-	24.0	-	-
10.0	8.0	2.0	-	-	24.0	2.0	-	24.0	-	-
10.0	8.0	3.0	-	-	24.0	2.0	-	24.0	-	-
10.0	8.0	4.0	-	-	24.0	2.0	-	24.0	-	-
10.0	8.0	5.0	-	-	24.0	2.0	-	24.0	-	-
10.0	8.0	6.0	-	37.0	24.0	2.0	35.2	23.1	30.1	24.4
10.0	8.0	7.0	-	65.0	25.0	2.0	61.7	25.1	52.1	46.0
10.0	8.0	8.0	-	42.0	25.0	2.0	39.9	24.6	33.8	28.0
10.0	8.0	9.0	-	110.0	26.0	2.0	105.0	27.5	87.7	80.9
10.0	8.0	10.0	809.0	131.0	26.0	2.0	901.6	51.1	667.8	642.4
10.0	8.0	11.0	820.0	135.0	27.0	3.0	949.8	53.3	695.8	669.2
10.0	8.0	12.0	114.0	378.0	26.0	3.0	496.7	40.9	388.2	373.3
10.0	8.0	13.0	791.0	125.0	26.0	3.0	815.5	47.7	614.1	591.0
10.0	8.0	14.0	743.0	110.0	25.0	3.0	646.2	43.4	493.4	474.9
10.0	8.0	15.0	645.0	89.0	25.0	2.0	423.5	38.7	320.5	307.7
10.0	8.0	16.0	432.0	55.0	24.0	2.0	176.7	29.4	125.3	117.7
10.0	8.0	17.0	-	-	22.0	2.0	-	22.0	-	-
10.0	8.0	18.0	-	-	22.0	2.0	-	22.0	-	-
10.0	8.0	19.0	-	-	21.0	2.0	-	21.0	-	-
10.0	8.0	20.0	-	-	20.0	2.0	-	20.0	-	-
10.0	8.0	21.0	-	-	19.0	2.0	-	19.0	-	-
10.0	8.0	22.0	-	-	18.0	2.0	-	18.0	-	-
10.0	8.0	23.0	-	-	18.0	2.0	-	18.0	-	-
10.0	9.0	-	-	-	18.0	1.0	-	18.0	-	-
10.0	9.0	1.0	-	-	17.0	1.0	-	17.0	-	-
10.0	9.0	2.0	-	-	17.0	1.0	-	17.0	-	-
10.0	9.0	3.0	-	-	17.0	1.0	-	17.0	-	-
10.0	9.0	4.0	-	-	17.0	1.0	-	17.0	-	-
10.0	9.0	5.0	-	-	17.0	1.0	-	17.0	-	-
10.0	9.0	6.0	-	47.0	18.0	2.0	45.5	17.2	39.9	34.0
10.0	9.0	7.0	4.0	121.0	19.0	2.0	119.3	20.8	102.7	95.6
10.0	9.0	8.0	34.0	211.0	21.0	2.0	235.5	26.8	197.0	187.6
10.0	9.0	9.0	35.0	272.0	22.0	1.0	305.2	32.2	249.1	238.3
10.0	9.0	10.0	898.0	104.0	23.0	1.0	946.3	54.5	688.3	662.0
10.0	9.0	11.0	912.0	104.0	24.0	1.0	995.6	60.0	702.6	675.7
10.0	9.0	12.0	264.0	370.0	25.0	1.0	650.1	50.8	482.7	464.6
10.0	9.0	13.0	74.0	315.0	26.0	1.0	385.0	41.4	300.1	288.0
10.0	9.0	14.0	244.0	247.0	26.0	1.0	434.8	41.5	337.1	323.8
10.0	9.0	15.0	683.0	82.0	25.0	1.0	433.2	40.7	323.8	311.0
10.0	9.0	16.0	439.0	53.0	24.0	1.0	175.5	30.9	123.0	115.5
10.0	9.0	17.0	-	-	22.0	1.0	-	22.0	-	-
10.0	9.0	18.0	-	-	22.0	1.0	-	22.0	-	-
10.0	9.0	19.0	-	-	21.0	1.0	-	21.0	-	-
10.0	9.0	20.0	-	-	21.0	1.0	-	21.0	-	-
10.0	9.0	21.0	-	-	20.0	1.0	-	20.0	-	-
10.0	9.0	22.0	-	-	20.0	1.0	-	20.0	-	-
10.0	9.0	23.0	-	-	19.0	1.0	-	19.0	-	-
10.0	10.0	-	-	-	19.0	1.0	-	19.0	-	-
10.0	10.0	1.0	-	-	19.0	1.0	-	19.0	-	-
10.0	10.0	2.0	-	-	19.0	1.0	-	19.0	-	-
10.0	10.0	3.0	-	-	19.0	1.0	-	19.0	-	-
10.0	10.0	4.0	-	-	18.0	1.0	-	18.0	-	-
10.0	10.0	5.0	-	-	18.0	1.0	-	18.0	-	-
10.0	10.0	6.0	393.0	41.0	20.0	1.0	131.3	22.3	91.3	84.4
10.0	10.0	7.0	673.0	71.0	22.0	1.0	386.1	34.3	293.5	281.6
10.0	10.0	8.0	797.0	87.0	23.0	1.0	625.7	44.8	472.0	454.2

10.0	10.0	9.0	855.0	99.0	24.0	1.0	811.3	52.9	593.5	571.1
10.0	10.0	10.0	888.0	104.0	25.0	1.0	935.9	58.5	665.6	640.3
10.0	10.0	11.0	899.0	106.0	25.0	-	983.7	67.2	666.4	641.0
10.0	10.0	12.0	863.0	119.0	26.0	-	940.0	67.0	637.1	613.0
10.0	10.0	13.0	829.0	115.0	26.0	-	833.0	63.4	575.3	553.7
10.0	10.0	14.0	763.0	106.0	26.0	-	650.5	56.8	462.0	444.7
10.0	10.0	15.0	644.0	88.0	26.0	-	419.0	47.6	302.6	290.4
10.0	10.0	16.0	404.0	55.0	25.0	-	167.6	35.0	115.8	108.3
10.0	10.0	17.0	-	-	24.0	-	-	24.0	-	-
10.0	10.0	18.0	-	-	23.0	-	-	23.0	-	-
10.0	10.0	19.0	-	-	23.0	1.0	-	23.0	-	-
10.0	10.0	20.0	-	-	22.0	1.0	-	22.0	-	-
10.0	10.0	21.0	-	-	22.0	1.0	-	22.0	-	-
10.0	10.0	22.0	-	-	22.0	1.0	-	22.0	-	-
10.0	10.0	23.0	-	-	21.0	2.0	-	21.0	-	-
10.0	11.0	-	-	-	21.0	2.0	-	21.0	-	-
10.0	11.0	1.0	-	-	21.0	2.0	-	21.0	-	-
10.0	11.0	2.0	-	-	21.0	2.0	-	21.0	-	-
10.0	11.0	3.0	-	-	20.0	2.0	-	20.0	-	-
10.0	11.0	4.0	-	-	20.0	2.0	-	20.0	-	-
10.0	11.0	5.0	-	-	20.0	2.0	-	20.0	-	-
10.0	11.0	6.0	353.0	43.0	21.0	2.0	125.0	22.8	87.8	81.0
10.0	11.0	7.0	643.0	75.0	22.0	3.0	376.8	31.0	291.5	279.6
10.0	11.0	8.0	773.0	91.0	23.0	3.0	613.8	39.1	476.7	458.8
10.0	11.0	9.0	839.0	100.0	24.0	3.0	803.4	45.8	610.3	587.3
10.0	11.0	10.0	874.0	104.0	25.0	2.0	921.7	53.4	674.4	648.7
10.0	11.0	11.0	889.0	103.0	26.0	2.0	969.3	56.1	699.2	672.5
10.0	11.0	12.0	886.0	99.0	27.0	2.0	937.7	56.3	675.2	649.5
10.0	11.0	13.0	160.0	326.0	27.0	2.0	478.8	43.5	369.1	354.8
10.0	11.0	14.0	129.0	249.0	27.0	2.0	350.0	37.9	276.9	265.4
10.0	11.0	15.0	709.0	68.0	26.0	2.0	426.6	38.6	321.3	308.5
10.0	11.0	16.0	465.0	45.0	25.0	2.0	172.0	30.3	119.0	111.5
10.0	11.0	17.0	-	-	24.0	2.0	-	24.0	-	-
10.0	11.0	18.0	-	-	23.0	2.0	-	23.0	-	-
10.0	11.0	19.0	-	-	23.0	2.0	-	23.0	-	-
10.0	11.0	20.0	-	-	22.0	2.0	-	22.0	-	-
10.0	11.0	21.0	-	-	22.0	2.0	-	22.0	-	-
10.0	11.0	22.0	-	-	21.0	2.0	-	21.0	-	-
10.0	11.0	23.0	-	-	21.0	3.0	-	21.0	-	-
10.0	12.0	-	-	-	21.0	3.0	-	21.0	-	-
10.0	12.0	1.0	-	-	21.0	3.0	-	21.0	-	-
10.0	12.0	2.0	-	-	20.0	3.0	-	20.0	-	-
10.0	12.0	3.0	-	-	20.0	2.0	-	20.0	-	-
10.0	12.0	4.0	-	-	20.0	2.0	-	20.0	-	-
10.0	12.0	5.0	-	-	20.0	2.0	-	20.0	-	-
10.0	12.0	6.0	381.0	39.0	21.0	2.0	126.8	22.8	87.9	81.1
10.0	12.0	7.0	-	56.0	22.0	3.0	53.2	22.1	45.5	39.6
10.0	12.0	8.0	-	59.0	23.0	3.0	56.0	23.0	47.8	41.8
10.0	12.0	9.0	-	73.0	24.0	3.0	69.4	24.4	58.8	52.6
10.0	12.0	10.0	-	85.0	25.0	2.0	80.9	25.9	68.1	61.7
10.0	12.0	11.0	875.0	107.0	25.0	2.0	958.7	51.7	708.3	681.2
10.0	12.0	12.0	847.0	116.0	26.0	2.0	918.4	54.8	666.8	641.4
10.0	12.0	13.0	-	125.0	26.0	2.0	119.7	31.9	97.8	90.8
10.0	12.0	14.0	754.0	99.0	26.0	2.0	633.3	43.6	482.4	464.3
10.0	12.0	15.0	68.0	151.0	25.0	2.0	185.7	31.7	150.4	142.1
10.0	12.0	16.0	387.0	50.0	24.0	1.0	156.6	28.6	111.0	103.6
10.0	12.0	17.0	-	-	24.0	1.0	-	24.0	-	-
10.0	12.0	18.0	-	-	24.0	2.0	-	24.0	-	-
10.0	12.0	19.0	-	-	23.0	2.0	-	23.0	-	-
10.0	12.0	20.0	-	-	23.0	2.0	-	23.0	-	-
10.0	12.0	21.0	-	-	23.0	2.0	-	23.0	-	-
10.0	12.0	22.0	-	-	23.0	2.0	-	23.0	-	-
10.0	12.0	23.0	-	-	23.0	2.0	-	23.0	-	-
10.0	13.0	-	-	-	22.0	3.0	-	22.0	-	-
10.0	13.0	1.0	-	-	22.0	3.0	-	22.0	-	-
10.0	13.0	2.0	-	-	22.0	2.0	-	22.0	-	-
10.0	13.0	3.0	-	-	22.0	2.0	-	22.0	-	-
10.0	13.0	4.0	-	-	22.0	2.0	-	22.0	-	-
10.0	13.0	5.0	-	-	22.0	2.0	-	22.0	-	-
10.0	13.0	6.0	300.0	43.0	22.0	3.0	113.1	23.3	80.3	73.6
10.0	13.0	7.0	-	62.0	24.0	3.0	58.9	24.3	49.9	43.9
10.0	13.0	8.0	7.0	175.0	25.0	3.0	175.0	28.3	145.5	137.4
10.0	13.0	9.0	27.0	256.0	26.0	3.0	273.6	32.4	223.0	213.0
10.0	13.0	10.0	831.0	120.0	27.0	3.0	903.8	50.2	672.7	647.1
10.0	13.0	11.0	844.0	121.0	27.0	3.0	942.8	53.1	691.3	664.8
10.0	13.0	12.0	835.0	120.0	28.0	2.0	916.6	56.6	659.0	634.0
10.0	13.0	13.0	805.0	114.0	28.0	2.0	806.4	53.5	588.3	566.2
10.0	13.0	14.0	58.0	230.0	28.0	2.0	273.8	38.0	216.7	206.8
10.0	13.0	15.0	628.0	83.0	27.0	1.0	401.6	40.7	299.7	287.6
10.0	13.0	16.0	379.0	50.0	26.0	1.0	153.8	32.0	107.2	100.0
10.0	13.0	17.0	-	-	25.0	1.0	-	25.0	-	-

10.0	13.0	18.0	-	-	25.0	1.0	-	25.0	-	-
10.0	13.0	19.0	-	-	24.0	2.0	-	24.0	-	-
10.0	13.0	20.0	-	-	24.0	3.0	-	24.0	-	-
10.0	13.0	21.0	-	-	23.0	3.0	-	23.0	-	-
10.0	13.0	22.0	-	-	23.0	2.0	-	23.0	-	-
10.0	13.0	23.0	-	-	23.0	2.0	-	23.0	-	-
10.0	14.0	-	-	-	22.0	2.0	-	22.0	-	-
10.0	14.0	1.0	-	-	22.0	2.0	-	22.0	-	-
10.0	14.0	2.0	-	-	22.0	2.0	-	22.0	-	-
10.0	14.0	3.0	-	-	22.0	2.0	-	22.0	-	-
10.0	14.0	4.0	-	-	21.0	2.0	-	21.0	-	-
10.0	14.0	5.0	-	-	21.0	2.0	-	21.0	-	-
10.0	14.0	6.0	306.0	42.0	22.0	2.0	113.3	23.5	80.1	73.4
10.0	14.0	7.0	613.0	76.0	23.0	3.0	363.7	31.6	280.7	269.0
10.0	14.0	8.0	751.0	93.0	25.0	3.0	599.7	40.7	461.9	444.6
10.0	14.0	9.0	820.0	105.0	26.0	3.0	790.5	47.4	595.5	573.1
10.0	14.0	10.0	852.0	113.0	26.0	3.0	907.4	50.9	672.8	647.2
10.0	14.0	11.0	864.0	116.0	27.0	2.0	954.8	56.6	686.9	660.6
10.0	14.0	12.0	848.0	119.0	28.0	2.0	925.8	56.9	664.5	639.2
10.0	14.0	13.0	829.0	108.0	28.0	2.0	817.9	53.9	595.5	573.1
10.0	14.0	14.0	780.0	94.0	28.0	1.0	642.0	52.4	466.4	448.9
10.0	14.0	15.0	676.0	75.0	27.0	1.0	414.4	43.3	304.6	292.3
10.0	14.0	16.0	433.0	46.0	26.0	1.0	162.2	32.4	111.2	103.9
10.0	14.0	17.0	-	-	24.0	1.0	-	24.0	-	-
10.0	14.0	18.0	-	-	24.0	1.0	-	24.0	-	-
10.0	14.0	19.0	-	-	23.0	1.0	-	23.0	-	-
10.0	14.0	20.0	-	-	23.0	2.0	-	23.0	-	-
10.0	14.0	21.0	-	-	22.0	2.0	-	22.0	-	-
10.0	14.0	22.0	-	-	22.0	2.0	-	22.0	-	-
10.0	14.0	23.0	-	-	22.0	2.0	-	22.0	-	-
10.0	15.0	-	-	-	21.0	2.0	-	21.0	-	-
10.0	15.0	1.0	-	-	21.0	2.0	-	21.0	-	-
10.0	15.0	2.0	-	-	21.0	2.0	-	21.0	-	-
10.0	15.0	3.0	-	-	21.0	2.0	-	21.0	-	-
10.0	15.0	4.0	-	-	21.0	2.0	-	21.0	-	-
10.0	15.0	5.0	-	-	21.0	2.0	-	21.0	-	-
10.0	15.0	6.0	343.0	41.0	22.0	2.0	120.8	23.7	84.5	77.7
10.0	15.0	7.0	652.0	74.0	23.0	2.0	378.5	33.1	289.5	277.6
10.0	15.0	8.0	787.0	91.0	24.0	2.0	620.2	42.3	473.6	455.8
10.0	15.0	9.0	863.0	97.0	25.0	2.0	810.3	49.6	603.0	580.3
10.0	15.0	10.0	896.0	102.0	26.0	2.0	934.0	54.7	678.4	652.5
10.0	15.0	11.0	481.0	289.0	26.0	1.0	785.5	55.5	568.3	547.0
10.0	15.0	12.0	890.0	107.0	26.0	1.0	942.7	59.5	666.7	641.4
10.0	15.0	13.0	862.0	101.0	26.0	1.0	830.2	56.9	594.4	572.0
10.0	15.0	14.0	805.0	91.0	26.0	1.0	653.8	51.0	478.6	460.6
10.0	15.0	15.0	695.0	74.0	25.0	1.0	420.9	41.6	311.6	299.1
10.0	15.0	16.0	443.0	45.0	24.0	1.0	162.8	30.4	112.1	104.8
10.0	15.0	17.0	-	-	22.0	1.0	-	22.0	-	-
10.0	15.0	18.0	-	-	22.0	-	-	22.0	-	-
10.0	15.0	19.0	-	-	22.0	-	-	22.0	-	-
10.0	15.0	20.0	-	-	22.0	-	-	22.0	-	-
10.0	15.0	21.0	-	-	22.0	-	-	22.0	-	-
10.0	15.0	22.0	-	-	21.0	-	-	21.0	-	-
10.0	15.0	23.0	-	-	21.0	-	-	21.0	-	-
10.0	16.0	-	-	-	21.0	-	-	21.0	-	-
10.0	16.0	1.0	-	-	21.0	-	-	21.0	-	-
10.0	16.0	2.0	-	-	21.0	-	-	21.0	-	-
10.0	16.0	3.0	-	-	20.0	-	-	20.0	-	-
10.0	16.0	4.0	-	-	20.0	1.0	-	20.0	-	-
10.0	16.0	5.0	-	-	20.0	1.0	-	20.0	-	-
10.0	16.0	6.0	384.0	38.0	21.0	1.0	126.3	23.1	87.2	80.3
10.0	16.0	7.0	682.0	69.0	23.0	1.0	386.0	35.3	291.5	279.6
10.0	16.0	8.0	809.0	85.0	24.0	1.0	627.0	45.8	470.1	452.4
10.0	16.0	9.0	870.0	95.0	25.0	1.0	812.6	53.9	590.9	568.7
10.0	16.0	10.0	442.0	292.0	26.0	1.0	732.5	53.3	536.3	516.2
10.0	16.0	11.0	447.0	305.0	27.0	1.0	769.6	55.0	558.5	537.5
10.0	16.0	12.0	885.0	109.0	27.0	-	938.4	66.6	637.5	613.4
10.0	16.0	13.0	855.0	104.0	27.0	-	831.1	64.2	570.9	549.5
10.0	16.0	14.0	379.0	205.0	26.0	-	478.1	51.0	351.6	337.8
10.0	16.0	15.0	446.0	116.0	26.0	-	343.4	43.4	254.7	243.8
10.0	16.0	16.0	280.0	52.0	25.0	-	128.7	32.6	91.1	84.2
10.0	16.0	17.0	-	-	23.0	1.0	-	23.0	-	-
10.0	16.0	18.0	-	-	23.0	1.0	-	23.0	-	-
10.0	16.0	19.0	-	-	22.0	1.0	-	22.0	-	-
10.0	16.0	20.0	-	-	22.0	1.0	-	22.0	-	-
10.0	16.0	21.0	-	-	22.0	1.0	-	22.0	-	-
10.0	16.0	22.0	-	-	21.0	1.0	-	21.0	-	-
10.0	16.0	23.0	-	-	21.0	1.0	-	21.0	-	-
10.0	17.0	-	-	-	21.0	1.0	-	21.0	-	-
10.0	17.0	1.0	-	-	21.0	1.0	-	21.0	-	-
10.0	17.0	2.0	-	-	21.0	1.0	-	21.0	-	-

10.0	17.0	3.0	-	-	21.0	1.0	-	21.0	-	-
10.0	17.0	4.0	-	-	21.0	1.0	-	21.0	-	-
10.0	17.0	5.0	-	-	21.0	1.0	-	21.0	-	-
10.0	17.0	6.0	337.0	36.0	22.0	1.0	114.5	23.7	79.4	72.7
10.0	17.0	7.0	633.0	72.0	23.0	1.0	367.1	34.6	278.7	267.1
10.0	17.0	8.0	476.0	171.0	24.0	1.0	501.8	41.6	386.1	371.3
10.0	17.0	9.0	99.0	297.0	25.0	1.0	385.8	39.5	303.4	291.1
10.0	17.0	10.0	187.0	356.0	26.0	1.0	549.8	45.3	420.2	404.2
10.0	17.0	11.0	528.0	275.0	26.0	1.0	813.3	54.5	591.8	569.6
10.0	17.0	12.0	528.0	262.0	26.0	1.0	782.9	54.9	568.4	547.1
10.0	17.0	13.0	234.0	306.0	25.0	2.0	517.6	42.0	401.8	386.5
10.0	17.0	14.0	95.0	232.0	25.0	2.0	301.4	34.6	242.4	231.8
10.0	17.0	15.0	-	68.0	24.0	1.0	64.6	26.0	54.3	48.2
10.0	17.0	16.0	-	25.0	23.0	1.0	23.7	21.8	20.3	14.8
10.0	17.0	17.0	-	-	23.0	1.0	-	23.0	-	-
10.0	17.0	18.0	-	-	22.0	1.0	-	22.0	-	-
10.0	17.0	19.0	-	-	21.0	2.0	-	21.0	-	-
10.0	17.0	20.0	-	-	20.0	2.0	-	20.0	-	-
10.0	17.0	21.0	-	-	19.0	2.0	-	19.0	-	-
10.0	17.0	22.0	-	-	18.0	2.0	-	18.0	-	-
10.0	17.0	23.0	-	-	18.0	2.0	-	18.0	-	-
10.0	18.0	-	-	-	17.0	2.0	-	17.0	-	-
10.0	18.0	1.0	-	-	17.0	2.0	-	17.0	-	-
10.0	18.0	2.0	-	-	16.0	2.0	-	16.0	-	-
10.0	18.0	3.0	-	-	16.0	2.0	-	16.0	-	-
10.0	18.0	4.0	-	-	15.0	2.0	-	15.0	-	-
10.0	18.0	5.0	-	-	15.0	2.0	-	15.0	-	-
10.0	18.0	6.0	430.0	35.0	15.0	2.0	132.6	16.9	92.6	85.7
10.0	18.0	7.0	732.0	63.0	17.0	2.0	399.6	27.8	312.1	299.6
10.0	18.0	8.0	858.0	78.0	19.0	3.0	649.1	36.2	510.7	491.6
10.0	18.0	9.0	921.0	86.0	20.0	3.0	840.9	43.0	647.8	623.2
10.0	18.0	10.0	952.0	91.0	22.0	3.0	967.7	48.7	725.7	697.8
10.0	18.0	11.0	961.0	93.0	23.0	3.0	1,013.9	51.2	750.8	721.7
10.0	18.0	12.0	955.0	90.0	23.0	3.0	977.3	50.5	726.4	698.4
10.0	18.0	13.0	927.0	86.0	24.0	3.0	860.9	48.4	645.2	620.8
10.0	18.0	14.0	870.0	77.0	23.0	3.0	672.6	42.2	514.7	495.4
10.0	18.0	15.0	753.0	65.0	22.0	3.0	432.8	34.4	330.8	317.7
10.0	18.0	16.0	487.0	40.0	21.0	2.0	165.5	26.1	114.3	106.9
10.0	18.0	17.0	-	-	19.0	2.0	-	19.0	-	-
10.0	18.0	18.0	-	-	18.0	2.0	-	18.0	-	-
10.0	18.0	19.0	-	-	17.0	2.0	-	17.0	-	-
10.0	18.0	20.0	-	-	17.0	2.0	-	17.0	-	-
10.0	18.0	21.0	-	-	16.0	2.0	-	16.0	-	-
10.0	18.0	22.0	-	-	16.0	2.0	-	16.0	-	-
10.0	18.0	23.0	-	-	15.0	2.0	-	15.0	-	-
10.0	19.0	-	-	-	15.0	2.0	-	15.0	-	-
10.0	19.0	1.0	-	-	14.0	2.0	-	14.0	-	-
10.0	19.0	2.0	-	-	14.0	2.0	-	14.0	-	-
10.0	19.0	3.0	-	-	14.0	2.0	-	14.0	-	-
10.0	19.0	4.0	-	-	13.0	2.0	-	13.0	-	-
10.0	19.0	5.0	-	-	13.0	2.0	-	13.0	-	-
10.0	19.0	6.0	420.0	34.0	14.0	2.0	129.4	15.8	90.8	83.9
10.0	19.0	7.0	708.0	66.0	16.0	2.0	391.7	26.6	307.9	295.5
10.0	19.0	8.0	824.0	85.0	18.0	2.0	634.0	36.9	497.1	478.5
10.0	19.0	9.0	888.0	95.0	19.0	2.0	823.1	44.3	629.8	606.0
10.0	19.0	10.0	913.0	103.0	20.0	2.0	944.1	49.3	705.7	678.7
10.0	19.0	11.0	918.0	108.0	21.0	1.0	988.3	57.0	708.9	681.7
10.0	19.0	12.0	910.0	106.0	22.0	1.0	952.1	57.1	682.5	656.4
10.0	19.0	13.0	878.0	101.0	22.0	1.0	835.5	53.4	609.5	586.5
10.0	19.0	14.0	816.0	91.0	22.0	1.0	653.8	47.2	487.7	469.4
10.0	19.0	15.0	698.0	74.0	21.0	1.0	416.4	37.6	313.7	301.1
10.0	19.0	16.0	432.0	42.0	20.0	1.0	153.7	26.0	107.1	99.9
10.0	19.0	17.0	-	-	19.0	1.0	-	19.0	-	-
10.0	19.0	18.0	-	-	18.0	1.0	-	18.0	-	-
10.0	19.0	19.0	-	-	17.0	2.0	-	17.0	-	-
10.0	19.0	20.0	-	-	17.0	2.0	-	17.0	-	-
10.0	19.0	21.0	-	-	17.0	2.0	-	17.0	-	-
10.0	19.0	22.0	-	-	16.0	2.0	-	16.0	-	-
10.0	19.0	23.0	-	-	16.0	2.0	-	16.0	-	-
10.0	20.0	-	-	-	15.0	2.0	-	15.0	-	-
10.0	20.0	1.0	-	-	15.0	2.0	-	15.0	-	-
10.0	20.0	2.0	-	-	15.0	2.0	-	15.0	-	-
10.0	20.0	3.0	-	-	14.0	2.0	-	14.0	-	-
10.0	20.0	4.0	-	-	14.0	2.0	-	14.0	-	-
10.0	20.0	5.0	-	-	14.0	2.0	-	14.0	-	-
10.0	20.0	6.0	157.0	38.0	15.0	2.0	78.7	15.2	60.9	54.6
10.0	20.0	7.0	690.0	67.0	17.0	2.0	385.3	27.1	302.2	289.9
10.0	20.0	8.0	818.0	84.0	19.0	2.0	628.0	37.7	490.5	472.1
10.0	20.0	9.0	883.0	95.0	20.0	1.0	817.7	49.4	609.2	586.2
10.0	20.0	10.0	914.0	101.0	21.0	1.0	941.1	55.0	682.2	656.2
10.0	20.0	11.0	925.0	102.0	22.0	1.0	986.3	57.9	704.2	677.2

10.0	20.0	12.0	918.0	100.0	22.0	1.0	950.7	57.1	681.6	655.6
10.0	20.0	13.0	888.0	95.0	23.0	-	835.0	60.8	584.7	562.7
10.0	20.0	14.0	828.0	85.0	23.0	-	653.3	54.2	469.4	451.7
10.0	20.0	15.0	708.0	70.0	22.0	-	415.2	43.7	302.8	290.6
10.0	20.0	16.0	436.0	40.0	21.0	-	151.8	30.4	103.1	95.9
10.0	20.0	17.0	-	-	20.0	-	-	20.0	-	-
10.0	20.0	18.0	-	-	20.0	-	-	20.0	-	-
10.0	20.0	19.0	-	-	19.0	-	-	19.0	-	-
10.0	20.0	20.0	-	-	19.0	-	-	19.0	-	-
10.0	20.0	21.0	-	-	18.0	-	-	18.0	-	-
10.0	20.0	22.0	-	-	18.0	-	-	18.0	-	-
10.0	20.0	23.0	-	-	17.0	-	-	17.0	-	-
10.0	21.0	-	-	-	16.0	-	-	16.0	-	-
10.0	21.0	1.0	-	-	16.0	1.0	-	16.0	-	-
10.0	21.0	2.0	-	-	15.0	1.0	-	15.0	-	-
10.0	21.0	3.0	-	-	15.0	1.0	-	15.0	-	-
10.0	21.0	4.0	-	-	15.0	1.0	-	15.0	-	-
10.0	21.0	5.0	-	-	15.0	1.0	-	15.0	-	-
10.0	21.0	6.0	52.0	38.0	16.0	1.0	51.5	15.1	42.7	36.8
10.0	21.0	7.0	677.0	69.0	18.0	1.0	381.2	29.6	295.5	283.5
10.0	21.0	8.0	810.0	86.0	20.0	1.0	624.1	41.8	477.2	459.3
10.0	21.0	9.0	879.0	96.0	21.0	1.0	814.3	50.2	603.9	581.2
10.0	21.0	10.0	917.0	100.0	22.0	1.0	941.0	55.9	678.7	652.9
10.0	21.0	11.0	934.0	100.0	23.0	-	990.5	65.6	676.9	651.1
10.0	21.0	12.0	933.0	96.0	23.0	-	957.7	64.9	656.9	631.9
10.0	21.0	13.0	908.0	89.0	24.0	-	842.5	62.0	585.9	563.8
10.0	21.0	14.0	853.0	80.0	24.0	-	662.4	55.4	472.4	454.6
10.0	21.0	15.0	738.0	65.0	23.0	-	421.1	44.9	304.5	292.2
10.0	21.0	16.0	467.0	37.0	22.0	-	155.1	31.6	103.6	96.4
10.0	21.0	17.0	-	-	21.0	1.0	-	21.0	-	-
10.0	21.0	18.0	-	-	20.0	1.0	-	20.0	-	-
10.0	21.0	19.0	-	-	19.0	1.0	-	19.0	-	-
10.0	21.0	20.0	-	-	18.0	1.0	-	18.0	-	-
10.0	21.0	21.0	-	-	18.0	1.0	-	18.0	-	-
10.0	21.0	22.0	-	-	17.0	1.0	-	17.0	-	-
10.0	21.0	23.0	-	-	17.0	1.0	-	17.0	-	-
10.0	22.0	-	-	-	17.0	1.0	-	17.0	-	-
10.0	22.0	1.0	-	-	17.0	1.0	-	17.0	-	-
10.0	22.0	2.0	-	-	16.0	1.0	-	16.0	-	-
10.0	22.0	3.0	-	-	16.0	1.0	-	16.0	-	-
10.0	22.0	4.0	-	-	16.0	2.0	-	16.0	-	-
10.0	22.0	5.0	-	-	16.0	2.0	-	16.0	-	-
10.0	22.0	6.0	328.0	32.0	17.0	2.0	108.6	18.2	76.7	70.1
10.0	22.0	7.0	409.0	99.0	19.0	2.0	293.2	26.5	233.9	223.6
10.0	22.0	8.0	803.0	82.0	21.0	2.0	614.1	38.8	476.6	458.7
10.0	22.0	9.0	860.0	95.0	23.0	2.0	801.6	47.4	603.2	580.5
10.0	22.0	10.0	324.0	322.0	24.0	2.0	646.1	44.8	494.9	476.3
10.0	22.0	11.0	496.0	272.0	25.0	2.0	775.5	48.8	581.9	560.1
10.0	22.0	12.0	588.0	231.0	25.0	2.0	798.4	49.9	595.2	572.8
10.0	22.0	13.0	53.0	275.0	25.0	2.0	326.2	36.5	260.5	249.5
10.0	22.0	14.0	550.0	151.0	25.0	2.0	536.5	40.7	414.8	399.0
10.0	22.0	15.0	134.0	135.0	24.0	2.0	204.7	30.8	164.7	156.2
10.0	22.0	16.0	38.0	45.0	23.0	2.0	54.5	23.6	44.4	38.4
10.0	22.0	17.0	-	-	21.0	2.0	-	21.0	-	-
10.0	22.0	18.0	-	-	21.0	2.0	-	21.0	-	-
10.0	22.0	19.0	-	-	21.0	2.0	-	21.0	-	-
10.0	22.0	20.0	-	-	21.0	2.0	-	21.0	-	-
10.0	22.0	21.0	-	-	21.0	2.0	-	21.0	-	-
10.0	22.0	22.0	-	-	21.0	2.0	-	21.0	-	-
10.0	22.0	23.0	-	-	20.0	3.0	-	20.0	-	-
10.0	23.0	-	-	-	20.0	3.0	-	20.0	-	-
10.0	23.0	1.0	-	-	19.0	3.0	-	19.0	-	-
10.0	23.0	2.0	-	-	19.0	3.0	-	19.0	-	-
10.0	23.0	3.0	-	-	19.0	3.0	-	19.0	-	-
10.0	23.0	4.0	-	-	18.0	3.0	-	18.0	-	-
10.0	23.0	5.0	-	-	18.0	3.0	-	18.0	-	-
10.0	23.0	6.0	-	33.0	18.0	3.0	32.0	16.9	28.1	22.4
10.0	23.0	7.0	67.0	122.0	19.0	3.0	153.8	21.5	130.1	122.3
10.0	23.0	8.0	272.0	202.0	20.0	3.0	395.1	29.6	323.7	310.8
10.0	23.0	9.0	25.0	239.0	21.0	4.0	255.5	27.0	213.8	204.0
10.0	23.0	10.0	-	143.0	21.0	4.0	137.5	23.6	117.0	109.5
10.0	23.0	11.0	-	68.0	22.0	4.0	64.7	22.4	55.3	49.2
10.0	23.0	12.0	-	33.0	22.0	4.0	31.4	21.3	27.0	21.4
10.0	23.0	13.0	-	92.0	21.0	4.0	87.5	21.6	75.1	68.6
10.0	23.0	14.0	-	21.0	20.0	4.0	19.9	19.1	17.3	11.9
10.0	23.0	15.0	-	37.0	20.0	4.0	35.1	19.2	30.4	24.8
10.0	23.0	16.0	-	3.0	19.0	4.0	2.8	17.4	2.5	-
10.0	23.0	17.0	-	-	19.0	4.0	-	19.0	-	-
10.0	23.0	18.0	-	-	19.0	4.0	-	19.0	-	-
10.0	23.0	19.0	-	-	19.0	4.0	-	19.0	-	-
10.0	23.0	20.0	-	-	19.0	4.0	-	19.0	-	-

10.0	23.0	21.0	-	-	19.0	4.0	-	19.0	-	-
10.0	23.0	22.0	-	-	20.0	4.0	-	20.0	-	-
10.0	23.0	23.0	-	-	20.0	4.0	-	20.0	-	-
10.0	24.0	-	-	-	20.0	4.0	-	20.0	-	-
10.0	24.0	1.0	-	-	20.0	4.0	-	20.0	-	-
10.0	24.0	2.0	-	-	20.0	4.0	-	20.0	-	-
10.0	24.0	3.0	-	-	20.0	3.0	-	20.0	-	-
10.0	24.0	4.0	-	-	20.0	3.0	-	20.0	-	-
10.0	24.0	5.0	-	-	20.0	2.0	-	20.0	-	-
10.0	24.0	6.0	98.0	43.0	20.0	2.0	70.4	20.0	55.5	49.4
10.0	24.0	7.0	466.0	97.0	20.0	2.0	315.2	28.0	248.8	238.1
10.0	24.0	8.0	39.0	195.0	21.0	2.0	224.4	27.3	187.1	178.0
10.0	24.0	9.0	2.0	176.0	21.0	3.0	172.5	24.8	146.0	137.8
10.0	24.0	10.0	11.0	231.0	21.0	3.0	236.1	26.3	198.2	188.8
10.0	24.0	11.0	275.0	348.0	22.0	3.0	641.1	38.4	507.5	488.5
10.0	24.0	12.0	33.0	290.0	22.0	3.0	328.4	31.5	269.1	257.8
10.0	24.0	13.0	149.0	295.0	22.0	3.0	435.6	33.3	353.3	339.6
10.0	24.0	14.0	11.0	175.0	21.0	3.0	178.7	25.7	150.4	142.2
10.0	24.0	15.0	695.0	65.0	21.0	2.0	397.0	31.9	305.9	293.6
10.0	24.0	16.0	414.0	35.0	20.0	2.0	138.8	24.1	96.1	89.1
10.0	24.0	17.0	-	-	18.0	2.0	-	18.0	-	-
10.0	24.0	18.0	-	-	17.0	2.0	-	17.0	-	-
10.0	24.0	19.0	-	-	16.0	2.0	-	16.0	-	-
10.0	24.0	20.0	-	-	16.0	1.0	-	16.0	-	-
10.0	24.0	21.0	-	-	15.0	1.0	-	15.0	-	-
10.0	24.0	22.0	-	-	15.0	1.0	-	15.0	-	-
10.0	24.0	23.0	-	-	15.0	1.0	-	15.0	-	-
10.0	25.0	-	-	-	14.0	1.0	-	14.0	-	-
10.0	25.0	1.0	-	-	14.0	1.0	-	14.0	-	-
10.0	25.0	2.0	-	-	14.0	1.0	-	14.0	-	-
10.0	25.0	3.0	-	-	14.0	1.0	-	14.0	-	-
10.0	25.0	4.0	-	-	14.0	2.0	-	14.0	-	-
10.0	25.0	5.0	-	-	14.0	2.0	-	14.0	-	-
10.0	25.0	6.0	-	24.0	14.0	2.0	22.8	12.3	20.4	14.9
10.0	25.0	7.0	113.0	121.0	16.0	2.0	177.6	19.4	150.5	142.3
10.0	25.0	8.0	849.0	77.0	18.0	2.0	634.3	36.0	498.9	480.2
10.0	25.0	9.0	908.0	88.0	19.0	2.0	822.2	44.3	628.8	605.0
10.0	25.0	10.0	932.0	95.0	20.0	2.0	941.5	49.3	703.9	676.9
10.0	25.0	11.0	936.0	99.0	20.0	2.0	983.2	50.9	729.3	701.2
10.0	25.0	12.0	925.0	97.0	21.0	2.0	943.3	50.9	699.3	672.5
10.0	25.0	13.0	889.0	93.0	21.0	2.0	823.5	47.4	619.9	596.5
10.0	25.0	14.0	823.0	84.0	21.0	1.0	639.9	45.8	480.1	462.1
10.0	25.0	15.0	693.0	67.0	20.0	1.0	398.1	35.9	300.9	288.7
10.0	25.0	16.0	398.0	36.0	19.0	1.0	135.6	24.2	94.1	87.2
10.0	25.0	17.0	-	-	18.0	1.0	-	18.0	-	-
10.0	25.0	18.0	-	-	18.0	1.0	-	18.0	-	-
10.0	25.0	19.0	-	-	17.0	1.0	-	17.0	-	-
10.0	25.0	20.0	-	-	17.0	1.0	-	17.0	-	-
10.0	25.0	21.0	-	-	16.0	1.0	-	16.0	-	-
10.0	25.0	22.0	-	-	15.0	1.0	-	15.0	-	-
10.0	25.0	23.0	-	-	15.0	1.0	-	15.0	-	-
10.0	26.0	-	-	-	14.0	1.0	-	14.0	-	-
10.0	26.0	1.0	-	-	14.0	1.0	-	14.0	-	-
10.0	26.0	2.0	-	-	13.0	2.0	-	13.0	-	-
10.0	26.0	3.0	-	-	13.0	1.0	-	13.0	-	-
10.0	26.0	4.0	-	-	13.0	1.0	-	13.0	-	-
10.0	26.0	5.0	-	-	13.0	1.0	-	13.0	-	-
10.0	26.0	6.0	56.0	33.0	14.0	1.0	47.4	12.9	39.2	33.4
10.0	26.0	7.0	313.0	106.0	16.0	1.0	252.4	23.0	205.7	196.1
10.0	26.0	8.0	849.0	75.0	18.0	1.0	630.8	39.4	487.6	469.3
10.0	26.0	9.0	914.0	83.0	19.0	1.0	819.7	48.5	613.0	589.9
10.0	26.0	10.0	943.0	89.0	20.0	1.0	942.6	54.2	686.4	660.2
10.0	26.0	11.0	950.0	91.0	21.0	1.0	985.1	57.0	706.9	679.8
10.0	26.0	12.0	937.0	92.0	22.0	1.0	946.3	56.9	678.8	652.9
10.0	26.0	13.0	907.0	87.0	22.0	1.0	829.2	53.2	605.1	582.3
10.0	26.0	14.0	845.0	78.0	22.0	1.0	645.7	46.9	481.3	463.3
10.0	26.0	15.0	721.0	63.0	21.0	1.0	403.9	37.1	302.8	290.6
10.0	26.0	16.0	421.0	34.0	20.0	1.0	138.1	25.4	94.5	87.5
10.0	26.0	17.0	-	-	20.0	1.0	-	20.0	-	-
10.0	26.0	18.0	-	-	19.0	1.0	-	19.0	-	-
10.0	26.0	19.0	-	-	19.0	1.0	-	19.0	-	-
10.0	26.0	20.0	-	-	18.0	1.0	-	18.0	-	-
10.0	26.0	21.0	-	-	18.0	1.0	-	18.0	-	-
10.0	26.0	22.0	-	-	17.0	1.0	-	17.0	-	-
10.0	26.0	23.0	-	-	17.0	1.0	-	17.0	-	-
10.0	27.0	-	-	-	17.0	1.0	-	17.0	-	-
10.0	27.0	1.0	-	-	17.0	1.0	-	17.0	-	-
10.0	27.0	2.0	-	-	17.0	2.0	-	17.0	-	-
10.0	27.0	3.0	-	-	17.0	2.0	-	17.0	-	-
10.0	27.0	4.0	-	-	16.0	3.0	-	16.0	-	-
10.0	27.0	5.0	-	-	15.0	3.0	-	15.0	-	-

10.0	27.0	6.0	269.0	33.0	15.0	3.0	99.1	15.8	72.5	66.0
10.0	27.0	7.0	423.0	91.0	15.0	4.0	288.9	20.9	235.7	225.3
10.0	27.0	8.0	856.0	77.0	15.0	4.0	636.2	30.1	514.7	495.4
10.0	27.0	9.0	942.0	83.0	15.0	4.0	840.0	36.0	669.5	644.0
10.0	27.0	10.0	980.0	87.0	16.0	3.0	971.2	43.1	749.8	720.7
10.0	27.0	11.0	993.0	88.0	16.0	3.0	1,019.2	44.7	780.8	750.3
10.0	27.0	12.0	982.0	88.0	17.0	3.0	979.8	44.8	749.8	720.7
10.0	27.0	13.0	954.0	82.0	17.0	3.0	859.1	41.6	666.1	640.8
10.0	27.0	14.0	896.0	73.0	16.0	3.0	667.8	35.3	527.7	507.9
10.0	27.0	15.0	433.0	96.0	15.0	3.0	307.3	24.0	248.6	237.9
10.0	27.0	16.0	457.0	33.0	14.0	3.0	144.4	17.2	101.7	94.5
10.0	27.0	17.0	-	-	13.0	3.0	-	13.0	-	-
10.0	27.0	18.0	-	-	12.0	3.0	-	12.0	-	-
10.0	27.0	19.0	-	-	11.0	3.0	-	11.0	-	-
10.0	27.0	20.0	-	-	10.0	3.0	-	10.0	-	-
10.0	27.0	21.0	-	-	10.0	3.0	-	10.0	-	-
10.0	27.0	22.0	-	-	9.0	3.0	-	9.0	-	-
10.0	27.0	23.0	-	-	9.0	3.0	-	9.0	-	-
10.0	28.0	-	-	-	9.0	3.0	-	9.0	-	-
10.0	28.0	1.0	-	-	8.0	3.0	-	8.0	-	-
10.0	28.0	2.0	-	-	8.0	3.0	-	8.0	-	-
10.0	28.0	3.0	-	-	8.0	3.0	-	8.0	-	-
10.0	28.0	4.0	-	-	7.0	3.0	-	7.0	-	-
10.0	28.0	5.0	-	-	7.0	3.0	-	7.0	-	-
10.0	28.0	6.0	37.0	31.0	8.0	3.0	41.5	7.0	35.9	30.1
10.0	28.0	7.0	469.0	83.0	9.0	3.0	299.4	15.5	249.3	238.5
10.0	28.0	8.0	870.0	75.0	10.0	3.0	641.4	26.8	526.9	507.2
10.0	28.0	9.0	571.0	184.0	11.0	3.0	662.2	29.6	545.4	524.9
10.0	28.0	10.0	964.0	89.0	12.0	3.0	957.2	38.3	757.0	727.6
10.0	28.0	11.0	975.0	90.0	13.0	3.0	1,002.7	41.4	781.3	750.8
10.0	28.0	12.0	970.0	86.0	14.0	3.0	964.6	41.5	750.7	721.6
10.0	28.0	13.0	941.0	80.0	15.0	2.0	844.3	42.4	652.0	627.2
10.0	28.0	14.0	882.0	71.0	15.0	2.0	654.7	36.5	514.0	494.8
10.0	28.0	15.0	761.0	57.0	14.0	2.0	412.7	27.6	323.0	310.1
10.0	28.0	16.0	459.0	31.0	13.0	2.0	142.1	17.2	99.5	92.5
10.0	28.0	17.0	-	-	11.0	2.0	-	11.0	-	-
10.0	28.0	18.0	-	-	10.0	2.0	-	10.0	-	-
10.0	28.0	19.0	-	-	10.0	2.0	-	10.0	-	-
10.0	28.0	20.0	-	-	9.0	2.0	-	9.0	-	-
10.0	28.0	21.0	-	-	9.0	2.0	-	9.0	-	-
10.0	28.0	22.0	-	-	8.0	2.0	-	8.0	-	-
10.0	28.0	23.0	-	-	8.0	2.0	-	8.0	-	-
10.0	29.0	-	-	-	7.0	2.0	-	7.0	-	-
10.0	29.0	1.0	-	-	7.0	2.0	-	7.0	-	-
10.0	29.0	2.0	-	-	7.0	1.0	-	7.0	-	-
10.0	29.0	3.0	-	-	6.0	1.0	-	6.0	-	-
10.0	29.0	4.0	-	-	6.0	1.0	-	6.0	-	-
10.0	29.0	5.0	-	-	6.0	1.0	-	6.0	-	-
10.0	29.0	6.0	13.0	29.0	7.0	1.0	31.8	5.1	28.7	23.0
10.0	29.0	7.0	449.0	85.0	9.0	1.0	292.5	17.3	241.8	231.3
10.0	29.0	8.0	876.0	69.0	11.0	1.0	633.5	33.0	504.9	486.0
10.0	29.0	9.0	939.0	77.0	12.0	1.0	827.2	42.2	638.9	614.7
10.0	29.0	10.0	968.0	81.0	13.0	1.0	949.6	48.0	714.5	687.1
10.0	29.0	11.0	975.0	83.0	14.0	1.0	992.6	50.8	736.2	707.8
10.0	29.0	12.0	965.0	82.0	15.0	1.0	953.4	50.8	707.0	679.9
10.0	29.0	13.0	936.0	78.0	15.0	1.0	836.0	47.0	630.3	606.5
10.0	29.0	14.0	876.0	70.0	16.0	1.0	647.9	41.4	496.3	477.7
10.0	29.0	15.0	754.0	56.0	15.0	1.0	407.1	31.4	312.7	300.1
10.0	29.0	16.0	448.0	30.0	14.0	1.0	136.9	19.3	94.6	87.7
10.0	29.0	17.0	-	-	13.0	1.0	-	13.0	-	-
10.0	29.0	18.0	-	-	12.0	1.0	-	12.0	-	-
10.0	29.0	19.0	-	-	12.0	1.0	-	12.0	-	-
10.0	29.0	20.0	-	-	12.0	1.0	-	12.0	-	-
10.0	29.0	21.0	-	-	11.0	1.0	-	11.0	-	-
10.0	29.0	22.0	-	-	11.0	1.0	-	11.0	-	-
10.0	29.0	23.0	-	-	10.0	1.0	-	10.0	-	-
10.0	30.0	-	-	-	10.0	1.0	-	10.0	-	-
10.0	30.0	1.0	-	-	9.0	2.0	-	9.0	-	-
10.0	30.0	2.0	-	-	9.0	2.0	-	9.0	-	-
10.0	30.0	3.0	-	-	9.0	2.0	-	9.0	-	-
10.0	30.0	4.0	-	-	9.0	2.0	-	9.0	-	-
10.0	30.0	5.0	-	-	9.0	2.0	-	9.0	-	-
10.0	30.0	6.0	113.0	29.0	10.0	2.0	58.1	10.1	46.2	40.2
10.0	30.0	7.0	461.0	82.0	12.0	2.0	293.8	19.2	240.4	229.9
10.0	30.0	8.0	864.0	69.0	14.0	2.0	624.5	32.3	499.3	480.6
10.0	30.0	9.0	926.0	77.0	16.0	2.0	815.2	41.2	633.0	609.1
10.0	30.0	10.0	956.0	82.0	17.0	1.0	938.1	51.2	693.8	667.3
10.0	30.0	11.0	964.0	84.0	18.0	1.0	981.5	54.1	715.3	687.9
10.0	30.0	12.0	953.0	83.0	19.0	1.0	941.8	54.0	686.2	660.0
10.0	30.0	13.0	921.0	79.0	19.0	1.0	823.3	50.2	610.2	587.2
10.0	30.0	14.0	857.0	72.0	20.0	1.0	639.8	44.8	481.5	463.5

10.0	30.0	15.0	729.0	58.0	19.0	1.0	396.9	34.9	299.7	287.6
10.0	30.0	16.0	413.0	30.0	18.0	1.0	131.2	23.1	90.0	83.2
10.0	30.0	17.0	-	-	16.0	1.0	-	16.0	-	-
10.0	30.0	18.0	-	-	15.0	1.0	-	15.0	-	-
10.0	30.0	19.0	-	-	15.0	2.0	-	15.0	-	-
10.0	30.0	20.0	-	-	14.0	2.0	-	14.0	-	-
10.0	30.0	21.0	-	-	14.0	2.0	-	14.0	-	-
10.0	30.0	22.0	-	-	13.0	2.0	-	13.0	-	-
10.0	30.0	23.0	-	-	13.0	2.0	-	13.0	-	-
10.0	31.0	-	-	-	12.0	2.0	-	12.0	-	-
10.0	31.0	1.0	-	-	12.0	2.0	-	12.0	-	-
10.0	31.0	2.0	-	-	12.0	2.0	-	12.0	-	-
10.0	31.0	3.0	-	-	12.0	2.0	-	12.0	-	-
10.0	31.0	4.0	-	-	12.0	2.0	-	12.0	-	-
10.0	31.0	5.0	-	-	12.0	2.0	-	12.0	-	-
10.0	31.0	6.0	66.0	29.0	13.0	2.0	48.5	12.8	39.7	33.8
10.0	31.0	7.0	661.0	63.0	14.0	2.0	360.3	23.2	286.2	274.5
10.0	31.0	8.0	800.0	82.0	16.0	2.0	601.2	33.9	477.3	459.4
10.0	31.0	9.0	875.0	90.0	18.0	2.0	788.5	42.2	609.0	586.1
10.0	31.0	10.0	907.0	96.0	19.0	2.0	909.1	47.3	686.5	660.3
10.0	31.0	11.0	916.0	99.0	20.0	1.0	952.6	54.9	691.2	664.8
10.0	31.0	12.0	907.0	96.0	20.0	1.0	913.9	54.0	666.1	640.8
10.0	31.0	13.0	872.0	91.0	21.0	1.0	796.4	51.1	587.4	565.3
10.0	31.0	14.0	804.0	82.0	20.0	1.0	615.7	43.9	465.7	448.2
10.0	31.0	15.0	669.0	65.0	19.0	1.0	378.2	34.1	287.3	275.5
10.0	31.0	16.0	345.0	31.0	18.0	1.0	117.6	22.4	82.3	75.6
10.0	31.0	17.0	-	-	17.0	1.0	-	17.0	-	-
10.0	31.0	18.0	-	-	15.0	2.0	-	15.0	-	-
10.0	31.0	19.0	-	-	14.0	2.0	-	14.0	-	-
10.0	31.0	20.0	-	-	13.0	2.0	-	13.0	-	-
10.0	31.0	21.0	-	-	13.0	2.0	-	13.0	-	-
10.0	31.0	22.0	-	-	13.0	2.0	-	13.0	-	-
10.0	31.0	23.0	-	-	12.0	2.0	-	12.0	-	-
11.0	1.0	-	-	-	12.0	2.0	-	12.0	-	-
11.0	1.0	1.0	-	-	11.0	2.0	-	11.0	-	-
11.0	1.0	2.0	-	-	11.0	2.0	-	11.0	-	-
11.0	1.0	3.0	-	-	11.0	2.0	-	11.0	-	-
11.0	1.0	4.0	-	-	11.0	2.0	-	11.0	-	-
11.0	1.0	5.0	-	-	11.0	2.0	-	11.0	-	-
11.0	1.0	6.0	374.0	25.0	12.0	2.0	114.1	13.8	80.7	74.0
11.0	1.0	7.0	426.0	85.0	14.0	2.0	281.3	21.1	228.5	218.3
11.0	1.0	8.0	862.0	71.0	15.0	2.0	625.9	33.3	498.0	479.3
11.0	1.0	9.0	925.0	80.0	16.0	2.0	814.2	41.1	632.2	608.3
11.0	1.0	10.0	514.0	237.0	17.0	2.0	725.1	40.3	567.9	546.6
11.0	1.0	11.0	960.0	88.0	18.0	2.0	978.1	48.0	736.4	707.9
11.0	1.0	12.0	947.0	88.0	18.0	2.0	938.0	47.9	706.2	679.1
11.0	1.0	13.0	913.0	84.0	19.0	2.0	818.9	45.4	622.4	598.9
11.0	1.0	14.0	846.0	75.0	19.0	2.0	633.0	39.6	489.0	470.7
11.0	1.0	15.0	711.0	61.0	18.0	2.0	389.9	30.8	300.2	288.1
11.0	1.0	16.0	387.0	30.0	17.0	2.0	126.0	20.6	88.0	81.1
11.0	1.0	17.0	-	-	15.0	2.0	-	15.0	-	-
11.0	1.0	18.0	-	-	15.0	2.0	-	15.0	-	-
11.0	1.0	19.0	-	-	14.0	2.0	-	14.0	-	-
11.0	1.0	20.0	-	-	14.0	2.0	-	14.0	-	-
11.0	1.0	21.0	-	-	13.0	2.0	-	13.0	-	-
11.0	1.0	22.0	-	-	13.0	2.0	-	13.0	-	-
11.0	1.0	23.0	-	-	12.0	2.0	-	12.0	-	-
11.0	2.0	-	-	-	12.0	2.0	-	12.0	-	-
11.0	2.0	1.0	-	-	12.0	2.0	-	12.0	-	-
11.0	2.0	2.0	-	-	11.0	2.0	-	11.0	-	-
11.0	2.0	3.0	-	-	11.0	2.0	-	11.0	-	-
11.0	2.0	4.0	-	-	11.0	1.0	-	11.0	-	-
11.0	2.0	5.0	-	-	11.0	1.0	-	11.0	-	-
11.0	2.0	6.0	317.0	26.0	11.0	1.0	103.5	13.0	74.7	68.2
11.0	2.0	7.0	672.0	61.0	13.0	2.0	360.8	22.5	287.1	275.3
11.0	2.0	8.0	811.0	79.0	15.0	1.0	601.8	36.2	472.1	454.3
11.0	2.0	9.0	878.0	90.0	16.0	1.0	792.3	44.7	604.1	581.4
11.0	2.0	10.0	909.0	97.0	17.0	1.0	908.0	50.2	675.2	649.4
11.0	2.0	11.0	918.0	99.0	18.0	1.0	950.4	53.0	696.7	670.0
11.0	2.0	12.0	917.0	93.0	19.0	1.0	915.3	53.1	670.3	644.8
11.0	2.0	13.0	883.0	88.0	19.0	1.0	798.0	49.3	594.1	571.8
11.0	2.0	14.0	816.0	79.0	19.0	1.0	617.0	43.0	468.5	450.9
11.0	2.0	15.0	681.0	62.0	19.0	1.0	378.1	34.1	286.6	274.8
11.0	2.0	16.0	353.0	30.0	18.0	1.0	118.8	22.5	82.9	76.2
11.0	2.0	17.0	-	-	16.0	1.0	-	16.0	-	-
11.0	2.0	18.0	-	-	16.0	1.0	-	16.0	-	-
11.0	2.0	19.0	-	-	16.0	2.0	-	16.0	-	-
11.0	2.0	20.0	-	-	15.0	2.0	-	15.0	-	-
11.0	2.0	21.0	-	-	15.0	2.0	-	15.0	-	-
11.0	2.0	22.0	-	-	14.0	2.0	-	14.0	-	-
11.0	2.0	23.0	-	-	14.0	2.0	-	14.0	-	-

11.0	3.0	-	-	-	13.0	2.0	-	13.0	-	-
11.0	3.0	1.0	-	-	13.0	1.0	-	13.0	-	-
11.0	3.0	2.0	-	-	13.0	1.0	-	13.0	-	-
11.0	3.0	3.0	-	-	13.0	1.0	-	13.0	-	-
11.0	3.0	4.0	-	-	12.0	1.0	-	12.0	-	-
11.0	3.0	5.0	-	-	12.0	1.0	-	12.0	-	-
11.0	3.0	6.0	300.0	25.0	13.0	2.0	99.1	14.4	71.3	64.8
11.0	3.0	7.0	663.0	61.0	15.0	2.0	356.1	24.3	280.8	269.1
11.0	3.0	8.0	810.0	77.0	17.0	2.0	597.5	34.7	471.9	454.2
11.0	3.0	9.0	881.0	87.0	18.0	2.0	784.5	42.1	606.0	583.2
11.0	3.0	10.0	913.0	93.0	19.0	2.0	905.0	47.2	683.8	657.7
11.0	3.0	11.0	920.0	97.0	20.0	2.0	947.9	49.8	707.0	679.9
11.0	3.0	12.0	907.0	96.0	20.0	2.0	908.0	48.8	680.2	654.2
11.0	3.0	13.0	869.0	92.0	21.0	2.0	794.9	46.5	600.7	578.1
11.0	3.0	14.0	381.0	176.0	21.0	2.0	436.9	35.8	346.2	332.6
11.0	3.0	15.0	428.0	88.0	20.0	1.0	292.2	31.0	227.6	217.4
11.0	3.0	16.0	131.0	32.0	19.0	1.0	67.4	21.0	51.1	45.0
11.0	3.0	17.0	-	-	18.0	1.0	-	18.0	-	-
11.0	3.0	18.0	-	-	18.0	1.0	-	18.0	-	-
11.0	3.0	19.0	-	-	17.0	2.0	-	17.0	-	-
11.0	3.0	20.0	-	-	17.0	2.0	-	17.0	-	-
11.0	3.0	21.0	-	-	17.0	2.0	-	17.0	-	-
11.0	3.0	22.0	-	-	16.0	1.0	-	16.0	-	-
11.0	3.0	23.0	-	-	16.0	1.0	-	16.0	-	-
11.0	4.0	-	-	-	16.0	1.0	-	16.0	-	-
11.0	4.0	1.0	-	-	15.0	1.0	-	15.0	-	-
11.0	4.0	2.0	-	-	15.0	1.0	-	15.0	-	-
11.0	4.0	3.0	-	-	15.0	1.0	-	15.0	-	-
11.0	4.0	4.0	-	-	14.0	1.0	-	14.0	-	-
11.0	4.0	5.0	-	-	14.0	1.0	-	14.0	-	-
11.0	4.0	6.0	284.0	24.0	15.0	1.0	94.9	16.3	67.9	61.5
11.0	4.0	7.0	337.0	91.0	16.0	2.0	249.1	22.0	202.6	193.1
11.0	4.0	8.0	803.0	77.0	18.0	1.0	591.7	38.1	459.5	442.2
11.0	4.0	9.0	475.0	209.0	20.0	1.0	608.6	42.5	469.9	452.2
11.0	4.0	10.0	497.0	240.0	21.0	2.0	710.7	42.9	549.2	528.6
11.0	4.0	11.0	591.0	218.0	22.0	1.0	789.8	50.8	586.0	563.9
11.0	4.0	12.0	601.0	204.0	22.0	1.0	768.5	50.5	570.6	549.2
11.0	4.0	13.0	862.0	93.0	22.0	1.0	788.9	51.1	581.8	560.0
11.0	4.0	14.0	780.0	86.0	22.0	1.0	599.2	45.2	449.7	432.8
11.0	4.0	15.0	346.0	97.0	21.0	1.0	265.9	32.1	207.2	197.6
11.0	4.0	16.0	132.0	31.0	20.0	1.0	70.7	21.9	53.6	47.5
11.0	4.0	17.0	-	-	19.0	1.0	-	19.0	-	-
11.0	4.0	18.0	-	-	18.0	1.0	-	18.0	-	-
11.0	4.0	19.0	-	-	18.0	1.0	-	18.0	-	-
11.0	4.0	20.0	-	-	17.0	1.0	-	17.0	-	-
11.0	4.0	21.0	-	-	17.0	1.0	-	17.0	-	-
11.0	4.0	22.0	-	-	16.0	1.0	-	16.0	-	-
11.0	4.0	23.0	-	-	16.0	2.0	-	16.0	-	-
11.0	5.0	-	-	-	15.0	2.0	-	15.0	-	-
11.0	5.0	1.0	-	-	15.0	2.0	-	15.0	-	-
11.0	5.0	2.0	-	-	14.0	2.0	-	14.0	-	-
11.0	5.0	3.0	-	-	14.0	2.0	-	14.0	-	-
11.0	5.0	4.0	-	-	14.0	2.0	-	14.0	-	-
11.0	5.0	5.0	-	-	14.0	2.0	-	14.0	-	-
11.0	5.0	6.0	41.0	24.0	15.0	2.0	35.1	14.1	28.9	23.2
11.0	5.0	7.0	357.0	88.0	16.0	2.0	253.8	21.9	206.0	196.4
11.0	5.0	8.0	812.0	78.0	18.0	2.0	596.8	35.2	469.9	452.3
11.0	5.0	9.0	891.0	87.0	19.0	3.0	788.5	40.5	614.0	590.8
11.0	5.0	10.0	460.0	254.0	20.0	2.0	692.9	42.2	537.5	517.4
11.0	5.0	11.0	942.0	95.0	21.0	2.0	961.3	50.3	715.0	687.6
11.0	5.0	12.0	926.0	97.0	21.0	2.0	921.8	50.2	685.4	659.2
11.0	5.0	13.0	886.0	94.0	21.0	2.0	807.0	46.9	608.5	585.5
11.0	5.0	14.0	809.0	85.0	20.0	2.0	615.0	40.0	473.9	456.1
11.0	5.0	15.0	656.0	67.0	19.0	2.0	370.1	31.1	284.6	272.9
11.0	5.0	16.0	301.0	29.0	18.0	2.0	107.1	21.0	76.2	69.6
11.0	5.0	17.0	-	-	16.0	2.0	-	16.0	-	-
11.0	5.0	18.0	-	-	16.0	2.0	-	16.0	-	-
11.0	5.0	19.0	-	-	15.0	2.0	-	15.0	-	-
11.0	5.0	20.0	-	-	14.0	2.0	-	14.0	-	-
11.0	5.0	21.0	-	-	14.0	2.0	-	14.0	-	-
11.0	5.0	22.0	-	-	13.0	2.0	-	13.0	-	-
11.0	5.0	23.0	-	-	12.0	2.0	-	12.0	-	-
11.0	6.0	-	-	-	12.0	2.0	-	12.0	-	-
11.0	6.0	1.0	-	-	12.0	2.0	-	12.0	-	-
11.0	6.0	2.0	-	-	11.0	2.0	-	11.0	-	-
11.0	6.0	3.0	-	-	11.0	2.0	-	11.0	-	-
11.0	6.0	4.0	-	-	11.0	2.0	-	11.0	-	-
11.0	6.0	5.0	-	-	11.0	2.0	-	11.0	-	-
11.0	6.0	6.0	64.0	23.0	11.0	2.0	41.8	10.4	34.1	28.4
11.0	6.0	7.0	388.0	83.0	13.0	2.0	260.6	19.1	213.5	203.7
11.0	6.0	8.0	863.0	70.0	15.0	2.0	617.4	32.9	491.3	472.8

11.0	6.0	9.0	540.0	183.0	17.0	2.0	628.1	36.7	499.1	480.4
11.0	6.0	10.0	534.0	222.0	18.0	2.0	720.9	40.4	564.2	543.1
11.0	6.0	11.0	554.0	229.0	19.0	2.0	766.4	43.0	592.2	569.9
11.0	6.0	12.0	656.0	181.0	20.0	2.0	789.4	44.8	604.0	581.2
11.0	6.0	13.0	920.0	83.0	20.0	2.0	814.1	45.6	617.7	594.4
11.0	6.0	14.0	852.0	74.0	20.0	1.0	628.3	44.4	473.1	455.3
11.0	6.0	15.0	713.0	58.0	19.0	1.0	382.4	34.3	288.4	276.6
11.0	6.0	16.0	363.0	26.0	17.0	1.0	117.8	21.5	81.9	75.2
11.0	6.0	17.0	-	-	16.0	2.0	-	16.0	-	-
11.0	6.0	18.0	-	-	16.0	2.0	-	16.0	-	-
11.0	6.0	19.0	-	-	15.0	2.0	-	15.0	-	-
11.0	6.0	20.0	-	-	15.0	2.0	-	15.0	-	-
11.0	6.0	21.0	-	-	15.0	2.0	-	15.0	-	-
11.0	6.0	22.0	-	-	14.0	2.0	-	14.0	-	-
11.0	6.0	23.0	-	-	14.0	2.0	-	14.0	-	-
11.0	7.0	-	-	-	14.0	2.0	-	14.0	-	-
11.0	7.0	1.0	-	-	13.0	2.0	-	13.0	-	-
11.0	7.0	2.0	-	-	13.0	2.0	-	13.0	-	-
11.0	7.0	3.0	-	-	13.0	2.0	-	13.0	-	-
11.0	7.0	4.0	-	-	13.0	2.0	-	13.0	-	-
11.0	7.0	5.0	-	-	13.0	2.0	-	13.0	-	-
11.0	7.0	6.0	272.0	22.0	14.0	2.0	90.5	15.1	65.0	58.7
11.0	7.0	7.0	649.0	60.0	15.0	2.0	345.0	24.0	271.8	260.5
11.0	7.0	8.0	791.0	81.0	17.0	2.0	584.2	34.3	462.0	444.6
11.0	7.0	9.0	869.0	90.0	19.0	2.0	776.3	42.8	597.4	574.9
11.0	7.0	10.0	895.0	99.0	20.0	2.0	888.3	47.6	669.4	643.9
11.0	7.0	11.0	896.0	105.0	21.0	2.0	927.3	50.1	690.4	664.0
11.0	7.0	12.0	664.0	178.0	22.0	2.0	791.8	47.4	597.5	575.0
11.0	7.0	13.0	643.0	151.0	21.0	2.0	682.2	42.9	525.5	505.8
11.0	7.0	14.0	432.0	155.0	21.0	2.0	452.0	35.8	357.5	343.6
11.0	7.0	15.0	302.0	98.0	20.0	1.0	247.1	29.5	195.4	186.0
11.0	7.0	16.0	101.0	29.0	19.0	1.0	58.0	20.3	44.7	38.7
11.0	7.0	17.0	-	-	18.0	2.0	-	18.0	-	-
11.0	7.0	18.0	-	-	18.0	2.0	-	18.0	-	-
11.0	7.0	19.0	-	-	18.0	2.0	-	18.0	-	-
11.0	7.0	20.0	-	-	18.0	2.0	-	18.0	-	-
11.0	7.0	21.0	-	-	17.0	2.0	-	17.0	-	-
11.0	7.0	22.0	-	-	17.0	2.0	-	17.0	-	-
11.0	7.0	23.0	-	-	16.0	2.0	-	16.0	-	-
11.0	8.0	-	-	-	16.0	2.0	-	16.0	-	-
11.0	8.0	1.0	-	-	16.0	2.0	-	16.0	-	-
11.0	8.0	2.0	-	-	16.0	2.0	-	16.0	-	-
11.0	8.0	3.0	-	-	16.0	2.0	-	16.0	-	-
11.0	8.0	4.0	-	-	15.0	2.0	-	15.0	-	-
11.0	8.0	5.0	-	-	15.0	2.0	-	15.0	-	-
11.0	8.0	6.0	148.0	22.0	16.0	2.0	62.4	16.0	46.8	40.8
11.0	8.0	7.0	-	59.0	17.0	2.0	56.3	16.8	49.4	43.4
11.0	8.0	8.0	423.0	150.0	18.0	3.0	433.3	28.2	354.9	341.0
11.0	8.0	9.0	538.0	184.0	20.0	3.0	625.6	36.7	497.1	478.5
11.0	8.0	10.0	479.0	242.0	21.0	3.0	693.5	40.1	543.7	523.3
11.0	8.0	11.0	522.0	238.0	22.0	3.0	745.5	42.6	577.3	555.6
11.0	8.0	12.0	381.0	275.0	22.0	3.0	637.6	40.0	500.2	481.5
11.0	8.0	13.0	31.0	228.0	23.0	3.0	259.8	30.6	213.6	203.8
11.0	8.0	14.0	287.0	180.0	23.0	2.0	380.6	33.8	304.9	292.6
11.0	8.0	15.0	391.0	87.0	22.0	2.0	273.0	30.1	213.5	203.7
11.0	8.0	16.0	107.0	29.0	21.0	2.0	59.5	22.1	45.3	39.4
11.0	8.0	17.0	-	-	20.0	2.0	-	20.0	-	-
11.0	8.0	18.0	-	-	20.0	2.0	-	20.0	-	-
11.0	8.0	19.0	-	-	20.0	2.0	-	20.0	-	-
11.0	8.0	20.0	-	-	19.0	2.0	-	19.0	-	-
11.0	8.0	21.0	-	-	19.0	2.0	-	19.0	-	-
11.0	8.0	22.0	-	-	19.0	3.0	-	19.0	-	-
11.0	8.0	23.0	-	-	19.0	3.0	-	19.0	-	-
11.0	9.0	-	-	-	18.0	3.0	-	18.0	-	-
11.0	9.0	1.0	-	-	18.0	3.0	-	18.0	-	-
11.0	9.0	2.0	-	-	18.0	3.0	-	18.0	-	-
11.0	9.0	3.0	-	-	18.0	3.0	-	18.0	-	-
11.0	9.0	4.0	-	-	18.0	3.0	-	18.0	-	-
11.0	9.0	5.0	-	-	18.0	3.0	-	18.0	-	-
11.0	9.0	6.0	-	2.0	18.0	3.0	1.9	16.3	1.7	-
11.0	9.0	7.0	-	12.0	18.0	4.0	11.4	16.5	10.0	4.7
11.0	9.0	8.0	-	16.0	19.0	4.0	15.2	17.7	13.3	7.9
11.0	9.0	9.0	-	18.0	19.0	4.0	17.1	17.7	14.9	9.5
11.0	9.0	10.0	-	54.0	20.0	4.0	51.3	19.7	44.5	38.5
11.0	9.0	11.0	-	28.0	20.0	4.0	26.6	19.1	23.1	17.6
11.0	9.0	12.0	-	59.0	20.0	4.0	56.1	19.8	48.6	42.5
11.0	9.0	13.0	-	113.0	20.0	4.0	108.3	21.2	93.1	86.2
11.0	9.0	14.0	-	85.0	20.0	5.0	81.0	20.6	69.8	63.4
11.0	9.0	15.0	-	56.0	20.0	5.0	53.2	19.9	46.0	40.0
11.0	9.0	16.0	-	10.0	20.0	6.0	9.5	19.0	8.2	3.0
11.0	9.0	17.0	-	-	20.0	6.0	-	20.0	-	-

11.0	9.0	18.0	-	-	20.0	6.0	-	20.0	-	-
11.0	9.0	19.0	-	-	20.0	7.0	-	20.0	-	-
11.0	9.0	20.0	-	-	20.0	7.0	-	20.0	-	-
11.0	9.0	21.0	-	-	21.0	6.0	-	21.0	-	-
11.0	9.0	22.0	-	-	21.0	6.0	-	21.0	-	-
11.0	9.0	23.0	-	-	22.0	6.0	-	22.0	-	-
11.0	10.0	-	-	-	22.0	6.0	-	22.0	-	-
11.0	10.0	1.0	-	-	22.0	5.0	-	22.0	-	-
11.0	10.0	2.0	-	-	22.0	5.0	-	22.0	-	-
11.0	10.0	3.0	-	-	22.0	5.0	-	22.0	-	-
11.0	10.0	4.0	-	-	22.0	5.0	-	22.0	-	-
11.0	10.0	5.0	-	-	21.0	4.0	-	21.0	-	-
11.0	10.0	6.0	9.0	18.0	21.0	3.0	19.2	19.7	16.2	10.8
11.0	10.0	7.0	281.0	106.0	21.0	3.0	235.5	25.7	189.0	179.8
11.0	10.0	8.0	-	88.0	21.0	2.0	84.1	22.6	71.8	65.3
11.0	10.0	9.0	-	38.0	22.0	2.0	36.1	21.4	31.0	25.3
11.0	10.0	10.0	3.0	185.0	22.0	2.0	183.1	25.8	154.1	145.8
11.0	10.0	11.0	9.0	213.0	22.0	2.0	217.0	27.5	181.2	172.2
11.0	10.0	12.0	46.0	277.0	22.0	2.0	328.5	31.1	269.6	258.3
11.0	10.0	13.0	57.0	244.0	21.0	2.0	298.1	29.6	246.1	235.5
11.0	10.0	14.0	607.0	120.0	20.0	3.0	524.2	33.5	417.8	402.0
11.0	10.0	15.0	416.0	93.0	19.0	3.0	289.7	27.0	229.9	219.6
11.0	10.0	16.0	92.0	28.0	18.0	3.0	55.4	18.7	43.2	37.3
11.0	10.0	17.0	-	-	17.0	4.0	-	17.0	-	-
11.0	10.0	18.0	-	-	17.0	4.0	-	17.0	-	-
11.0	10.0	19.0	-	-	17.0	4.0	-	17.0	-	-
11.0	10.0	20.0	-	-	17.0	4.0	-	17.0	-	-
11.0	10.0	21.0	-	-	17.0	4.0	-	17.0	-	-
11.0	10.0	22.0	-	-	16.0	4.0	-	16.0	-	-
11.0	10.0	23.0	-	-	16.0	4.0	-	16.0	-	-
11.0	11.0	-	-	-	16.0	4.0	-	16.0	-	-
11.0	11.0	1.0	-	-	16.0	4.0	-	16.0	-	-
11.0	11.0	2.0	-	-	15.0	4.0	-	15.0	-	-
11.0	11.0	3.0	-	-	15.0	4.0	-	15.0	-	-
11.0	11.0	4.0	-	-	15.0	4.0	-	15.0	-	-
11.0	11.0	5.0	-	-	15.0	4.0	-	15.0	-	-
11.0	11.0	6.0	178.0	20.0	15.0	4.0	67.9	15.1	50.2	44.2
11.0	11.0	7.0	82.0	97.0	15.0	4.0	139.1	17.0	119.1	111.6
11.0	11.0	8.0	27.0	162.0	16.0	4.0	183.6	19.3	158.9	150.4
11.0	11.0	9.0	33.0	223.0	17.0	4.0	256.1	22.3	219.0	209.0
11.0	11.0	10.0	19.0	236.0	18.0	4.0	249.8	23.4	212.7	202.9
11.0	11.0	11.0	20.0	249.0	19.0	4.0	264.4	24.7	223.7	213.7
11.0	11.0	12.0	2.0	181.0	20.0	4.0	178.2	23.6	151.5	143.3
11.0	11.0	13.0	-	135.0	20.0	4.0	130.4	22.2	111.6	104.3
11.0	11.0	14.0	793.0	77.0	20.0	4.0	588.9	33.4	468.2	450.6
11.0	11.0	15.0	-	74.0	19.0	3.0	71.7	21.3	61.6	55.3
11.0	11.0	16.0	255.0	25.0	18.0	3.0	94.2	19.0	68.2	61.8
11.0	11.0	17.0	-	-	18.0	3.0	-	18.0	-	-
11.0	11.0	18.0	-	-	17.0	3.0	-	17.0	-	-
11.0	11.0	19.0	-	-	16.0	3.0	-	16.0	-	-
11.0	11.0	20.0	-	-	16.0	2.0	-	16.0	-	-
11.0	11.0	21.0	-	-	15.0	2.0	-	15.0	-	-
11.0	11.0	22.0	-	-	15.0	2.0	-	15.0	-	-
11.0	11.0	23.0	-	-	14.0	2.0	-	14.0	-	-
11.0	12.0	-	-	-	14.0	3.0	-	14.0	-	-
11.0	12.0	1.0	-	-	14.0	3.0	-	14.0	-	-
11.0	12.0	2.0	-	-	13.0	3.0	-	13.0	-	-
11.0	12.0	3.0	-	-	13.0	2.0	-	13.0	-	-
11.0	12.0	4.0	-	-	12.0	2.0	-	12.0	-	-
11.0	12.0	5.0	-	-	12.0	2.0	-	12.0	-	-
11.0	12.0	6.0	-	18.0	12.0	2.0	17.1	10.6	15.4	10.0
11.0	12.0	7.0	641.0	60.0	13.0	2.0	336.2	21.3	267.1	255.8
11.0	12.0	8.0	811.0	78.0	15.0	2.0	584.8	32.3	466.1	448.5
11.0	12.0	9.0	905.0	83.0	16.0	2.0	781.0	40.0	608.9	586.0
11.0	12.0	10.0	946.0	86.0	17.0	2.0	906.8	45.3	691.3	664.9
11.0	12.0	11.0	961.0	86.0	17.0	2.0	953.5	47.1	720.9	693.1
11.0	12.0	12.0	955.0	82.0	18.0	2.0	916.3	47.2	691.9	665.4
11.0	12.0	13.0	922.0	78.0	18.0	2.0	800.0	43.8	612.3	589.2
11.0	12.0	14.0	852.0	69.0	18.0	2.0	615.2	38.1	477.6	459.6
11.0	12.0	15.0	710.0	54.0	17.0	2.0	372.1	29.2	286.7	274.9
11.0	12.0	16.0	338.0	23.0	16.0	2.0	110.7	19.1	78.1	71.4
11.0	12.0	17.0	-	-	15.0	2.0	-	15.0	-	-
11.0	12.0	18.0	-	-	14.0	2.0	-	14.0	-	-
11.0	12.0	19.0	-	-	14.0	2.0	-	14.0	-	-
11.0	12.0	20.0	-	-	13.0	2.0	-	13.0	-	-
11.0	12.0	21.0	-	-	13.0	2.0	-	13.0	-	-
11.0	12.0	22.0	-	-	12.0	2.0	-	12.0	-	-
11.0	12.0	23.0	-	-	12.0	1.0	-	12.0	-	-
11.0	13.0	-	-	-	12.0	1.0	-	12.0	-	-
11.0	13.0	1.0	-	-	11.0	1.0	-	11.0	-	-
11.0	13.0	2.0	-	-	11.0	1.0	-	11.0	-	-

11.0	13.0	3.0	-	-	11.0	1.0	-	11.0	-	-
11.0	13.0	4.0	-	-	11.0	1.0	-	11.0	-	-
11.0	13.0	5.0	-	-	11.0	1.0	-	11.0	-	-
11.0	13.0	6.0	-	19.0	11.0	-	18.0	9.3	16.3	10.9
11.0	13.0	7.0	302.0	83.0	13.0	-	222.1	20.4	181.3	172.3
11.0	13.0	8.0	847.0	66.0	15.0	-	591.0	39.7	453.4	436.3
11.0	13.0	9.0	922.0	74.0	17.0	-	781.3	51.2	574.6	553.0
11.0	13.0	10.0	956.0	78.0	18.0	1.0	903.9	51.0	668.9	643.4
11.0	13.0	11.0	965.0	81.0	18.0	1.0	949.2	52.9	695.6	669.0
11.0	13.0	12.0	956.0	79.0	19.0	1.0	911.8	53.0	667.6	642.2
11.0	13.0	13.0	924.0	75.0	19.0	1.0	796.6	49.3	592.5	570.2
11.0	13.0	14.0	856.0	67.0	19.0	1.0	614.3	42.9	465.2	447.7
11.0	13.0	15.0	334.0	88.0	18.0	1.0	248.6	28.7	196.2	186.9
11.0	13.0	16.0	331.0	23.0	17.0	1.0	109.4	20.2	76.9	70.3
11.0	13.0	17.0	-	-	16.0	1.0	-	16.0	-	-
11.0	13.0	18.0	-	-	16.0	1.0	-	16.0	-	-
11.0	13.0	19.0	-	-	15.0	1.0	-	15.0	-	-
11.0	13.0	20.0	-	-	15.0	1.0	-	15.0	-	-
11.0	13.0	21.0	-	-	15.0	1.0	-	15.0	-	-
11.0	13.0	22.0	-	-	15.0	1.0	-	15.0	-	-
11.0	13.0	23.0	-	-	15.0	1.0	-	15.0	-	-
11.0	14.0	-	-	-	14.0	-	-	14.0	-	-
11.0	14.0	1.0	-	-	14.0	-	-	14.0	-	-
11.0	14.0	2.0	-	-	14.0	-	-	14.0	-	-
11.0	14.0	3.0	-	-	13.0	1.0	-	13.0	-	-
11.0	14.0	4.0	-	-	13.0	1.0	-	13.0	-	-
11.0	14.0	5.0	-	-	13.0	-	-	13.0	-	-
11.0	14.0	6.0	230.0	17.0	13.0	-	74.9	14.7	53.6	47.4
11.0	14.0	7.0	664.0	55.0	14.0	-	335.5	27.2	258.1	247.2
11.0	14.0	8.0	822.0	73.0	16.0	-	582.3	41.3	443.2	426.5
11.0	14.0	9.0	901.0	81.0	17.0	1.0	771.7	44.9	586.7	564.7
11.0	14.0	10.0	934.0	87.0	18.0	1.0	893.6	50.6	662.6	637.4
11.0	14.0	11.0	943.0	90.0	19.0	1.0	938.2	53.5	685.6	659.4
11.0	14.0	12.0	925.0	92.0	19.0	1.0	898.7	52.5	659.6	634.6
11.0	14.0	13.0	889.0	87.0	19.0	1.0	787.4	48.9	586.8	564.7
11.0	14.0	14.0	814.0	78.0	19.0	1.0	600.0	42.4	455.7	438.6
11.0	14.0	15.0	106.0	102.0	18.0	1.0	156.5	25.4	128.7	121.0
11.0	14.0	16.0	6.0	22.0	17.0	1.0	22.2	16.2	19.2	13.8
11.0	14.0	17.0	-	-	17.0	1.0	-	17.0	-	-
11.0	14.0	18.0	-	-	16.0	1.0	-	16.0	-	-
11.0	14.0	19.0	-	-	16.0	1.0	-	16.0	-	-
11.0	14.0	20.0	-	-	15.0	1.0	-	15.0	-	-
11.0	14.0	21.0	-	-	15.0	1.0	-	15.0	-	-
11.0	14.0	22.0	-	-	15.0	1.0	-	15.0	-	-
11.0	14.0	23.0	-	-	15.0	1.0	-	15.0	-	-
11.0	15.0	-	-	-	14.0	1.0	-	14.0	-	-
11.0	15.0	1.0	-	-	14.0	-	-	14.0	-	-
11.0	15.0	2.0	-	-	14.0	-	-	14.0	-	-
11.0	15.0	3.0	-	-	13.0	-	-	13.0	-	-
11.0	15.0	4.0	-	-	13.0	1.0	-	13.0	-	-
11.0	15.0	5.0	-	-	12.0	1.0	-	12.0	-	-
11.0	15.0	6.0	169.0	16.0	12.0	1.0	60.6	11.5	45.0	39.0
11.0	15.0	7.0	291.0	81.0	14.0	-	214.6	21.7	174.0	165.2
11.0	15.0	8.0	770.0	84.0	16.0	-	561.9	39.6	431.7	415.4
11.0	15.0	9.0	851.0	96.0	17.0	-	754.5	50.1	558.2	537.3
11.0	15.0	10.0	890.0	103.0	18.0	-	879.0	56.4	631.3	607.5
11.0	15.0	11.0	901.0	106.0	19.0	-	924.4	59.6	653.1	628.3
11.0	15.0	12.0	900.0	100.0	19.0	-	891.1	58.8	631.8	607.9
11.0	15.0	13.0	862.0	94.0	19.0	-	773.6	54.8	558.4	537.5
11.0	15.0	14.0	784.0	84.0	19.0	-	587.3	47.8	433.9	417.5
11.0	15.0	15.0	624.0	65.0	19.0	-	348.0	37.8	258.1	247.1
11.0	15.0	16.0	241.0	23.0	18.0	-	89.4	24.0	63.3	57.0
11.0	15.0	17.0	-	-	17.0	-	-	17.0	-	-
11.0	15.0	18.0	-	-	17.0	-	-	17.0	-	-
11.0	15.0	19.0	-	-	16.0	-	-	16.0	-	-
11.0	15.0	20.0	-	-	16.0	-	-	16.0	-	-
11.0	15.0	21.0	-	-	15.0	-	-	15.0	-	-
11.0	15.0	22.0	-	-	15.0	-	-	15.0	-	-
11.0	15.0	23.0	-	-	15.0	-	-	15.0	-	-
11.0	16.0	-	-	-	14.0	-	-	14.0	-	-
11.0	16.0	1.0	-	-	14.0	-	-	14.0	-	-
11.0	16.0	2.0	-	-	14.0	-	-	14.0	-	-
11.0	16.0	3.0	-	-	13.0	-	-	13.0	-	-
11.0	16.0	4.0	-	-	13.0	-	-	13.0	-	-
11.0	16.0	5.0	-	-	13.0	-	-	13.0	-	-
11.0	16.0	6.0	122.0	16.0	13.0	-	48.6	13.2	36.5	30.7
11.0	16.0	7.0	548.0	67.0	15.0	-	302.0	26.5	234.6	224.3
11.0	16.0	8.0	730.0	91.0	16.0	-	546.8	39.8	419.8	403.9
11.0	16.0	9.0	816.0	104.0	18.0	-	735.6	50.3	543.7	523.3
11.0	16.0	10.0	587.0	190.0	19.0	-	719.0	52.0	529.4	509.5
11.0	16.0	11.0	867.0	114.0	19.0	-	901.9	57.9	643.4	619.0

11.0	16.0	12.0	825.0	124.0	20.0	-	853.0	58.4	606.3	583.5
11.0	16.0	13.0	391.0	217.0	20.0	-	541.0	47.7	406.5	391.0
11.0	16.0	14.0	677.0	106.0	20.0	-	547.8	45.6	410.0	394.4
11.0	16.0	15.0	495.0	80.0	19.0	-	308.8	35.9	232.8	222.5
11.0	16.0	16.0	138.0	24.0	18.0	-	65.8	22.5	49.0	42.9
11.0	16.0	17.0	-	-	17.0	1.0	-	17.0	-	-
11.0	16.0	18.0	-	-	17.0	1.0	-	17.0	-	-
11.0	16.0	19.0	-	-	17.0	1.0	-	17.0	-	-
11.0	16.0	20.0	-	-	17.0	1.0	-	17.0	-	-
11.0	16.0	21.0	-	-	17.0	1.0	-	17.0	-	-
11.0	16.0	22.0	-	-	17.0	1.0	-	17.0	-	-
11.0	16.0	23.0	-	-	17.0	1.0	-	17.0	-	-
11.0	17.0	-	-	-	18.0	1.0	-	18.0	-	-
11.0	17.0	1.0	-	-	18.0	1.0	-	18.0	-	-
11.0	17.0	2.0	-	-	18.0	1.0	-	18.0	-	-
11.0	17.0	3.0	-	-	18.0	1.0	-	18.0	-	-
11.0	17.0	4.0	-	-	17.0	2.0	-	17.0	-	-
11.0	17.0	5.0	-	-	16.0	2.0	-	16.0	-	-
11.0	17.0	6.0	-	10.0	14.0	3.0	9.5	12.5	8.5	3.2
11.0	17.0	7.0	43.0	86.0	13.0	3.0	106.7	14.0	93.3	86.3
11.0	17.0	8.0	15.0	148.0	13.0	3.0	155.7	15.7	137.0	129.1
11.0	17.0	9.0	205.0	240.0	13.0	2.0	413.1	24.4	349.0	335.3
11.0	17.0	10.0	46.0	262.0	13.0	2.0	312.5	22.5	267.0	255.8
11.0	17.0	11.0	259.0	301.0	13.0	2.0	566.6	29.7	467.8	450.2
11.0	17.0	12.0	536.0	210.0	14.0	2.0	702.3	35.8	562.3	541.2
11.0	17.0	13.0	353.0	224.0	14.0	2.0	519.8	31.0	425.1	408.9
11.0	17.0	14.0	843.0	70.0	15.0	2.0	606.0	33.7	480.3	462.3
11.0	17.0	15.0	428.0	75.0	14.0	1.0	273.1	25.6	216.7	206.9
11.0	17.0	16.0	293.0	21.0	13.0	1.0	99.0	15.9	71.4	64.9
11.0	17.0	17.0	-	-	12.0	2.0	-	12.0	-	-
11.0	17.0	18.0	-	-	12.0	2.0	-	12.0	-	-
11.0	17.0	19.0	-	-	11.0	2.0	-	11.0	-	-
11.0	17.0	20.0	-	-	11.0	2.0	-	11.0	-	-
11.0	17.0	21.0	-	-	10.0	2.0	-	10.0	-	-
11.0	17.0	22.0	-	-	10.0	1.0	-	10.0	-	-
11.0	17.0	23.0	-	-	9.0	1.0	-	9.0	-	-
11.0	18.0	-	-	-	9.0	1.0	-	9.0	-	-
11.0	18.0	1.0	-	-	9.0	1.0	-	9.0	-	-
11.0	18.0	2.0	-	-	9.0	1.0	-	9.0	-	-
11.0	18.0	3.0	-	-	9.0	1.0	-	9.0	-	-
11.0	18.0	4.0	-	-	8.0	1.0	-	8.0	-	-
11.0	18.0	5.0	-	-	8.0	1.0	-	8.0	-	-
11.0	18.0	6.0	-	12.0	8.0	1.0	11.4	6.1	10.5	5.2
11.0	18.0	7.0	613.0	55.0	10.0	1.0	312.3	18.9	249.4	238.6
11.0	18.0	8.0	786.0	75.0	11.0	1.0	556.3	30.5	446.2	429.4
11.0	18.0	9.0	866.0	86.0	12.0	1.0	748.5	39.3	585.3	563.3
11.0	18.0	10.0	903.0	92.0	13.0	1.0	865.4	45.0	660.7	635.6
11.0	18.0	11.0	914.0	94.0	14.0	1.0	910.0	47.9	685.0	658.8
11.0	18.0	12.0	905.0	93.0	14.0	1.0	876.5	47.1	661.9	636.8
11.0	18.0	13.0	869.0	88.0	15.0	1.0	768.4	44.5	585.8	563.8
11.0	18.0	14.0	793.0	78.0	15.0	1.0	583.8	38.0	453.2	436.1
11.0	18.0	15.0	638.0	60.0	14.0	1.0	347.4	28.0	269.6	258.3
11.0	18.0	16.0	245.0	21.0	13.0	1.0	88.3	16.1	64.5	58.1
11.0	18.0	17.0	-	-	12.0	1.0	-	12.0	-	-
11.0	18.0	18.0	-	-	11.0	1.0	-	11.0	-	-
11.0	18.0	19.0	-	-	11.0	1.0	-	11.0	-	-
11.0	18.0	20.0	-	-	10.0	1.0	-	10.0	-	-
11.0	18.0	21.0	-	-	10.0	1.0	-	10.0	-	-
11.0	18.0	22.0	-	-	10.0	1.0	-	10.0	-	-
11.0	18.0	23.0	-	-	9.0	1.0	-	9.0	-	-
11.0	19.0	-	-	-	9.0	1.0	-	9.0	-	-
11.0	19.0	1.0	-	-	9.0	1.0	-	9.0	-	-
11.0	19.0	2.0	-	-	8.0	1.0	-	8.0	-	-
11.0	19.0	3.0	-	-	8.0	1.0	-	8.0	-	-
11.0	19.0	4.0	-	-	8.0	1.0	-	8.0	-	-
11.0	19.0	5.0	-	-	8.0	1.0	-	8.0	-	-
11.0	19.0	6.0	-	10.0	9.0	1.0	9.5	7.0	8.7	3.4
11.0	19.0	7.0	254.0	79.0	10.0	2.0	190.4	13.7	160.0	151.6
11.0	19.0	8.0	791.0	74.0	12.0	2.0	556.4	27.9	451.7	434.7
11.0	19.0	9.0	881.0	83.0	13.0	2.0	754.2	36.3	598.5	576.0
11.0	19.0	10.0	920.0	88.0	14.0	1.0	873.1	46.2	662.3	637.2
11.0	19.0	11.0	930.0	91.0	15.0	1.0	918.7	49.1	687.0	660.8
11.0	19.0	12.0	919.0	90.0	16.0	1.0	883.3	49.2	659.8	634.7
11.0	19.0	13.0	879.0	87.0	16.0	1.0	773.7	45.6	586.3	564.3
11.0	19.0	14.0	797.0	78.0	16.0	1.0	585.5	39.0	452.1	435.1
11.0	19.0	15.0	629.0	61.0	15.0	1.0	344.5	28.9	266.3	255.1
11.0	19.0	16.0	225.0	21.0	14.0	1.0	83.9	16.9	61.4	55.2
11.0	19.0	17.0	-	-	13.0	1.0	-	13.0	-	-
11.0	19.0	18.0	-	-	12.0	1.0	-	12.0	-	-
11.0	19.0	19.0	-	-	12.0	1.0	-	12.0	-	-
11.0	19.0	20.0	-	-	12.0	1.0	-	12.0	-	-

11.0	19.0	21.0	-	-	11.0	2.0	-	11.0	-	-
11.0	19.0	22.0	-	-	11.0	2.0	-	11.0	-	-
11.0	19.0	23.0	-	-	10.0	2.0	-	10.0	-	-
11.0	20.0	-	-	-	10.0	2.0	-	10.0	-	-
11.0	20.0	1.0	-	-	10.0	2.0	-	10.0	-	-
11.0	20.0	2.0	-	-	10.0	2.0	-	10.0	-	-
11.0	20.0	3.0	-	-	10.0	2.0	-	10.0	-	-
11.0	20.0	4.0	-	-	10.0	2.0	-	10.0	-	-
11.0	20.0	5.0	-	-	10.0	2.0	-	10.0	-	-
11.0	20.0	6.0	-	9.0	10.0	2.0	8.5	8.2	7.8	2.5
11.0	20.0	7.0	343.0	71.0	12.0	2.0	221.1	16.7	181.5	172.5
11.0	20.0	8.0	781.0	75.0	13.0	2.0	549.9	28.8	444.4	427.6
11.0	20.0	9.0	869.0	85.0	15.0	2.0	745.7	37.9	586.9	564.9
11.0	20.0	10.0	910.0	90.0	16.0	2.0	865.1	43.1	666.9	641.5
11.0	20.0	11.0	679.0	169.0	17.0	2.0	798.1	42.6	617.6	594.3
11.0	20.0	12.0	901.0	95.0	18.0	2.0	872.5	45.4	664.8	639.5
11.0	20.0	13.0	853.0	92.0	18.0	1.0	758.8	46.9	571.1	549.7
11.0	20.0	14.0	759.0	85.0	18.0	1.0	571.8	40.4	438.7	422.1
11.0	20.0	15.0	158.0	95.0	17.0	1.0	170.9	24.7	139.6	131.6
11.0	20.0	16.0	-	19.0	15.0	1.0	18.0	14.1	16.0	10.6
11.0	20.0	17.0	-	-	15.0	1.0	-	15.0	-	-
11.0	20.0	18.0	-	-	15.0	1.0	-	15.0	-	-
11.0	20.0	19.0	-	-	15.0	1.0	-	15.0	-	-
11.0	20.0	20.0	-	-	14.0	2.0	-	14.0	-	-
11.0	20.0	21.0	-	-	14.0	2.0	-	14.0	-	-
11.0	20.0	22.0	-	-	14.0	1.0	-	14.0	-	-
11.0	20.0	23.0	-	-	13.0	1.0	-	13.0	-	-
11.0	21.0	-	-	-	13.0	1.0	-	13.0	-	-
11.0	21.0	1.0	-	-	14.0	1.0	-	14.0	-	-
11.0	21.0	2.0	-	-	14.0	2.0	-	14.0	-	-
11.0	21.0	3.0	-	-	14.0	2.0	-	14.0	-	-
11.0	21.0	4.0	-	-	14.0	2.0	-	14.0	-	-
11.0	21.0	5.0	-	-	14.0	2.0	-	14.0	-	-
11.0	21.0	6.0	-	-	14.0	2.0	-	14.0	-	-
11.0	21.0	7.0	16.0	78.0	15.0	2.0	84.1	15.3	73.7	67.2
11.0	21.0	8.0	32.0	151.0	16.0	2.0	175.7	19.7	151.7	143.4
11.0	21.0	9.0	-	125.0	17.0	2.0	120.7	19.4	104.7	97.5
11.0	21.0	10.0	150.0	284.0	18.0	2.0	435.3	29.8	359.1	345.1
11.0	21.0	11.0	11.0	216.0	19.0	2.0	222.7	25.8	187.4	178.3
11.0	21.0	12.0	10.0	208.0	20.0	2.0	213.6	25.6	180.0	171.0
11.0	21.0	13.0	6.0	179.0	20.0	2.0	180.8	24.5	153.1	144.8
11.0	21.0	14.0	-	107.0	19.0	2.0	103.5	20.9	89.1	82.3
11.0	21.0	15.0	-	80.0	18.0	2.0	78.8	18.8	68.6	62.1
11.0	21.0	16.0	-	10.0	18.0	2.0	9.5	16.4	8.3	3.1
11.0	21.0	17.0	-	-	17.0	2.0	-	17.0	-	-
11.0	21.0	18.0	-	-	17.0	3.0	-	17.0	-	-
11.0	21.0	19.0	-	-	17.0	3.0	-	17.0	-	-
11.0	21.0	20.0	-	-	17.0	4.0	-	17.0	-	-
11.0	21.0	21.0	-	-	17.0	4.0	-	17.0	-	-
11.0	21.0	22.0	-	-	18.0	4.0	-	18.0	-	-
11.0	21.0	23.0	-	-	18.0	4.0	-	18.0	-	-
11.0	22.0	-	-	-	18.0	3.0	-	18.0	-	-
11.0	22.0	1.0	-	-	19.0	2.0	-	19.0	-	-
11.0	22.0	2.0	-	-	18.0	2.0	-	18.0	-	-
11.0	22.0	3.0	-	-	18.0	2.0	-	18.0	-	-
11.0	22.0	4.0	-	-	18.0	2.0	-	18.0	-	-
11.0	22.0	5.0	-	-	17.0	2.0	-	17.0	-	-
11.0	22.0	6.0	-	-	17.0	2.0	-	17.0	-	-
11.0	22.0	7.0	-	68.0	18.0	2.0	67.0	17.9	58.5	52.3
11.0	22.0	8.0	-	130.0	18.0	2.0	128.2	20.1	110.8	103.5
11.0	22.0	9.0	-	106.0	19.0	2.0	101.6	20.6	87.6	80.8
11.0	22.0	10.0	-	43.0	19.0	2.0	40.8	18.6	35.6	29.8
11.0	22.0	11.0	5.0	196.0	19.0	2.0	196.7	23.2	167.6	159.0
11.0	22.0	12.0	-	100.0	19.0	1.0	95.4	21.3	82.0	75.3
11.0	22.0	13.0	-	82.0	19.0	1.0	78.0	19.9	67.4	61.0
11.0	22.0	14.0	-	119.0	19.0	1.0	116.0	21.2	99.8	92.7
11.0	22.0	15.0	-	54.0	18.0	1.0	51.4	18.0	44.8	38.9
11.0	22.0	16.0	-	7.0	17.0	1.0	6.6	14.8	5.9	0.7
11.0	22.0	17.0	-	-	16.0	1.0	-	16.0	-	-
11.0	22.0	18.0	-	-	16.0	1.0	-	16.0	-	-
11.0	22.0	19.0	-	-	16.0	1.0	-	16.0	-	-
11.0	22.0	20.0	-	-	15.0	1.0	-	15.0	-	-
11.0	22.0	21.0	-	-	15.0	1.0	-	15.0	-	-
11.0	22.0	22.0	-	-	15.0	-	-	15.0	-	-
11.0	22.0	23.0	-	-	14.0	-	-	14.0	-	-
11.0	23.0	-	-	-	14.0	-	-	14.0	-	-
11.0	23.0	1.0	-	-	14.0	-	-	14.0	-	-
11.0	23.0	2.0	-	-	14.0	-	-	14.0	-	-
11.0	23.0	3.0	-	-	14.0	-	-	14.0	-	-
11.0	23.0	4.0	-	-	14.0	-	-	14.0	-	-
11.0	23.0	5.0	-	-	14.0	-	-	14.0	-	-

11.0	23.0	6.0	-	-	14.0	-	-	14.0	-	-
11.0	23.0	7.0	-	23.0	14.0	1.0	21.8	11.9	19.5	14.1
11.0	23.0	8.0	-	42.0	15.0	1.0	39.8	13.8	35.4	29.7
11.0	23.0	9.0	-	161.0	16.0	1.0	157.9	19.4	136.9	129.0
11.0	23.0	10.0	4.0	187.0	17.0	1.0	186.9	22.4	159.8	151.4
11.0	23.0	11.0	13.0	221.0	17.0	1.0	229.8	24.2	194.9	185.6
11.0	23.0	12.0	19.0	227.0	18.0	1.0	241.4	25.9	203.1	193.6
11.0	23.0	13.0	52.0	225.0	17.0	1.0	274.6	26.1	230.6	220.3
11.0	23.0	14.0	240.0	168.0	17.0	1.0	336.7	28.6	276.5	265.0
11.0	23.0	15.0	320.0	82.0	16.0	1.0	235.5	24.4	189.4	180.2
11.0	23.0	16.0	-	28.0	16.0	1.0	28.2	16.0	24.8	19.3
11.0	23.0	17.0	-	-	15.0	1.0	-	15.0	-	-
11.0	23.0	18.0	-	-	15.0	1.0	-	15.0	-	-
11.0	23.0	19.0	-	-	14.0	1.0	-	14.0	-	-
11.0	23.0	20.0	-	-	14.0	1.0	-	14.0	-	-
11.0	23.0	21.0	-	-	14.0	1.0	-	14.0	-	-
11.0	23.0	22.0	-	-	13.0	1.0	-	13.0	-	-
11.0	23.0	23.0	-	-	13.0	1.0	-	13.0	-	-
11.0	24.0	-	-	-	13.0	1.0	-	13.0	-	-
11.0	24.0	1.0	-	-	13.0	1.0	-	13.0	-	-
11.0	24.0	2.0	-	-	13.0	1.0	-	13.0	-	-
11.0	24.0	3.0	-	-	13.0	1.0	-	13.0	-	-
11.0	24.0	4.0	-	-	13.0	1.0	-	13.0	-	-
11.0	24.0	5.0	-	-	12.0	1.0	-	12.0	-	-
11.0	24.0	6.0	-	-	12.0	1.0	-	12.0	-	-
11.0	24.0	7.0	-	70.0	13.0	1.0	69.5	12.7	62.1	55.8
11.0	24.0	8.0	421.0	127.0	14.0	2.0	393.8	24.4	326.8	313.8
11.0	24.0	9.0	420.0	191.0	15.0	2.0	530.2	30.9	432.8	416.5
11.0	24.0	10.0	598.0	176.0	16.0	1.0	707.2	41.6	549.5	528.9
11.0	24.0	11.0	674.0	164.0	17.0	1.0	783.5	45.9	595.9	573.5
11.0	24.0	12.0	148.0	285.0	17.0	1.0	436.2	35.1	350.7	337.0
11.0	24.0	13.0	255.0	233.0	17.0	1.0	455.1	33.7	367.6	353.4
11.0	24.0	14.0	61.0	167.0	17.0	-	211.9	29.3	174.6	165.8
11.0	24.0	15.0	167.0	93.0	16.0	-	178.2	24.2	145.8	137.7
11.0	24.0	16.0	-	18.0	16.0	1.0	17.1	15.1	15.1	9.7
11.0	24.0	17.0	-	-	15.0	1.0	-	15.0	-	-
11.0	24.0	18.0	-	-	15.0	1.0	-	15.0	-	-
11.0	24.0	19.0	-	-	15.0	1.0	-	15.0	-	-
11.0	24.0	20.0	-	-	15.0	1.0	-	15.0	-	-
11.0	24.0	21.0	-	-	15.0	1.0	-	15.0	-	-
11.0	24.0	22.0	-	-	15.0	1.0	-	15.0	-	-
11.0	24.0	23.0	-	-	15.0	-	-	15.0	-	-
11.0	25.0	-	-	-	15.0	-	-	15.0	-	-
11.0	25.0	1.0	-	-	14.0	-	-	14.0	-	-
11.0	25.0	2.0	-	-	14.0	1.0	-	14.0	-	-
11.0	25.0	3.0	-	-	14.0	1.0	-	14.0	-	-
11.0	25.0	4.0	-	-	13.0	1.0	-	13.0	-	-
11.0	25.0	5.0	-	-	13.0	1.0	-	13.0	-	-
11.0	25.0	6.0	-	-	13.0	1.0	-	13.0	-	-
11.0	25.0	7.0	338.0	65.0	14.0	1.0	209.3	19.0	169.0	160.3
11.0	25.0	8.0	411.0	128.0	15.0	1.0	388.3	28.0	316.8	304.2
11.0	25.0	9.0	680.0	135.0	16.0	1.0	659.0	39.2	515.5	496.2
11.0	25.0	10.0	728.0	149.0	17.0	1.0	783.3	45.6	595.8	573.4
11.0	25.0	11.0	750.0	153.0	18.0	1.0	835.3	48.9	625.5	601.9
11.0	25.0	12.0	507.0	212.0	18.0	1.0	674.5	44.1	517.7	498.3
11.0	25.0	13.0	813.0	101.0	19.0	1.0	734.7	46.1	555.3	534.5
11.0	25.0	14.0	753.0	85.0	18.0	1.0	566.0	40.1	434.8	418.3
11.0	25.0	15.0	610.0	61.0	17.0	1.0	336.0	30.4	257.9	246.9
11.0	25.0	16.0	210.0	20.0	16.0	1.0	80.1	18.7	58.5	52.3
11.0	25.0	17.0	-	-	14.0	2.0	-	14.0	-	-
11.0	25.0	18.0	-	-	13.0	2.0	-	13.0	-	-
11.0	25.0	19.0	-	-	13.0	2.0	-	13.0	-	-
11.0	25.0	20.0	-	-	12.0	2.0	-	12.0	-	-
11.0	25.0	21.0	-	-	12.0	2.0	-	12.0	-	-
11.0	25.0	22.0	-	-	11.0	2.0	-	11.0	-	-
11.0	25.0	23.0	-	-	10.0	2.0	-	10.0	-	-
11.0	26.0	-	-	-	10.0	2.0	-	10.0	-	-
11.0	26.0	1.0	-	-	10.0	2.0	-	10.0	-	-
11.0	26.0	2.0	-	-	9.0	2.0	-	9.0	-	-
11.0	26.0	3.0	-	-	9.0	2.0	-	9.0	-	-
11.0	26.0	4.0	-	-	9.0	2.0	-	9.0	-	-
11.0	26.0	5.0	-	-	9.0	2.0	-	9.0	-	-
11.0	26.0	6.0	-	-	9.0	2.0	-	9.0	-	-
11.0	26.0	7.0	675.0	43.0	10.0	2.0	310.0	17.4	245.4	234.8
11.0	26.0	8.0	850.0	59.0	12.0	2.0	557.1	28.4	449.1	432.2
11.0	26.0	9.0	929.0	65.0	13.0	2.0	749.3	36.1	594.1	571.8
11.0	26.0	10.0	959.0	71.0	14.0	2.0	871.9	41.4	677.5	651.7
11.0	26.0	11.0	959.0	77.0	15.0	2.0	915.5	44.0	702.8	675.8
11.0	26.0	12.0	942.0	79.0	16.0	3.0	880.3	41.0	685.7	659.6
11.0	26.0	13.0	911.0	75.0	15.0	3.0	772.1	37.1	610.5	587.5
11.0	26.0	14.0	852.0	65.0	14.0	3.0	600.6	31.3	481.1	463.0

11.0	26.0	15.0	721.0	48.0	13.0	3.0	366.2	23.4	288.7	276.8
11.0	26.0	16.0	-	33.0	12.0	3.0	34.7	12.3	31.1	25.4
11.0	26.0	17.0	-	-	10.0	2.0	-	10.0	-	-
11.0	26.0	18.0	-	-	10.0	2.0	-	10.0	-	-
11.0	26.0	19.0	-	-	9.0	2.0	-	9.0	-	-
11.0	26.0	20.0	-	-	9.0	2.0	-	9.0	-	-
11.0	26.0	21.0	-	-	8.0	2.0	-	8.0	-	-
11.0	26.0	22.0	-	-	8.0	2.0	-	8.0	-	-
11.0	26.0	23.0	-	-	7.0	2.0	-	7.0	-	-
11.0	27.0	-	-	-	7.0	2.0	-	7.0	-	-
11.0	27.0	1.0	-	-	7.0	2.0	-	7.0	-	-
11.0	27.0	2.0	-	-	6.0	2.0	-	6.0	-	-
11.0	27.0	3.0	-	-	6.0	2.0	-	6.0	-	-
11.0	27.0	4.0	-	-	6.0	1.0	-	6.0	-	-
11.0	27.0	5.0	-	-	6.0	1.0	-	6.0	-	-
11.0	27.0	6.0	-	-	6.0	1.0	-	6.0	-	-
11.0	27.0	7.0	212.0	71.0	8.0	1.0	162.6	11.2	137.9	130.0
11.0	27.0	8.0	834.0	64.0	10.0	1.0	555.3	28.6	447.5	430.6
11.0	27.0	9.0	918.0	73.0	11.0	1.0	748.9	38.4	587.3	565.2
11.0	27.0	10.0	958.0	77.0	12.0	1.0	876.4	44.4	670.4	644.9
11.0	27.0	11.0	732.0	141.0	13.0	1.0	804.0	43.7	618.2	594.9
11.0	27.0	12.0	500.0	213.0	13.0	1.0	668.7	39.1	526.5	506.8
11.0	27.0	13.0	347.0	214.0	14.0	1.0	501.7	33.8	404.6	389.2
11.0	27.0	14.0	516.0	120.0	13.0	1.0	457.6	30.3	370.1	355.8
11.0	27.0	15.0	163.0	91.0	12.0	1.0	174.5	19.1	146.3	138.2
11.0	27.0	16.0	-	19.0	11.0	1.0	18.0	10.0	16.3	10.9
11.0	27.0	17.0	-	-	11.0	1.0	-	11.0	-	-
11.0	27.0	18.0	-	-	10.0	1.0	-	10.0	-	-
11.0	27.0	19.0	-	-	10.0	1.0	-	10.0	-	-
11.0	27.0	20.0	-	-	10.0	1.0	-	10.0	-	-
11.0	27.0	21.0	-	-	10.0	1.0	-	10.0	-	-
11.0	27.0	22.0	-	-	10.0	1.0	-	10.0	-	-
11.0	27.0	23.0	-	-	10.0	1.0	-	10.0	-	-
11.0	28.0	-	-	-	10.0	1.0	-	10.0	-	-
11.0	28.0	1.0	-	-	9.0	1.0	-	9.0	-	-
11.0	28.0	2.0	-	-	9.0	1.0	-	9.0	-	-
11.0	28.0	3.0	-	-	9.0	1.0	-	9.0	-	-
11.0	28.0	4.0	-	-	9.0	1.0	-	9.0	-	-
11.0	28.0	5.0	-	-	9.0	1.0	-	9.0	-	-
11.0	28.0	6.0	-	-	10.0	1.0	-	10.0	-	-
11.0	28.0	7.0	43.0	72.0	10.0	1.0	91.8	10.5	81.1	74.4
11.0	28.0	8.0	11.0	133.0	12.0	1.0	138.5	15.0	122.3	114.7
11.0	28.0	9.0	115.0	222.0	13.0	1.0	325.7	23.3	276.6	265.1
11.0	28.0	10.0	477.0	215.0	14.0	1.0	643.7	36.4	513.4	494.2
11.0	28.0	11.0	706.0	150.0	15.0	1.0	790.9	43.9	607.6	584.7
11.0	28.0	12.0	6.0	195.0	15.0	-	197.1	30.2	162.5	153.9
11.0	28.0	13.0	372.0	208.0	15.0	-	513.3	36.7	408.0	392.5
11.0	28.0	14.0	208.0	167.0	15.0	-	308.7	31.8	249.7	239.0
11.0	28.0	15.0	49.0	91.0	14.0	-	116.3	20.7	98.7	91.6
11.0	28.0	16.0	-	29.0	14.0	-	29.6	13.3	26.4	20.8
11.0	28.0	17.0	-	-	14.0	1.0	-	14.0	-	-
11.0	28.0	18.0	-	-	14.0	1.0	-	14.0	-	-
11.0	28.0	19.0	-	-	14.0	1.0	-	14.0	-	-
11.0	28.0	20.0	-	-	13.0	1.0	-	13.0	-	-
11.0	28.0	21.0	-	-	13.0	1.0	-	13.0	-	-
11.0	28.0	22.0	-	-	12.0	1.0	-	12.0	-	-
11.0	28.0	23.0	-	-	12.0	1.0	-	12.0	-	-
11.0	29.0	-	-	-	11.0	1.0	-	11.0	-	-
11.0	29.0	1.0	-	-	11.0	1.0	-	11.0	-	-
11.0	29.0	2.0	-	-	11.0	1.0	-	11.0	-	-
11.0	29.0	3.0	-	-	11.0	1.0	-	11.0	-	-
11.0	29.0	4.0	-	-	11.0	1.0	-	11.0	-	-
11.0	29.0	5.0	-	-	11.0	-	-	11.0	-	-
11.0	29.0	6.0	-	-	12.0	-	-	12.0	-	-
11.0	29.0	7.0	550.0	48.0	14.0	-	267.3	23.3	206.7	197.0
11.0	29.0	8.0	735.0	70.0	16.0	-	502.9	37.8	387.4	372.6
11.0	29.0	9.0	817.0	84.0	17.0	-	690.7	47.5	516.8	497.5
11.0	29.0	10.0	491.0	209.0	18.0	-	647.6	48.3	485.9	467.7
11.0	29.0	11.0	538.0	207.0	19.0	-	705.6	50.9	522.7	503.1
11.0	29.0	12.0	435.0	232.0	20.0	-	634.8	49.8	472.8	455.0
11.0	29.0	13.0	671.0	125.0	20.0	-	657.1	50.1	486.5	468.2
11.0	29.0	14.0	673.0	85.0	19.0	-	517.0	44.5	388.4	373.5
11.0	29.0	15.0	356.0	77.0	18.0	-	245.6	32.3	189.6	180.4
11.0	29.0	16.0	-	22.0	17.0	1.0	21.2	16.9	18.6	13.1
11.0	29.0	17.0	-	-	16.0	1.0	-	16.0	-	-
11.0	29.0	18.0	-	-	16.0	1.0	-	16.0	-	-
11.0	29.0	19.0	-	-	16.0	1.0	-	16.0	-	-
11.0	29.0	20.0	-	-	16.0	1.0	-	16.0	-	-
11.0	29.0	21.0	-	-	16.0	1.0	-	16.0	-	-
11.0	29.0	22.0	-	-	16.0	1.0	-	16.0	-	-
11.0	29.0	23.0	-	-	16.0	1.0	-	16.0	-	-

11.0	30.0	-	-	-	16.0	1.0	-	16.0	-	-
11.0	30.0	1.0	-	-	16.0	1.0	-	16.0	-	-
11.0	30.0	2.0	-	-	16.0	1.0	-	16.0	-	-
11.0	30.0	3.0	-	-	16.0	1.0	-	16.0	-	-
11.0	30.0	4.0	-	-	17.0	1.0	-	17.0	-	-
11.0	30.0	5.0	-	-	17.0	1.0	-	17.0	-	-
11.0	30.0	6.0	-	-	17.0	1.0	-	17.0	-	-
11.0	30.0	7.0	206.0	68.0	18.0	1.0	156.0	21.1	126.2	118.5
11.0	30.0	8.0	658.0	82.0	19.0	2.0	474.1	32.2	376.0	361.5
11.0	30.0	9.0	779.0	88.0	20.0	2.0	666.6	40.1	518.0	498.6
11.0	30.0	10.0	121.0	268.0	21.0	2.0	392.6	34.0	317.4	304.8
11.0	30.0	11.0	-	113.0	21.0	3.0	108.2	23.6	92.1	85.1
11.0	30.0	12.0	-	100.0	21.0	3.0	95.4	22.2	81.7	75.0
11.0	30.0	13.0	-	27.0	21.0	3.0	25.6	20.2	22.1	16.6
11.0	30.0	14.0	-	100.0	20.0	2.0	96.6	21.0	83.2	76.4
11.0	30.0	15.0	385.0	74.0	19.0	2.0	254.5	25.2	202.7	193.2
11.0	30.0	16.0	-	23.0	18.0	3.0	22.3	17.6	19.5	14.1
11.0	30.0	17.0	-	-	16.0	4.0	-	16.0	-	-
11.0	30.0	18.0	-	-	8.0	2.0	-	8.0	-	-
11.0	30.0	19.0	-	-	8.0	2.0	-	8.0	-	-
11.0	30.0	20.0	-	-	7.0	2.0	-	7.0	-	-
11.0	30.0	21.0	-	-	6.0	2.0	-	6.0	-	-
11.0	30.0	22.0	-	-	6.0	2.0	-	6.0	-	-
11.0	30.0	23.0	-	-	5.0	2.0	-	5.0	-	-
12.0	1.0	-	-	-	5.0	2.0	-	5.0	-	-
12.0	1.0	1.0	-	-	4.0	2.0	-	4.0	-	-
12.0	1.0	2.0	-	-	4.0	2.0	-	4.0	-	-
12.0	1.0	3.0	-	-	4.0	2.0	-	4.0	-	-
12.0	1.0	4.0	-	-	4.0	1.0	-	4.0	-	-
12.0	1.0	5.0	-	-	4.0	1.0	-	4.0	-	-
12.0	1.0	6.0	-	-	4.0	1.0	-	4.0	-	-
12.0	1.0	7.0	624.0	47.0	6.0	2.0	288.1	12.7	232.2	221.9
12.0	1.0	8.0	819.0	66.0	8.0	1.0	542.0	27.0	439.3	422.7
12.0	1.0	9.0	906.0	77.0	10.0	1.0	737.6	37.0	582.0	560.1
12.0	1.0	10.0	947.0	82.0	12.0	1.0	866.4	44.0	663.9	638.6
12.0	1.0	11.0	961.0	84.0	13.0	1.0	918.2	47.2	693.0	666.5
12.0	1.0	12.0	956.0	82.0	14.0	1.0	890.1	47.6	670.1	644.6
12.0	1.0	13.0	923.0	77.0	15.0	1.0	780.4	44.9	592.9	570.6
12.0	1.0	14.0	852.0	68.0	15.0	1.0	603.3	38.7	465.9	448.4
12.0	1.0	15.0	700.0	52.0	14.0	1.0	362.7	28.7	279.5	267.9
12.0	1.0	16.0	280.0	18.0	13.0	1.0	95.2	16.5	68.7	62.3
12.0	1.0	17.0	-	-	12.0	1.0	-	12.0	-	-
12.0	1.0	18.0	-	-	11.0	1.0	-	11.0	-	-
12.0	1.0	19.0	-	-	10.0	2.0	-	10.0	-	-
12.0	1.0	20.0	-	-	10.0	2.0	-	10.0	-	-
12.0	1.0	21.0	-	-	10.0	2.0	-	10.0	-	-
12.0	1.0	22.0	-	-	9.0	2.0	-	9.0	-	-
12.0	1.0	23.0	-	-	9.0	1.0	-	9.0	-	-
12.0	2.0	-	-	-	9.0	1.0	-	9.0	-	-
12.0	2.0	1.0	-	-	9.0	1.0	-	9.0	-	-
12.0	2.0	2.0	-	-	9.0	1.0	-	9.0	-	-
12.0	2.0	3.0	-	-	8.0	1.0	-	8.0	-	-
12.0	2.0	4.0	-	-	8.0	1.0	-	8.0	-	-
12.0	2.0	5.0	-	-	8.0	1.0	-	8.0	-	-
12.0	2.0	6.0	-	-	9.0	1.0	-	9.0	-	-
12.0	2.0	7.0	557.0	51.0	10.0	1.0	269.5	17.2	213.7	203.9
12.0	2.0	8.0	765.0	73.0	12.0	1.0	518.0	29.9	414.2	398.5
12.0	2.0	9.0	859.0	84.0	15.0	1.0	715.4	40.8	553.7	532.9
12.0	2.0	10.0	901.0	91.0	16.0	1.0	844.0	46.9	637.1	613.0
12.0	2.0	11.0	139.0	287.0	17.0	1.0	433.8	35.4	348.4	334.7
12.0	2.0	12.0	684.0	146.0	18.0	1.0	748.1	44.2	573.3	551.8
12.0	2.0	13.0	745.0	102.0	18.0	1.0	684.6	43.9	523.2	503.6
12.0	2.0	14.0	783.0	77.0	18.0	1.0	571.9	40.0	439.2	422.6
12.0	2.0	15.0	632.0	56.0	17.0	1.0	341.1	30.6	261.2	250.1
12.0	2.0	16.0	227.0	17.0	15.0	1.0	81.6	17.8	59.3	53.0
12.0	2.0	17.0	-	-	13.0	2.0	-	13.0	-	-
12.0	2.0	18.0	-	-	13.0	2.0	-	13.0	-	-
12.0	2.0	19.0	-	-	12.0	2.0	-	12.0	-	-
12.0	2.0	20.0	-	-	12.0	2.0	-	12.0	-	-
12.0	2.0	21.0	-	-	12.0	2.0	-	12.0	-	-
12.0	2.0	22.0	-	-	11.0	2.0	-	11.0	-	-
12.0	2.0	23.0	-	-	11.0	2.0	-	11.0	-	-
12.0	3.0	-	-	-	11.0	2.0	-	11.0	-	-
12.0	3.0	1.0	-	-	10.0	2.0	-	10.0	-	-
12.0	3.0	2.0	-	-	10.0	2.0	-	10.0	-	-
12.0	3.0	3.0	-	-	10.0	2.0	-	10.0	-	-
12.0	3.0	4.0	-	-	10.0	2.0	-	10.0	-	-
12.0	3.0	5.0	-	-	10.0	2.0	-	10.0	-	-
12.0	3.0	6.0	-	-	10.0	2.0	-	10.0	-	-
12.0	3.0	7.0	565.0	46.0	12.0	2.0	265.7	18.0	209.2	199.5
12.0	3.0	8.0	747.0	70.0	14.0	2.0	503.2	28.6	404.7	389.3

12.0	3.0	9.0	817.0	88.0	16.0	2.0	688.7	37.0	543.3	522.9
12.0	3.0	10.0	840.0	103.0	18.0	2.0	807.2	43.1	621.5	598.1
12.0	3.0	11.0	845.0	110.0	19.0	2.0	854.0	45.8	649.3	624.7
12.0	3.0	12.0	391.0	239.0	19.0	3.0	594.5	36.3	474.7	456.8
12.0	3.0	13.0	814.0	96.0	19.0	3.0	725.8	38.9	569.1	547.7
12.0	3.0	14.0	583.0	105.0	19.0	2.0	485.2	35.0	383.0	368.3
12.0	3.0	15.0	263.0	84.0	18.0	2.0	209.1	24.7	168.7	160.0
12.0	3.0	16.0	-	19.0	17.0	2.0	18.0	16.3	15.8	10.5
12.0	3.0	17.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	18.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	19.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	20.0	-	-	16.0	2.0	-	16.0	-	-
12.0	3.0	21.0	-	-	15.0	2.0	-	15.0	-	-
12.0	3.0	22.0	-	-	15.0	2.0	-	15.0	-	-
12.0	3.0	23.0	-	-	15.0	2.0	-	15.0	-	-
12.0	4.0	-	-	-	15.0	2.0	-	15.0	-	-
12.0	4.0	1.0	-	-	15.0	2.0	-	15.0	-	-
12.0	4.0	2.0	-	-	15.0	2.0	-	15.0	-	-
12.0	4.0	3.0	-	-	14.0	2.0	-	14.0	-	-
12.0	4.0	4.0	-	-	14.0	2.0	-	14.0	-	-
12.0	4.0	5.0	-	-	14.0	2.0	-	14.0	-	-
12.0	4.0	6.0	-	-	14.0	2.0	-	14.0	-	-
12.0	4.0	7.0	4.0	63.0	16.0	3.0	64.7	15.8	56.9	50.7
12.0	4.0	8.0	535.0	97.0	17.0	3.0	417.3	26.8	339.9	326.5
12.0	4.0	9.0	763.0	100.0	18.0	3.0	665.6	35.7	528.6	508.8
12.0	4.0	10.0	802.0	113.0	19.0	3.0	786.5	40.7	613.2	590.1
12.0	4.0	11.0	810.0	120.0	20.0	3.0	834.6	43.3	643.1	618.8
12.0	4.0	12.0	799.0	118.0	20.0	3.0	805.8	42.7	622.3	598.8
12.0	4.0	13.0	759.0	110.0	20.0	3.0	703.9	40.0	548.9	528.4
12.0	4.0	14.0	676.0	95.0	19.0	3.0	530.4	34.1	420.1	404.1
12.0	4.0	15.0	506.0	70.0	18.0	2.0	304.0	27.7	237.8	227.4
12.0	4.0	16.0	-	25.0	17.0	2.0	24.7	17.0	21.7	16.2
12.0	4.0	17.0	-	-	17.0	2.0	-	17.0	-	-
12.0	4.0	18.0	-	-	17.0	2.0	-	17.0	-	-
12.0	4.0	19.0	-	-	17.0	2.0	-	17.0	-	-
12.0	4.0	20.0	-	-	17.0	2.0	-	17.0	-	-
12.0	4.0	21.0	-	-	17.0	2.0	-	17.0	-	-
12.0	4.0	22.0	-	-	17.0	2.0	-	17.0	-	-
12.0	4.0	23.0	-	-	17.0	2.0	-	17.0	-	-
12.0	5.0	-	-	-	17.0	2.0	-	17.0	-	-
12.0	5.0	1.0	-	-	17.0	2.0	-	17.0	-	-
12.0	5.0	2.0	-	-	17.0	2.0	-	17.0	-	-
12.0	5.0	3.0	-	-	17.0	2.0	-	17.0	-	-
12.0	5.0	4.0	-	-	17.0	2.0	-	17.0	-	-
12.0	5.0	5.0	-	-	17.0	2.0	-	17.0	-	-
12.0	5.0	6.0	-	-	17.0	2.0	-	17.0	-	-
12.0	5.0	7.0	21.0	64.0	18.0	2.0	75.2	18.1	64.8	58.4
12.0	5.0	8.0	-	113.0	19.0	2.0	111.4	20.7	96.1	89.1
12.0	5.0	9.0	-	117.0	21.0	2.0	113.1	23.0	96.5	89.5
12.0	5.0	10.0	-	134.0	22.0	3.0	129.6	24.2	109.9	102.6
12.0	5.0	11.0	-	157.0	22.0	3.0	152.7	24.9	129.1	121.4
12.0	5.0	12.0	23.0	226.0	22.0	3.0	244.4	27.5	204.1	194.5
12.0	5.0	13.0	62.0	221.0	22.0	3.0	278.8	28.7	231.1	220.9
12.0	5.0	14.0	2.0	136.0	21.0	2.0	135.8	24.5	115.1	107.6
12.0	5.0	15.0	-	64.0	20.0	2.0	62.1	20.4	53.6	47.4
12.0	5.0	16.0	-	8.0	20.0	2.0	7.6	18.4	6.6	1.4
12.0	5.0	17.0	-	-	20.0	2.0	-	20.0	-	-
12.0	5.0	18.0	-	-	20.0	2.0	-	20.0	-	-
12.0	5.0	19.0	-	-	20.0	1.0	-	20.0	-	-
12.0	5.0	20.0	-	-	19.0	1.0	-	19.0	-	-
12.0	5.0	21.0	-	-	19.0	1.0	-	19.0	-	-
12.0	5.0	22.0	-	-	19.0	1.0	-	19.0	-	-
12.0	5.0	23.0	-	-	19.0	1.0	-	19.0	-	-
12.0	6.0	-	-	-	19.0	1.0	-	19.0	-	-
12.0	6.0	1.0	-	-	19.0	1.0	-	19.0	-	-
12.0	6.0	2.0	-	-	19.0	1.0	-	19.0	-	-
12.0	6.0	3.0	-	-	19.0	1.0	-	19.0	-	-
12.0	6.0	4.0	-	-	19.0	1.0	-	19.0	-	-
12.0	6.0	5.0	-	-	19.0	1.0	-	19.0	-	-
12.0	6.0	6.0	-	-	19.0	1.0	-	19.0	-	-
12.0	6.0	7.0	13.0	62.0	20.0	1.0	67.1	19.8	57.5	51.3
12.0	6.0	8.0	11.0	126.0	21.0	1.0	131.7	23.8	111.7	104.4
12.0	6.0	9.0	3.0	161.0	21.0	1.0	161.1	25.3	135.9	128.0
12.0	6.0	10.0	-	110.0	22.0	1.0	105.4	24.5	89.3	82.4
12.0	6.0	11.0	-	135.0	22.0	1.0	130.3	25.0	110.1	102.8
12.0	6.0	12.0	-	68.0	22.0	1.0	64.6	22.8	55.2	49.0
12.0	6.0	13.0	69.0	223.0	22.0	1.0	286.4	30.4	235.5	225.1
12.0	6.0	14.0	660.0	90.0	21.0	1.0	515.5	38.7	399.0	383.8
12.0	6.0	15.0	488.0	66.0	20.0	1.0	293.0	31.6	225.1	215.1
12.0	6.0	16.0	-	23.0	19.0	1.0	22.4	19.3	19.4	13.9
12.0	6.0	17.0	-	-	18.0	1.0	-	18.0	-	-

12.0	6.0	18.0	-	-	17.0	1.0	-	17.0	-	-
12.0	6.0	19.0	-	-	17.0	2.0	-	17.0	-	-
12.0	6.0	20.0	-	-	16.0	2.0	-	16.0	-	-
12.0	6.0	21.0	-	-	15.0	2.0	-	15.0	-	-
12.0	6.0	22.0	-	-	13.0	3.0	-	13.0	-	-
12.0	6.0	23.0	-	-	13.0	2.0	-	13.0	-	-
12.0	7.0	-	-	-	12.0	2.0	-	12.0	-	-
12.0	7.0	1.0	-	-	12.0	3.0	-	12.0	-	-
12.0	7.0	2.0	-	-	11.0	3.0	-	11.0	-	-
12.0	7.0	3.0	-	-	11.0	3.0	-	11.0	-	-
12.0	7.0	4.0	-	-	10.0	3.0	-	10.0	-	-
12.0	7.0	5.0	-	-	10.0	3.0	-	10.0	-	-
12.0	7.0	6.0	-	-	9.0	3.0	-	9.0	-	-
12.0	7.0	7.0	-	39.0	9.0	4.0	37.0	8.0	33.8	28.0
12.0	7.0	8.0	-	28.0	9.0	4.0	26.5	7.9	24.2	18.7
12.0	7.0	9.0	104.0	210.0	9.0	4.0	294.7	14.7	260.2	249.2
12.0	7.0	10.0	53.0	242.0	10.0	4.0	297.4	16.6	260.9	249.9
12.0	7.0	11.0	933.0	92.0	10.0	4.0	897.0	31.6	732.3	704.1
12.0	7.0	12.0	933.0	88.0	11.0	4.0	873.9	33.7	705.6	678.6
12.0	7.0	13.0	899.0	82.0	11.0	4.0	772.0	31.2	628.3	604.6
12.0	7.0	14.0	821.0	73.0	11.0	3.0	591.4	28.1	481.2	463.1
12.0	7.0	15.0	659.0	56.0	10.0	3.0	354.8	20.1	285.7	273.9
12.0	7.0	16.0	237.0	19.0	9.0	3.0	87.8	10.7	66.3	59.9
12.0	7.0	17.0	-	-	8.0	3.0	-	8.0	-	-
12.0	7.0	18.0	-	-	7.0	3.0	-	7.0	-	-
12.0	7.0	19.0	-	-	6.0	3.0	-	6.0	-	-
12.0	7.0	20.0	-	-	6.0	3.0	-	6.0	-	-
12.0	7.0	21.0	-	-	5.0	3.0	-	5.0	-	-
12.0	7.0	22.0	-	-	5.0	3.0	-	5.0	-	-
12.0	7.0	23.0	-	-	5.0	2.0	-	5.0	-	-
12.0	8.0	-	-	-	4.0	2.0	-	4.0	-	-
12.0	8.0	1.0	-	-	4.0	2.0	-	4.0	-	-
12.0	8.0	2.0	-	-	4.0	2.0	-	4.0	-	-
12.0	8.0	3.0	-	-	4.0	2.0	-	4.0	-	-
12.0	8.0	4.0	-	-	4.0	2.0	-	4.0	-	-
12.0	8.0	5.0	-	-	4.0	2.0	-	4.0	-	-
12.0	8.0	6.0	-	-	4.0	2.0	-	4.0	-	-
12.0	8.0	7.0	532.0	49.0	5.0	2.0	251.3	10.6	204.0	194.4
12.0	8.0	8.0	764.0	71.0	7.0	2.0	505.6	21.7	419.0	403.1
12.0	8.0	9.0	869.0	81.0	8.0	1.0	709.2	34.0	567.4	546.1
12.0	8.0	10.0	919.0	86.0	9.0	1.0	838.3	40.2	654.6	629.8
12.0	8.0	11.0	647.0	163.0	10.0	-	746.8	45.4	569.2	547.8
12.0	8.0	12.0	527.0	197.0	11.0	-	668.9	43.0	515.9	496.6
12.0	8.0	13.0	665.0	124.0	12.0	-	650.0	42.7	500.0	481.2
12.0	8.0	14.0	620.0	96.0	12.0	-	498.7	37.2	389.1	374.2
12.0	8.0	15.0	663.0	43.0	11.0	1.0	340.5	24.3	267.9	256.7
12.0	8.0	16.0	-	28.0	10.0	1.0	28.5	10.7	25.7	20.1
12.0	8.0	17.0	-	-	9.0	1.0	-	9.0	-	-
12.0	8.0	18.0	-	-	8.0	1.0	-	8.0	-	-
12.0	8.0	19.0	-	-	8.0	1.0	-	8.0	-	-
12.0	8.0	20.0	-	-	7.0	1.0	-	7.0	-	-
12.0	8.0	21.0	-	-	7.0	1.0	-	7.0	-	-
12.0	8.0	22.0	-	-	7.0	1.0	-	7.0	-	-
12.0	8.0	23.0	-	-	6.0	1.0	-	6.0	-	-
12.0	9.0	-	-	-	6.0	1.0	-	6.0	-	-
12.0	9.0	1.0	-	-	6.0	1.0	-	6.0	-	-
12.0	9.0	2.0	-	-	6.0	1.0	-	6.0	-	-
12.0	9.0	3.0	-	-	5.0	1.0	-	5.0	-	-
12.0	9.0	4.0	-	-	5.0	1.0	-	5.0	-	-
12.0	9.0	5.0	-	-	5.0	1.0	-	5.0	-	-
12.0	9.0	6.0	-	-	5.0	1.0	-	5.0	-	-
12.0	9.0	7.0	88.0	62.0	7.0	1.0	100.9	7.8	88.3	81.5
12.0	9.0	8.0	764.0	67.0	9.0	1.0	499.7	25.3	407.0	391.5
12.0	9.0	9.0	594.0	131.0	11.0	1.0	576.1	32.3	465.4	447.9
12.0	9.0	10.0	656.0	145.0	12.0	1.0	704.4	38.0	556.7	535.8
12.0	9.0	11.0	610.0	174.0	13.0	1.0	727.1	40.4	568.7	547.4
12.0	9.0	12.0	83.0	262.0	14.0	1.0	345.6	28.9	286.5	274.7
12.0	9.0	13.0	538.0	163.0	14.0	1.0	595.1	34.9	476.5	458.6
12.0	9.0	14.0	286.0	156.0	13.0	1.0	352.3	27.3	290.6	278.8
12.0	9.0	15.0	68.0	90.0	12.0	1.0	124.1	16.5	106.9	99.6
12.0	9.0	16.0	-	15.0	11.0	1.0	14.2	9.5	12.9	7.5
12.0	9.0	17.0	-	-	11.0	2.0	-	11.0	-	-
12.0	9.0	18.0	-	-	11.0	2.0	-	11.0	-	-
12.0	9.0	19.0	-	-	10.0	2.0	-	10.0	-	-
12.0	9.0	20.0	-	-	10.0	2.0	-	10.0	-	-
12.0	9.0	21.0	-	-	9.0	2.0	-	9.0	-	-
12.0	9.0	22.0	-	-	9.0	2.0	-	9.0	-	-
12.0	9.0	23.0	-	-	8.0	2.0	-	8.0	-	-
12.0	10.0	-	-	-	8.0	2.0	-	8.0	-	-
12.0	10.0	1.0	-	-	8.0	3.0	-	8.0	-	-
12.0	10.0	2.0	-	-	8.0	3.0	-	8.0	-	-

12.0	10.0	3.0	-	-	8.0	3.0	-	8.0	-	-
12.0	10.0	4.0	-	-	8.0	3.0	-	8.0	-	-
12.0	10.0	5.0	-	-	8.0	3.0	-	8.0	-	-
12.0	10.0	6.0	-	-	8.0	3.0	-	8.0	-	-
12.0	10.0	7.0	50.0	60.0	8.0	3.0	81.1	8.1	71.7	65.3
12.0	10.0	8.0	77.0	137.0	9.0	3.0	186.2	12.5	165.0	156.5
12.0	10.0	9.0	314.0	191.0	10.0	3.0	435.8	20.8	372.8	358.4
12.0	10.0	10.0	281.0	246.0	11.0	3.0	504.4	24.6	426.0	409.9
12.0	10.0	11.0	175.0	280.0	11.0	3.0	455.7	23.5	387.3	372.5
12.0	10.0	12.0	56.0	251.0	12.0	3.0	310.8	20.4	268.2	256.9
12.0	10.0	13.0	510.0	170.0	12.0	3.0	582.4	27.2	484.0	465.9
12.0	10.0	14.0	695.0	79.0	12.0	3.0	525.4	26.7	431.0	414.7
12.0	10.0	15.0	317.0	83.0	11.0	3.0	239.2	17.7	198.9	189.5
12.0	10.0	16.0	-	29.0	10.0	3.0	29.7	9.6	26.9	21.3
12.0	10.0	17.0	-	-	10.0	3.0	-	10.0	-	-
12.0	10.0	18.0	-	-	9.0	3.0	-	9.0	-	-
12.0	10.0	19.0	-	-	9.0	3.0	-	9.0	-	-
12.0	10.0	20.0	-	-	8.0	3.0	-	8.0	-	-
12.0	10.0	21.0	-	-	8.0	3.0	-	8.0	-	-
12.0	10.0	22.0	-	-	8.0	3.0	-	8.0	-	-
12.0	10.0	23.0	-	-	7.0	3.0	-	7.0	-	-
12.0	11.0	-	-	-	7.0	3.0	-	7.0	-	-
12.0	11.0	1.0	-	-	6.0	3.0	-	6.0	-	-
12.0	11.0	2.0	-	-	6.0	3.0	-	6.0	-	-
12.0	11.0	3.0	-	-	6.0	3.0	-	6.0	-	-
12.0	11.0	4.0	-	-	6.0	3.0	-	6.0	-	-
12.0	11.0	5.0	-	-	6.0	2.0	-	6.0	-	-
12.0	11.0	6.0	-	-	7.0	2.0	-	7.0	-	-
12.0	11.0	7.0	-	38.0	7.0	2.0	36.1	5.6	33.3	27.6
12.0	11.0	8.0	1.0	117.0	8.0	3.0	116.9	9.3	106.0	98.8
12.0	11.0	9.0	-	53.0	9.0	3.0	50.3	8.7	45.8	39.8
12.0	11.0	10.0	43.0	233.0	11.0	2.0	279.2	17.7	243.9	233.3
12.0	11.0	11.0	42.0	250.0	12.0	2.0	298.3	20.4	257.4	246.4
12.0	11.0	12.0	1.0	176.0	12.0	2.0	173.6	16.6	152.4	144.1
12.0	11.0	13.0	23.0	196.0	12.0	2.0	212.7	17.2	186.2	177.1
12.0	11.0	14.0	-	77.0	12.0	2.0	73.3	13.0	65.4	59.1
12.0	11.0	15.0	15.0	86.0	12.0	2.0	92.7	12.9	82.3	75.6
12.0	11.0	16.0	-	12.0	11.0	2.0	11.4	9.4	10.3	5.0
12.0	11.0	17.0	-	-	11.0	2.0	-	11.0	-	-
12.0	11.0	18.0	-	-	10.0	2.0	-	10.0	-	-
12.0	11.0	19.0	-	-	10.0	2.0	-	10.0	-	-
12.0	11.0	20.0	-	-	10.0	2.0	-	10.0	-	-
12.0	11.0	21.0	-	-	10.0	2.0	-	10.0	-	-
12.0	11.0	22.0	-	-	10.0	2.0	-	10.0	-	-
12.0	11.0	23.0	-	-	10.0	2.0	-	10.0	-	-
12.0	12.0	-	-	-	10.0	2.0	-	10.0	-	-
12.0	12.0	1.0	-	-	10.0	2.0	-	10.0	-	-
12.0	12.0	2.0	-	-	10.0	2.0	-	10.0	-	-
12.0	12.0	3.0	-	-	10.0	2.0	-	10.0	-	-
12.0	12.0	4.0	-	-	9.0	2.0	-	9.0	-	-
12.0	12.0	5.0	-	-	9.0	2.0	-	9.0	-	-
12.0	12.0	6.0	-	-	9.0	2.0	-	9.0	-	-
12.0	12.0	7.0	390.0	51.0	10.0	2.0	200.7	14.0	161.5	153.0
12.0	12.0	8.0	69.0	134.0	11.0	2.0	178.4	15.3	156.2	147.8
12.0	12.0	9.0	-	136.0	12.0	2.0	133.0	14.7	117.8	110.3
12.0	12.0	10.0	7.0	190.0	13.0	2.0	193.5	17.4	169.3	160.6
12.0	12.0	11.0	53.0	257.0	14.0	2.0	315.6	22.5	269.7	258.4
12.0	12.0	12.0	187.0	269.0	15.0	2.0	450.0	28.2	374.0	359.6
12.0	12.0	13.0	173.0	230.0	16.0	1.0	381.7	30.3	313.6	301.0
12.0	12.0	14.0	670.0	93.0	16.0	1.0	527.4	34.8	416.4	400.6
12.0	12.0	15.0	503.0	68.0	15.0	1.0	304.6	27.1	239.6	229.1
12.0	12.0	16.0	-	26.0	14.0	1.0	25.9	14.4	23.0	17.5
12.0	12.0	17.0	-	-	14.0	2.0	-	14.0	-	-
12.0	12.0	18.0	-	-	14.0	2.0	-	14.0	-	-
12.0	12.0	19.0	-	-	13.0	2.0	-	13.0	-	-
12.0	12.0	20.0	-	-	12.0	2.0	-	12.0	-	-
12.0	12.0	21.0	-	-	12.0	2.0	-	12.0	-	-
12.0	12.0	22.0	-	-	12.0	2.0	-	12.0	-	-
12.0	12.0	23.0	-	-	11.0	2.0	-	11.0	-	-
12.0	13.0	-	-	-	11.0	2.0	-	11.0	-	-
12.0	13.0	1.0	-	-	11.0	2.0	-	11.0	-	-
12.0	13.0	2.0	-	-	11.0	2.0	-	11.0	-	-
12.0	13.0	3.0	-	-	11.0	2.0	-	11.0	-	-
12.0	13.0	4.0	-	-	11.0	2.0	-	11.0	-	-
12.0	13.0	5.0	-	-	11.0	2.0	-	11.0	-	-
12.0	13.0	6.0	-	-	11.0	2.0	-	11.0	-	-
12.0	13.0	7.0	-	18.0	12.0	2.0	17.0	10.1	15.4	10.0
12.0	13.0	8.0	-	73.0	13.0	2.0	69.8	12.9	62.4	56.1
12.0	13.0	9.0	795.0	82.0	15.0	2.0	652.3	33.1	523.7	504.1
12.0	13.0	10.0	852.0	87.0	16.0	2.0	786.4	40.5	613.2	590.1
12.0	13.0	11.0	877.0	87.0	17.0	1.0	839.6	48.1	630.7	606.9

12.0	13.0	12.0	850.0	93.0	18.0	1.0	815.8	48.5	610.9	587.9
12.0	13.0	13.0	823.0	85.0	19.0	1.0	720.0	46.4	543.1	522.7
12.0	13.0	14.0	754.0	73.0	19.0	1.0	553.8	40.5	424.3	408.2
12.0	13.0	15.0	605.0	54.0	18.0	1.0	333.6	31.2	255.7	244.8
12.0	13.0	16.0	220.0	18.0	16.0	1.0	84.1	18.9	61.7	55.4
12.0	13.0	17.0	-	-	15.0	1.0	-	15.0	-	-
12.0	13.0	18.0	-	-	15.0	1.0	-	15.0	-	-
12.0	13.0	19.0	-	-	14.0	1.0	-	14.0	-	-
12.0	13.0	20.0	-	-	14.0	1.0	-	14.0	-	-
12.0	13.0	21.0	-	-	13.0	2.0	-	13.0	-	-
12.0	13.0	22.0	-	-	13.0	1.0	-	13.0	-	-
12.0	13.0	23.0	-	-	13.0	1.0	-	13.0	-	-
12.0	14.0	-	-	-	13.0	1.0	-	13.0	-	-
12.0	14.0	1.0	-	-	13.0	2.0	-	13.0	-	-
12.0	14.0	2.0	-	-	13.0	2.0	-	13.0	-	-
12.0	14.0	3.0	-	-	13.0	2.0	-	13.0	-	-
12.0	14.0	4.0	-	-	13.0	2.0	-	13.0	-	-
12.0	14.0	5.0	-	-	13.0	2.0	-	13.0	-	-
12.0	14.0	6.0	-	-	13.0	2.0	-	13.0	-	-
12.0	14.0	7.0	439.0	46.0	15.0	2.0	210.3	19.3	163.7	155.2
12.0	14.0	8.0	670.0	72.0	17.0	2.0	450.5	29.7	359.0	345.1
12.0	14.0	9.0	48.0	191.0	19.0	2.0	233.9	26.2	196.1	186.7
12.0	14.0	10.0	45.0	232.0	20.0	2.0	279.8	27.7	233.3	223.0
12.0	14.0	11.0	58.0	259.0	21.0	2.0	322.2	30.2	265.5	254.3
12.0	14.0	12.0	9.0	198.0	21.0	2.0	203.3	26.7	170.4	161.7
12.0	14.0	13.0	799.0	92.0	21.0	2.0	710.6	41.3	550.4	529.7
12.0	14.0	14.0	721.0	81.0	20.0	2.0	545.8	37.6	424.6	408.5
12.0	14.0	15.0	569.0	60.0	19.0	1.0	325.7	31.9	249.6	238.8
12.0	14.0	16.0	179.0	20.0	18.0	1.0	76.8	20.5	57.1	50.9
12.0	14.0	17.0	-	-	17.0	1.0	-	17.0	-	-
12.0	14.0	18.0	-	-	17.0	1.0	-	17.0	-	-
12.0	14.0	19.0	-	-	16.0	1.0	-	16.0	-	-
12.0	14.0	20.0	-	-	16.0	1.0	-	16.0	-	-
12.0	14.0	21.0	-	-	16.0	1.0	-	16.0	-	-
12.0	14.0	22.0	-	-	16.0	1.0	-	16.0	-	-
12.0	14.0	23.0	-	-	16.0	1.0	-	16.0	-	-
12.0	15.0	-	-	-	16.0	1.0	-	16.0	-	-
12.0	15.0	1.0	-	-	16.0	1.0	-	16.0	-	-
12.0	15.0	2.0	-	-	15.0	1.0	-	15.0	-	-
12.0	15.0	3.0	-	-	15.0	1.0	-	15.0	-	-
12.0	15.0	4.0	-	-	15.0	1.0	-	15.0	-	-
12.0	15.0	5.0	-	-	15.0	1.0	-	15.0	-	-
12.0	15.0	6.0	-	-	16.0	1.0	-	16.0	-	-
12.0	15.0	7.0	392.0	50.0	18.0	1.0	197.8	22.7	152.4	144.1
12.0	15.0	8.0	644.0	79.0	19.0	1.0	443.5	33.7	346.8	333.3
12.0	15.0	9.0	777.0	88.0	20.0	1.0	644.4	42.9	492.7	474.2
12.0	15.0	10.0	827.0	97.0	21.0	1.0	776.4	49.1	579.0	557.2
12.0	15.0	11.0	841.0	102.0	22.0	1.0	832.3	52.4	610.8	587.8
12.0	15.0	12.0	818.0	106.0	22.0	1.0	804.5	51.9	591.9	569.6
12.0	15.0	13.0	768.0	104.0	22.0	1.0	704.7	48.6	525.4	505.7
12.0	15.0	14.0	678.0	93.0	21.0	1.0	534.0	41.7	407.4	391.9
12.0	15.0	15.0	503.0	70.0	20.0	1.0	308.8	32.2	237.3	226.9
12.0	15.0	16.0	122.0	21.0	19.0	1.0	62.1	20.9	47.2	41.2
12.0	15.0	17.0	-	-	18.0	1.0	-	18.0	-	-
12.0	15.0	18.0	-	-	18.0	1.0	-	18.0	-	-
12.0	15.0	19.0	-	-	17.0	1.0	-	17.0	-	-
12.0	15.0	20.0	-	-	17.0	1.0	-	17.0	-	-
12.0	15.0	21.0	-	-	17.0	1.0	-	17.0	-	-
12.0	15.0	22.0	-	-	16.0	1.0	-	16.0	-	-
12.0	15.0	23.0	-	-	16.0	1.0	-	16.0	-	-
12.0	16.0	-	-	-	16.0	1.0	-	16.0	-	-
12.0	16.0	1.0	-	-	16.0	1.0	-	16.0	-	-
12.0	16.0	2.0	-	-	16.0	1.0	-	16.0	-	-
12.0	16.0	3.0	-	-	16.0	1.0	-	16.0	-	-
12.0	16.0	4.0	-	-	16.0	1.0	-	16.0	-	-
12.0	16.0	5.0	-	-	16.0	1.0	-	16.0	-	-
12.0	16.0	6.0	-	-	16.0	1.0	-	16.0	-	-
12.0	16.0	7.0	448.0	45.0	18.0	1.0	210.5	23.1	160.4	151.9
12.0	16.0	8.0	694.0	69.0	19.0	1.0	457.3	34.3	355.9	342.1
12.0	16.0	9.0	804.0	81.0	20.0	1.0	653.8	43.2	498.7	480.0
12.0	16.0	10.0	859.0	86.0	21.0	1.0	788.0	49.5	586.2	564.2
12.0	16.0	11.0	882.0	87.0	22.0	1.0	842.3	52.8	616.9	593.6
12.0	16.0	12.0	880.0	84.0	22.0	1.0	823.7	52.5	603.8	581.1
12.0	16.0	13.0	843.0	79.0	22.0	-	729.0	55.6	523.2	503.6
12.0	16.0	14.0	762.0	72.0	22.0	-	559.6	49.3	409.8	394.2
12.0	16.0	15.0	568.0	60.0	21.0	-	326.9	38.7	242.5	231.9
12.0	16.0	16.0	175.0	20.0	19.0	-	76.4	24.2	56.0	49.8
12.0	16.0	17.0	-	-	18.0	-	-	18.0	-	-
12.0	16.0	18.0	-	-	18.0	-	-	18.0	-	-
12.0	16.0	19.0	-	-	17.0	-	-	17.0	-	-
12.0	16.0	20.0	-	-	17.0	-	-	17.0	-	-

12.0	16.0	21.0	-	-	17.0	1.0	-	17.0	-	-
12.0	16.0	22.0	-	-	17.0	1.0	-	17.0	-	-
12.0	16.0	23.0	-	-	16.0	1.0	-	16.0	-	-
12.0	17.0	-	-	-	16.0	1.0	-	16.0	-	-
12.0	17.0	1.0	-	-	15.0	2.0	-	15.0	-	-
12.0	17.0	2.0	-	-	14.0	2.0	-	14.0	-	-
12.0	17.0	3.0	-	-	13.0	2.0	-	13.0	-	-
12.0	17.0	4.0	-	-	13.0	2.0	-	13.0	-	-
12.0	17.0	5.0	-	-	13.0	2.0	-	13.0	-	-
12.0	17.0	6.0	-	-	13.0	2.0	-	13.0	-	-
12.0	17.0	7.0	-	32.0	13.0	2.0	30.4	11.6	27.3	21.7
12.0	17.0	8.0	636.0	79.0	13.0	3.0	437.1	23.3	359.1	345.2
12.0	17.0	9.0	777.0	90.0	14.0	2.0	644.5	33.5	516.2	496.9
12.0	17.0	10.0	857.0	92.0	15.0	2.0	792.7	39.6	620.6	597.1
12.0	17.0	11.0	897.0	90.0	16.0	2.0	857.9	43.1	661.4	636.3
12.0	17.0	12.0	908.0	85.0	17.0	2.0	847.8	44.0	650.2	625.5
12.0	17.0	13.0	888.0	78.0	18.0	2.0	756.6	42.3	582.7	560.8
12.0	17.0	14.0	829.0	68.0	17.0	2.0	596.8	36.4	466.8	449.3
12.0	17.0	15.0	692.0	52.0	16.0	2.0	370.4	28.1	288.0	276.2
12.0	17.0	16.0	316.0	19.0	14.0	2.0	109.0	17.0	79.1	72.5
12.0	17.0	17.0	-	-	12.0	2.0	-	12.0	-	-
12.0	17.0	18.0	-	-	11.0	2.0	-	11.0	-	-
12.0	17.0	19.0	-	-	10.0	2.0	-	10.0	-	-
12.0	17.0	20.0	-	-	10.0	2.0	-	10.0	-	-
12.0	17.0	21.0	-	-	9.0	2.0	-	9.0	-	-
12.0	17.0	22.0	-	-	9.0	2.0	-	9.0	-	-
12.0	17.0	23.0	-	-	8.0	2.0	-	8.0	-	-
12.0	18.0	-	-	-	8.0	2.0	-	8.0	-	-
12.0	18.0	1.0	-	-	7.0	2.0	-	7.0	-	-
12.0	18.0	2.0	-	-	7.0	2.0	-	7.0	-	-
12.0	18.0	3.0	-	-	7.0	2.0	-	7.0	-	-
12.0	18.0	4.0	-	-	7.0	2.0	-	7.0	-	-
12.0	18.0	5.0	-	-	6.0	2.0	-	6.0	-	-
12.0	18.0	6.0	-	-	6.0	2.0	-	6.0	-	-
12.0	18.0	7.0	580.0	37.0	8.0	2.0	240.7	13.2	188.7	179.5
12.0	18.0	8.0	807.0	57.0	10.0	2.0	498.2	24.4	405.4	390.0
12.0	18.0	9.0	907.0	66.0	12.0	2.0	699.5	33.5	559.9	538.9
12.0	18.0	10.0	954.0	71.0	13.0	2.0	837.7	39.3	656.9	632.0
12.0	18.0	11.0	972.0	72.0	14.0	2.0	898.8	42.5	694.8	668.3
12.0	18.0	12.0	967.0	71.0	15.0	1.0	879.7	48.0	660.3	635.2
12.0	18.0	13.0	936.0	68.0	16.0	1.0	780.9	45.8	590.6	568.4
12.0	18.0	14.0	868.0	61.0	16.0	1.0	609.5	39.8	468.4	450.8
12.0	18.0	15.0	723.0	48.0	15.0	1.0	380.6	30.3	292.6	280.6
12.0	18.0	16.0	341.0	19.0	13.0	1.0	115.7	17.4	83.5	76.8
12.0	18.0	17.0	-	-	12.0	1.0	-	12.0	-	-
12.0	18.0	18.0	-	-	11.0	1.0	-	11.0	-	-
12.0	18.0	19.0	-	-	11.0	1.0	-	11.0	-	-
12.0	18.0	20.0	-	-	10.0	1.0	-	10.0	-	-
12.0	18.0	21.0	-	-	10.0	1.0	-	10.0	-	-
12.0	18.0	22.0	-	-	10.0	1.0	-	10.0	-	-
12.0	18.0	23.0	-	-	9.0	1.0	-	9.0	-	-
12.0	19.0	-	-	-	9.0	1.0	-	9.0	-	-
12.0	19.0	1.0	-	-	9.0	1.0	-	9.0	-	-
12.0	19.0	2.0	-	-	9.0	1.0	-	9.0	-	-
12.0	19.0	3.0	-	-	9.0	1.0	-	9.0	-	-
12.0	19.0	4.0	-	-	9.0	1.0	-	9.0	-	-
12.0	19.0	5.0	-	-	9.0	1.0	-	9.0	-	-
12.0	19.0	6.0	-	-	10.0	1.0	-	10.0	-	-
12.0	19.0	7.0	131.0	53.0	12.0	1.0	108.1	13.1	90.5	83.6
12.0	19.0	8.0	601.0	75.0	14.0	1.0	412.2	27.1	332.4	319.2
12.0	19.0	9.0	454.0	158.0	15.0	2.0	498.7	30.1	407.4	391.9
12.0	19.0	10.0	70.0	241.0	17.0	2.0	309.9	26.8	259.4	248.4
12.0	19.0	11.0	32.0	238.0	18.0	2.0	276.4	25.9	232.5	222.2
12.0	19.0	12.0	176.0	269.0	19.0	2.0	441.2	31.7	360.6	346.6
12.0	19.0	13.0	253.0	224.0	20.0	2.0	444.9	33.5	359.5	345.5
12.0	19.0	14.0	211.0	166.0	19.0	2.0	312.6	28.6	256.9	246.0
12.0	19.0	15.0	-	65.0	18.0	1.0	62.9	19.9	54.5	48.3
12.0	19.0	16.0	-	10.0	17.0	1.0	9.5	15.0	8.4	3.1
12.0	19.0	17.0	-	-	17.0	1.0	-	17.0	-	-
12.0	19.0	18.0	-	-	17.0	1.0	-	17.0	-	-
12.0	19.0	19.0	-	-	17.0	1.0	-	17.0	-	-
12.0	19.0	20.0	-	-	17.0	1.0	-	17.0	-	-
12.0	19.0	21.0	-	-	17.0	2.0	-	17.0	-	-
12.0	19.0	22.0	-	-	17.0	2.0	-	17.0	-	-
12.0	19.0	23.0	-	-	18.0	2.0	-	18.0	-	-
12.0	20.0	-	-	-	18.0	2.0	-	18.0	-	-
12.0	20.0	1.0	-	-	18.0	2.0	-	18.0	-	-
12.0	20.0	2.0	-	-	18.0	2.0	-	18.0	-	-
12.0	20.0	3.0	-	-	18.0	2.0	-	18.0	-	-
12.0	20.0	4.0	-	-	18.0	2.0	-	18.0	-	-
12.0	20.0	5.0	-	-	18.0	2.0	-	18.0	-	-

12.0	20.0	6.0	-	-	18.0	2.0	-	18.0	-	-
12.0	20.0	7.0	-	19.0	18.0	2.0	18.0	16.3	15.8	10.4
12.0	20.0	8.0	-	69.0	19.0	2.0	65.9	19.0	57.3	51.1
12.0	20.0	9.0	-	104.0	19.0	2.0	100.1	20.3	86.5	79.7
12.0	20.0	10.0	-	11.0	20.0	2.0	10.4	18.6	9.1	3.8
12.0	20.0	11.0	-	16.0	20.0	2.0	15.2	18.3	13.2	7.9
12.0	20.0	12.0	-	10.0	21.0	2.0	9.5	19.2	8.2	3.0
12.0	20.0	13.0	24.0	198.0	21.0	2.0	215.7	25.7	181.6	172.6
12.0	20.0	14.0	160.0	173.0	21.0	2.0	289.7	28.9	238.3	227.9
12.0	20.0	15.0	149.0	94.0	20.0	2.0	170.3	24.6	139.8	131.9
12.0	20.0	16.0	102.0	24.0	20.0	2.0	62.2	20.6	48.4	42.4
12.0	20.0	17.0	-	-	20.0	2.0	-	20.0	-	-
12.0	20.0	18.0	-	-	20.0	2.0	-	20.0	-	-
12.0	20.0	19.0	-	-	20.0	2.0	-	20.0	-	-
12.0	20.0	20.0	-	-	20.0	2.0	-	20.0	-	-
12.0	20.0	21.0	-	-	20.0	2.0	-	20.0	-	-
12.0	20.0	22.0	-	-	20.0	2.0	-	20.0	-	-
12.0	20.0	23.0	-	-	20.0	2.0	-	20.0	-	-
12.0	21.0	-	-	-	20.0	2.0	-	20.0	-	-
12.0	21.0	1.0	-	-	20.0	2.0	-	20.0	-	-
12.0	21.0	2.0	-	-	20.0	2.0	-	20.0	-	-
12.0	21.0	3.0	-	-	20.0	2.0	-	20.0	-	-
12.0	21.0	4.0	-	-	20.0	2.0	-	20.0	-	-
12.0	21.0	5.0	-	-	20.0	2.0	-	20.0	-	-
12.0	21.0	6.0	-	-	20.0	2.0	-	20.0	-	-
12.0	21.0	7.0	259.0	53.0	21.0	2.0	153.9	23.7	119.7	112.1
12.0	21.0	8.0	-	93.0	21.0	2.0	91.0	22.5	77.8	71.2
12.0	21.0	9.0	-	148.0	21.0	2.0	145.9	23.9	124.0	116.3
12.0	21.0	10.0	13.0	197.0	22.0	2.0	205.9	27.0	172.3	163.5
12.0	21.0	11.0	2.0	181.0	22.0	2.0	179.5	26.5	150.6	142.4
12.0	21.0	12.0	217.0	263.0	22.0	1.0	467.9	37.4	371.7	357.3
12.0	21.0	13.0	775.0	92.0	22.0	1.0	696.5	46.6	525.0	505.3
12.0	21.0	14.0	708.0	79.0	22.0	1.0	541.1	42.9	410.4	394.8
12.0	21.0	15.0	561.0	60.0	21.0	-	328.2	38.5	244.4	233.8
12.0	21.0	16.0	188.0	22.0	20.0	-	83.6	25.5	61.1	54.8
12.0	21.0	17.0	-	-	19.0	-	-	19.0	-	-
12.0	21.0	18.0	-	-	19.0	-	-	19.0	-	-
12.0	21.0	19.0	-	-	18.0	-	-	18.0	-	-
12.0	21.0	20.0	-	-	18.0	1.0	-	18.0	-	-
12.0	21.0	21.0	-	-	18.0	1.0	-	18.0	-	-
12.0	21.0	22.0	-	-	18.0	1.0	-	18.0	-	-
12.0	21.0	23.0	-	-	18.0	1.0	-	18.0	-	-
12.0	22.0	-	-	-	18.0	1.0	-	18.0	-	-
12.0	22.0	1.0	-	-	18.0	1.0	-	18.0	-	-
12.0	22.0	2.0	-	-	19.0	1.0	-	19.0	-	-
12.0	22.0	3.0	-	-	19.0	1.0	-	19.0	-	-
12.0	22.0	4.0	-	-	19.0	1.0	-	19.0	-	-
12.0	22.0	5.0	-	-	19.0	1.0	-	19.0	-	-
12.0	22.0	6.0	-	-	20.0	2.0	-	20.0	-	-
12.0	22.0	7.0	-	8.0	20.0	2.0	7.6	18.1	6.6	1.4
12.0	22.0	8.0	-	24.0	21.0	2.0	22.7	19.6	19.7	14.2
12.0	22.0	9.0	-	50.0	21.0	2.0	47.5	20.5	41.0	35.1
12.0	22.0	10.0	9.0	190.0	21.0	2.0	195.3	25.2	164.8	156.3
12.0	22.0	11.0	-	92.0	21.0	3.0	87.5	22.3	74.9	68.3
12.0	22.0	12.0	24.0	224.0	22.0	3.0	243.5	27.2	203.5	194.0
12.0	22.0	13.0	-	72.0	21.0	3.0	68.4	21.9	58.6	52.4
12.0	22.0	14.0	79.0	169.0	21.0	2.0	227.4	26.3	190.0	180.8
12.0	22.0	15.0	-	3.0	21.0	2.0	2.8	20.1	2.5	-
12.0	22.0	16.0	-	-	20.0	2.0	-	20.0	-	-
12.0	22.0	17.0	-	-	19.0	1.0	-	19.0	-	-
12.0	22.0	18.0	-	-	19.0	1.0	-	19.0	-	-
12.0	22.0	19.0	-	-	19.0	1.0	-	19.0	-	-
12.0	22.0	20.0	-	-	18.0	1.0	-	18.0	-	-
12.0	22.0	21.0	-	-	17.0	1.0	-	17.0	-	-
12.0	22.0	22.0	-	-	16.0	2.0	-	16.0	-	-
12.0	22.0	23.0	-	-	15.0	2.0	-	15.0	-	-
12.0	23.0	-	-	-	13.0	2.0	-	13.0	-	-
12.0	23.0	1.0	-	-	12.0	2.0	-	12.0	-	-
12.0	23.0	2.0	-	-	12.0	2.0	-	12.0	-	-
12.0	23.0	3.0	-	-	12.0	2.0	-	12.0	-	-
12.0	23.0	4.0	-	-	12.0	2.0	-	12.0	-	-
12.0	23.0	5.0	-	-	12.0	2.0	-	12.0	-	-
12.0	23.0	6.0	-	-	12.0	2.0	-	12.0	-	-
12.0	23.0	7.0	-	3.0	12.0	2.0	2.8	9.6	2.6	-
12.0	23.0	8.0	104.0	128.0	13.0	3.0	195.7	16.5	169.7	161.0
12.0	23.0	9.0	299.0	189.0	14.0	3.0	418.4	24.4	351.9	338.1
12.0	23.0	10.0	232.0	246.0	15.0	2.0	452.7	28.7	374.9	360.4
12.0	23.0	11.0	230.0	271.0	16.0	2.0	490.4	31.0	402.2	386.8
12.0	23.0	12.0	217.0	267.0	16.0	2.0	472.7	30.6	388.3	373.4
12.0	23.0	13.0	13.0	187.0	17.0	2.0	195.6	23.2	166.6	158.0
12.0	23.0	14.0	164.0	171.0	16.0	2.0	290.3	23.8	244.6	234.0

12.0	23.0	15.0	364.0	80.0	15.0	2.0	262.6	22.4	214.0	204.2
12.0	23.0	16.0	112.0	24.0	14.0	2.0	65.3	15.0	51.9	45.9
12.0	23.0	17.0	-	-	14.0	2.0	-	14.0	-	-
12.0	23.0	18.0	-	-	13.0	2.0	-	13.0	-	-
12.0	23.0	19.0	-	-	12.0	3.0	-	12.0	-	-
12.0	23.0	20.0	-	-	12.0	2.0	-	12.0	-	-
12.0	23.0	21.0	-	-	11.0	2.0	-	11.0	-	-
12.0	23.0	22.0	-	-	11.0	2.0	-	11.0	-	-
12.0	23.0	23.0	-	-	11.0	2.0	-	11.0	-	-
12.0	24.0	-	-	-	10.0	2.0	-	10.0	-	-
12.0	24.0	1.0	-	-	10.0	2.0	-	10.0	-	-
12.0	24.0	2.0	-	-	10.0	2.0	-	10.0	-	-
12.0	24.0	3.0	-	-	10.0	2.0	-	10.0	-	-
12.0	24.0	4.0	-	-	10.0	2.0	-	10.0	-	-
12.0	24.0	5.0	-	-	10.0	2.0	-	10.0	-	-
12.0	24.0	6.0	-	-	10.0	2.0	-	10.0	-	-
12.0	24.0	7.0	100.0	50.0	10.0	2.0	89.3	10.4	75.9	69.4
12.0	24.0	8.0	578.0	86.0	11.0	2.0	408.0	21.9	337.1	323.8
12.0	24.0	9.0	719.0	101.0	12.0	2.0	614.7	30.6	499.3	480.6
12.0	24.0	10.0	790.0	107.0	14.0	2.0	753.4	37.4	596.3	573.9
12.0	24.0	11.0	824.0	107.0	15.0	2.0	822.2	40.9	640.8	616.5
12.0	24.0	12.0	830.0	102.0	16.0	2.0	812.0	41.9	629.6	605.8
12.0	24.0	13.0	801.0	95.0	17.0	2.0	721.6	40.2	562.1	541.1
12.0	24.0	14.0	729.0	83.0	17.0	2.0	561.8	35.2	443.1	426.4
12.0	24.0	15.0	575.0	63.0	16.0	1.0	340.8	29.6	265.6	254.5
12.0	24.0	16.0	215.0	24.0	15.0	1.0	93.9	18.3	70.8	64.3
12.0	24.0	17.0	-	-	15.0	1.0	-	15.0	-	-
12.0	24.0	18.0	-	-	15.0	1.0	-	15.0	-	-
12.0	24.0	19.0	-	-	15.0	2.0	-	15.0	-	-
12.0	24.0	20.0	-	-	14.0	2.0	-	14.0	-	-
12.0	24.0	21.0	-	-	14.0	2.0	-	14.0	-	-
12.0	24.0	22.0	-	-	14.0	2.0	-	14.0	-	-
12.0	24.0	23.0	-	-	14.0	2.0	-	14.0	-	-
12.0	25.0	-	-	-	14.0	2.0	-	14.0	-	-
12.0	25.0	1.0	-	-	14.0	2.0	-	14.0	-	-
12.0	25.0	2.0	-	-	14.0	1.0	-	14.0	-	-
12.0	25.0	3.0	-	-	13.0	1.0	-	13.0	-	-
12.0	25.0	4.0	-	-	13.0	2.0	-	13.0	-	-
12.0	25.0	5.0	-	-	13.0	2.0	-	13.0	-	-
12.0	25.0	6.0	-	-	13.0	2.0	-	13.0	-	-
12.0	25.0	7.0	-	23.0	14.0	2.0	21.8	12.3	19.5	14.1
12.0	25.0	8.0	-	86.0	15.0	1.0	83.6	15.4	73.9	67.3
12.0	25.0	9.0	79.0	194.0	16.0	1.0	258.3	23.5	219.1	209.2
12.0	25.0	10.0	72.0	241.0	17.0	1.0	311.4	27.6	259.7	248.6
12.0	25.0	11.0	271.0	266.0	17.0	1.0	530.1	35.4	425.3	409.2
12.0	25.0	12.0	14.0	210.0	18.0	1.0	220.2	27.1	184.2	175.1
12.0	25.0	13.0	5.0	175.0	19.0	-	176.7	27.1	147.8	139.7
12.0	25.0	14.0	84.0	171.0	19.0	-	233.0	29.1	192.1	182.8
12.0	25.0	15.0	-	68.0	18.0	-	65.9	21.4	56.6	50.5
12.0	25.0	16.0	-	12.0	17.0	-	11.4	14.3	10.1	4.8
12.0	25.0	17.0	-	-	17.0	1.0	-	17.0	-	-
12.0	25.0	18.0	-	-	16.0	1.0	-	16.0	-	-
12.0	25.0	19.0	-	-	16.0	2.0	-	16.0	-	-
12.0	25.0	20.0	-	-	16.0	2.0	-	16.0	-	-
12.0	25.0	21.0	-	-	15.0	2.0	-	15.0	-	-
12.0	25.0	22.0	-	-	15.0	2.0	-	15.0	-	-
12.0	25.0	23.0	-	-	15.0	2.0	-	15.0	-	-
12.0	26.0	-	-	-	15.0	2.0	-	15.0	-	-
12.0	26.0	1.0	-	-	14.0	2.0	-	14.0	-	-
12.0	26.0	2.0	-	-	14.0	2.0	-	14.0	-	-
12.0	26.0	3.0	-	-	14.0	2.0	-	14.0	-	-
12.0	26.0	4.0	-	-	14.0	2.0	-	14.0	-	-
12.0	26.0	5.0	-	-	13.0	2.0	-	13.0	-	-
12.0	26.0	6.0	-	-	13.0	2.0	-	13.0	-	-
12.0	26.0	7.0	318.0	46.0	14.0	2.0	162.1	16.8	127.7	120.0
12.0	26.0	8.0	-	66.0	14.0	3.0	62.9	14.3	55.8	49.6
12.0	26.0	9.0	-	76.0	15.0	3.0	72.2	15.2	63.8	57.5
12.0	26.0	10.0	220.0	247.0	16.0	2.0	444.2	27.9	369.3	355.0
12.0	26.0	11.0	91.0	270.0	17.0	2.0	362.4	28.1	301.6	289.3
12.0	26.0	12.0	85.0	263.0	18.0	2.0	348.9	28.3	289.9	278.1
12.0	26.0	13.0	-	110.0	18.0	2.0	105.7	20.8	91.0	84.2
12.0	26.0	14.0	-	110.0	18.0	2.0	106.9	19.7	92.6	85.6
12.0	26.0	15.0	-	13.0	17.0	2.0	12.3	15.6	10.9	5.6
12.0	26.0	16.0	-	2.0	17.0	2.0	1.9	14.8	1.7	-
12.0	26.0	17.0	-	-	17.0	2.0	-	17.0	-	-
12.0	26.0	18.0	-	-	17.0	3.0	-	17.0	-	-
12.0	26.0	19.0	-	-	18.0	2.0	-	18.0	-	-
12.0	26.0	20.0	-	-	18.0	2.0	-	18.0	-	-
12.0	26.0	21.0	-	-	18.0	2.0	-	18.0	-	-
12.0	26.0	22.0	-	-	19.0	3.0	-	19.0	-	-
12.0	26.0	23.0	-	-	19.0	3.0	-	19.0	-	-

12.0	27.0	-	-	-	17.0	4.0	-	17.0	-	-
12.0	27.0	1.0	-	-	15.0	4.0	-	15.0	-	-
12.0	27.0	2.0	-	-	13.0	4.0	-	13.0	-	-
12.0	27.0	3.0	-	-	12.0	4.0	-	12.0	-	-
12.0	27.0	4.0	-	-	11.0	4.0	-	11.0	-	-
12.0	27.0	5.0	-	-	10.0	4.0	-	10.0	-	-
12.0	27.0	6.0	-	-	10.0	3.0	-	10.0	-	-
12.0	27.0	7.0	498.0	39.0	10.0	3.0	210.8	13.8	164.3	155.8
12.0	27.0	8.0	760.0	62.0	10.0	4.0	469.6	20.8	387.7	372.8
12.0	27.0	9.0	873.0	73.0	11.0	3.0	681.3	29.5	555.6	534.8
12.0	27.0	10.0	920.0	80.0	12.0	3.0	817.4	34.8	655.4	630.5
12.0	27.0	11.0	932.0	84.0	13.0	3.0	879.6	37.8	696.4	669.8
12.0	27.0	12.0	921.0	85.0	14.0	3.0	862.7	38.5	680.3	654.4
12.0	27.0	13.0	883.0	82.0	14.0	3.0	771.1	36.1	613.3	590.1
12.0	27.0	14.0	808.0	74.0	14.0	3.0	602.1	31.3	484.0	465.8
12.0	27.0	15.0	654.0	60.0	13.0	2.0	376.3	25.3	299.2	287.0
12.0	27.0	16.0	281.0	26.0	13.0	2.0	113.9	16.1	85.8	79.0
12.0	27.0	17.0	-	-	12.0	2.0	-	12.0	-	-
12.0	27.0	18.0	-	-	11.0	2.0	-	11.0	-	-
12.0	27.0	19.0	-	-	11.0	2.0	-	11.0	-	-
12.0	27.0	20.0	-	-	10.0	2.0	-	10.0	-	-
12.0	27.0	21.0	-	-	9.0	2.0	-	9.0	-	-
12.0	27.0	22.0	-	-	9.0	2.0	-	9.0	-	-
12.0	27.0	23.0	-	-	9.0	2.0	-	9.0	-	-
12.0	28.0	-	-	-	9.0	2.0	-	9.0	-	-
12.0	28.0	1.0	-	-	9.0	2.0	-	9.0	-	-
12.0	28.0	2.0	-	-	8.0	1.0	-	8.0	-	-
12.0	28.0	3.0	-	-	8.0	1.0	-	8.0	-	-
12.0	28.0	4.0	-	-	8.0	1.0	-	8.0	-	-
12.0	28.0	5.0	-	-	8.0	1.0	-	8.0	-	-
12.0	28.0	6.0	-	-	8.0	1.0	-	8.0	-	-
12.0	28.0	7.0	165.0	47.0	9.0	1.0	109.7	10.1	91.4	84.5
12.0	28.0	8.0	795.0	55.0	10.0	1.0	478.7	25.6	385.9	371.1
12.0	28.0	9.0	900.0	65.0	11.0	-	685.0	41.5	526.1	506.4
12.0	28.0	10.0	670.0	135.0	12.0	-	694.2	44.3	530.8	510.9
12.0	28.0	11.0	964.0	75.0	13.0	-	895.9	52.1	658.6	633.6
12.0	28.0	12.0	679.0	147.0	13.0	-	745.1	48.5	558.4	537.5
12.0	28.0	13.0	778.0	96.0	13.0	-	709.3	46.2	536.0	515.9
12.0	28.0	14.0	845.0	69.0	13.0	-	620.8	42.9	471.0	453.3
12.0	28.0	15.0	699.0	56.0	12.0	1.0	391.3	27.8	307.0	294.7
12.0	28.0	16.0	338.0	25.0	12.0	1.0	127.8	16.9	94.8	87.8
12.0	28.0	17.0	-	-	12.0	1.0	-	12.0	-	-
12.0	28.0	18.0	-	-	12.0	1.0	-	12.0	-	-
12.0	28.0	19.0	-	-	11.0	-	-	11.0	-	-
12.0	28.0	20.0	-	-	11.0	-	-	11.0	-	-
12.0	28.0	21.0	-	-	11.0	-	-	11.0	-	-
12.0	28.0	22.0	-	-	11.0	-	-	11.0	-	-
12.0	28.0	23.0	-	-	11.0	-	-	11.0	-	-
12.0	29.0	-	-	-	11.0	-	-	11.0	-	-
12.0	29.0	1.0	-	-	11.0	-	-	11.0	-	-
12.0	29.0	2.0	-	-	10.0	-	-	10.0	-	-
12.0	29.0	3.0	-	-	10.0	-	-	10.0	-	-
12.0	29.0	4.0	-	-	10.0	-	-	10.0	-	-
12.0	29.0	5.0	-	-	10.0	-	-	10.0	-	-
12.0	29.0	6.0	-	-	10.0	-	-	10.0	-	-
12.0	29.0	7.0	-	17.0	11.0	-	16.1	7.0	14.8	9.4
12.0	29.0	8.0	708.0	65.0	13.0	-	444.8	30.1	351.4	337.7
12.0	29.0	9.0	828.0	76.0	15.0	-	653.6	43.8	496.2	477.6
12.0	29.0	10.0	877.0	84.0	16.0	-	793.8	51.1	585.2	563.2
12.0	29.0	11.0	894.0	88.0	17.0	-	853.3	55.0	617.6	594.3
12.0	29.0	12.0	869.0	95.0	17.0	-	839.2	54.9	607.5	584.6
12.0	29.0	13.0	834.0	91.0	18.0	1.0	747.0	46.4	563.8	542.7
12.0	29.0	14.0	766.0	80.0	17.0	-	585.2	45.7	438.1	421.6
12.0	29.0	15.0	621.0	62.0	16.0	-	366.1	35.6	277.7	266.1
12.0	29.0	16.0	270.0	27.0	15.0	1.0	112.6	19.1	84.1	77.3
12.0	29.0	17.0	-	-	15.0	1.0	-	15.0	-	-
12.0	29.0	18.0	-	-	15.0	1.0	-	15.0	-	-
12.0	29.0	19.0	-	-	15.0	1.0	-	15.0	-	-
12.0	29.0	20.0	-	-	15.0	1.0	-	15.0	-	-
12.0	29.0	21.0	-	-	15.0	1.0	-	15.0	-	-
12.0	29.0	22.0	-	-	15.0	1.0	-	15.0	-	-
12.0	29.0	23.0	-	-	15.0	1.0	-	15.0	-	-
12.0	30.0	-	-	-	14.0	1.0	-	14.0	-	-
12.0	30.0	1.0	-	-	14.0	1.0	-	14.0	-	-
12.0	30.0	2.0	-	-	14.0	1.0	-	14.0	-	-
12.0	30.0	3.0	-	-	14.0	1.0	-	14.0	-	-
12.0	30.0	4.0	-	-	14.0	1.0	-	14.0	-	-
12.0	30.0	5.0	-	-	14.0	1.0	-	14.0	-	-
12.0	30.0	6.0	-	-	14.0	1.0	-	14.0	-	-
12.0	30.0	7.0	105.0	47.0	16.0	1.0	90.9	16.6	75.0	68.4
12.0	30.0	8.0	714.0	62.0	17.0	1.0	443.8	31.1	348.8	335.2

	12.0	30.0	9.0	818.0	76.0	18.0	1.0	646.4	41.0	497.9	479.3
	12.0	30.0	10.0	867.0	85.0	19.0	2.0	787.1	43.3	604.6	581.8
	12.0	30.0	11.0	170.0	278.0	20.0	2.0	448.7	35.1	360.7	346.7
	12.0	30.0	12.0	53.0	252.0	20.0	2.0	309.6	29.5	255.9	245.0
	12.0	30.0	13.0	857.0	83.0	20.0	2.0	756.2	42.0	583.9	561.9
	12.0	30.0	14.0	790.0	74.0	20.0	2.0	594.9	39.3	460.2	442.9
	12.0	30.0	15.0	356.0	87.0	19.0	2.0	271.6	28.1	216.6	206.7
	12.0	30.0	16.0	305.0	26.0	17.0	2.0	120.8	19.9	89.1	82.3
	12.0	30.0	17.0	-	-	17.0	2.0	-	17.0	-	-
	12.0	30.0	18.0	-	-	17.0	2.0	-	17.0	-	-
	12.0	30.0	19.0	-	-	16.0	1.0	-	16.0	-	-
	12.0	30.0	20.0	-	-	16.0	1.0	-	16.0	-	-
	12.0	30.0	21.0	-	-	16.0	2.0	-	16.0	-	-
	12.0	30.0	22.0	-	-	16.0	2.0	-	16.0	-	-
	12.0	30.0	23.0	-	-	16.0	2.0	-	16.0	-	-
	12.0	31.0	-	-	-	15.0	2.0	-	15.0	-	-
	12.0	31.0	1.0	-	-	15.0	2.0	-	15.0	-	-
	12.0	31.0	2.0	-	-	15.0	2.0	-	15.0	-	-
	12.0	31.0	3.0	-	-	14.0	1.0	-	14.0	-	-
	12.0	31.0	4.0	-	-	14.0	1.0	-	14.0	-	-
	12.0	31.0	5.0	-	-	13.0	1.0	-	13.0	-	-
	12.0	31.0	6.0	-	-	13.0	1.0	-	13.0	-	-
	12.0	31.0	7.0	431.0	39.0	15.0	1.0	187.4	19.2	142.8	134.8
	12.0	31.0	8.0	694.0	66.0	17.0	-	439.6	35.6	338.2	324.9
	12.0	31.0	9.0	815.0	79.0	18.0	-	647.5	46.4	485.1	466.9
	12.0	31.0	10.0	868.0	88.0	19.0	1.0	791.4	47.7	594.2	571.8
	12.0	31.0	11.0	888.0	92.0	19.0	1.0	860.0	50.6	637.5	613.4
	12.0	31.0	12.0	867.0	98.0	20.0	1.0	842.8	51.3	622.0	598.6
	12.0	31.0	13.0	830.0	95.0	19.0	1.0	750.9	47.5	563.8	542.6
	12.0	31.0	14.0	753.0	87.0	19.0	1.0	590.2	41.9	450.9	433.9
	12.0	31.0	15.0	591.0	70.0	18.0	1.0	363.8	32.5	281.1	269.4
	12.0	31.0	16.0	236.0	30.0	16.0	1.0	107.2	19.9	80.8	74.2
	12.0	31.0	17.0	-	-	16.0	1.0	-	16.0	-	-
	12.0	31.0	18.0	-	-	17.0	-	-	17.0	-	-
	12.0	31.0	19.0	-	-	17.0	1.0	-	17.0	-	-
	12.0	31.0	20.0	-	-	16.0	1.0	-	16.0	-	-
	12.0	31.0	21.0	-	-	16.0	1.0	-	16.0	-	-
	12.0	31.0	22.0	-	-	16.0	1.0	-	16.0	-	-
	12.0	31.0	23.0	-	-	16.0	1.0	-	16.0	-	-
Totals				1,919,741.0	650,523.0	175,898.0	12,712.0	2,017,348.2	244,444.1	1,506,733.0	1,443,548.1

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PVWatts: Monthly PV Performance Data

Requested Location:	1 Energy Pl, Pensacola, FL 32520
Location:	Lat, Lon: 30.41, -87.22
Lat (deg N):	30.41
Long (deg W):	87.22
Elev (m):	12.66666698
DC System Size (kW):	1
Module Type:	Standard
Array Type:	Fixed (roof mount)
Array Tilt (deg):	20
Array Azimuth (deg):	**180**
System Losses:	15.5
Invert Efficiency:	96
DC to AC Size Ratio:	1.2
Average Cost of Electricity Purchased from Utility ($/kWh):	0.121
Capacity Factor (%)	16.5

Month	AC System Output(kWh)	Solar Radiation (kWh/m^2/day)	Plane of Array Irradiance (W/m^2)	DC array Output (kWh)	Value ($)
1	98	4	130	102	12
2	94	4	125	98	11
3	131	6	178	137	16
4	136	6	187	142	16
5	150	7	214	156	18
6	130	6	188	136	16
7	132	6	191	138	16
8	131	6	191	136	16
9	122	6	176	127	15
10	126	6	177	132	15
11	102	5	138	107	12
12	92	4	122	96	11
Total	**1,444**	66	2,017	1,507	174

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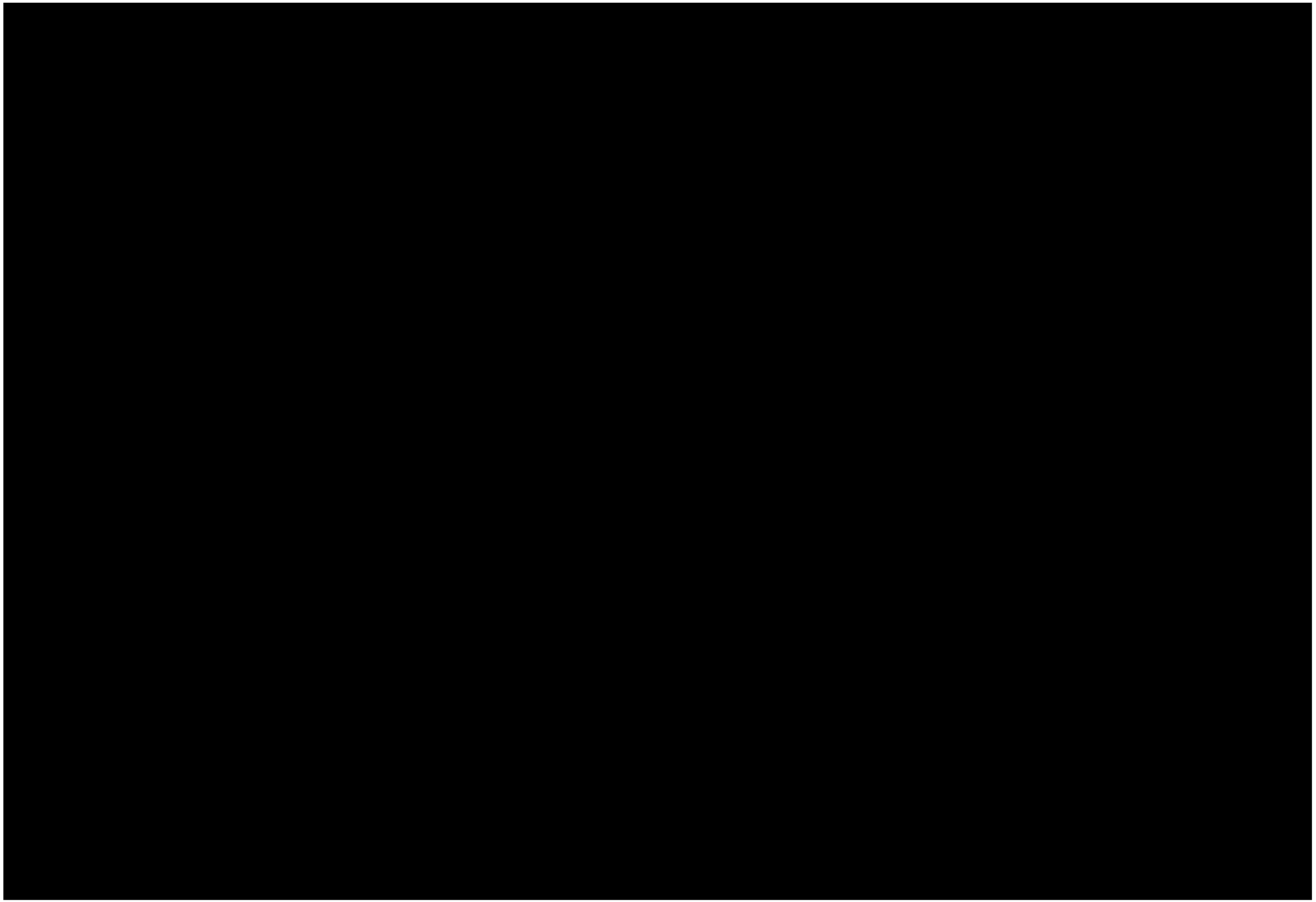

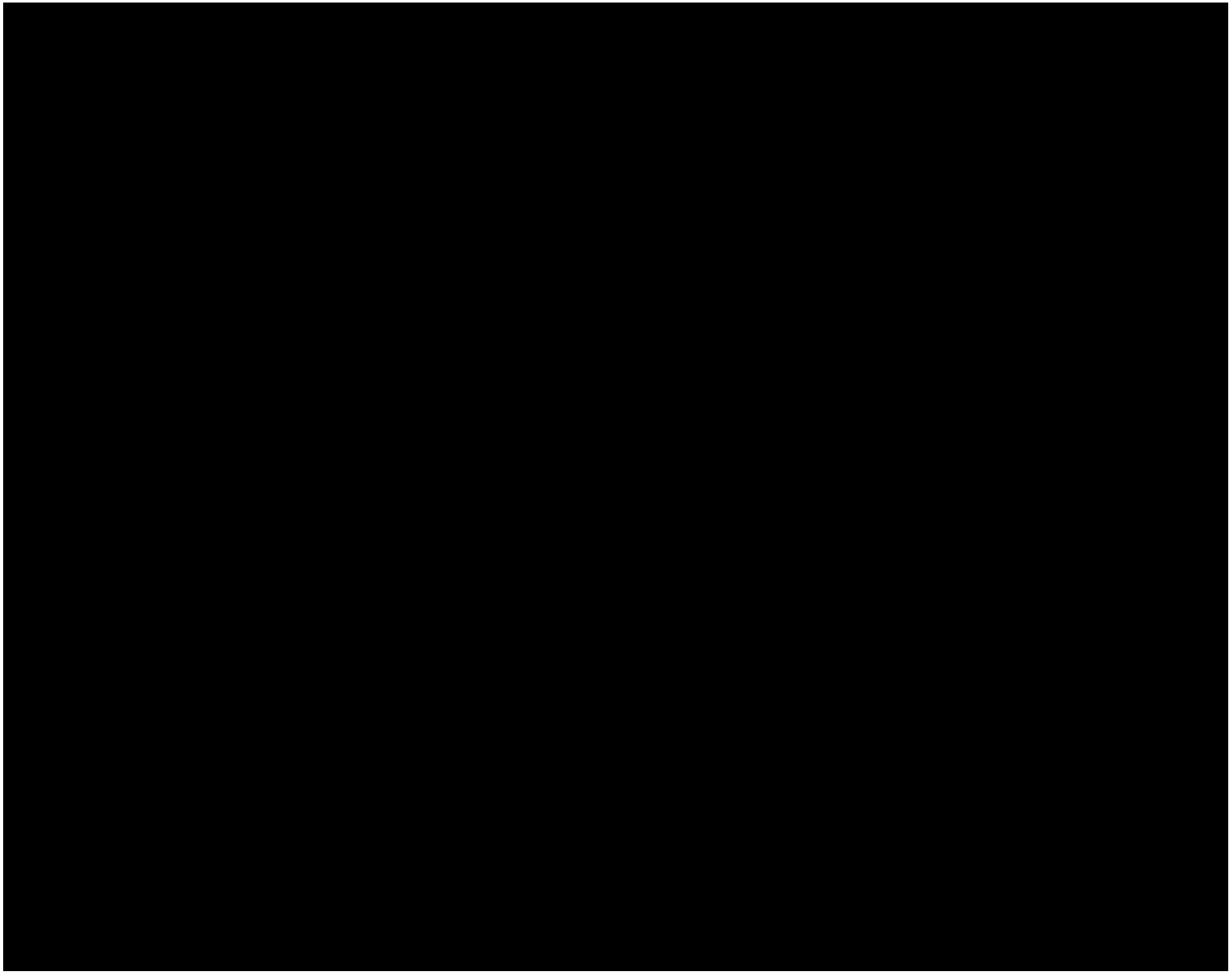

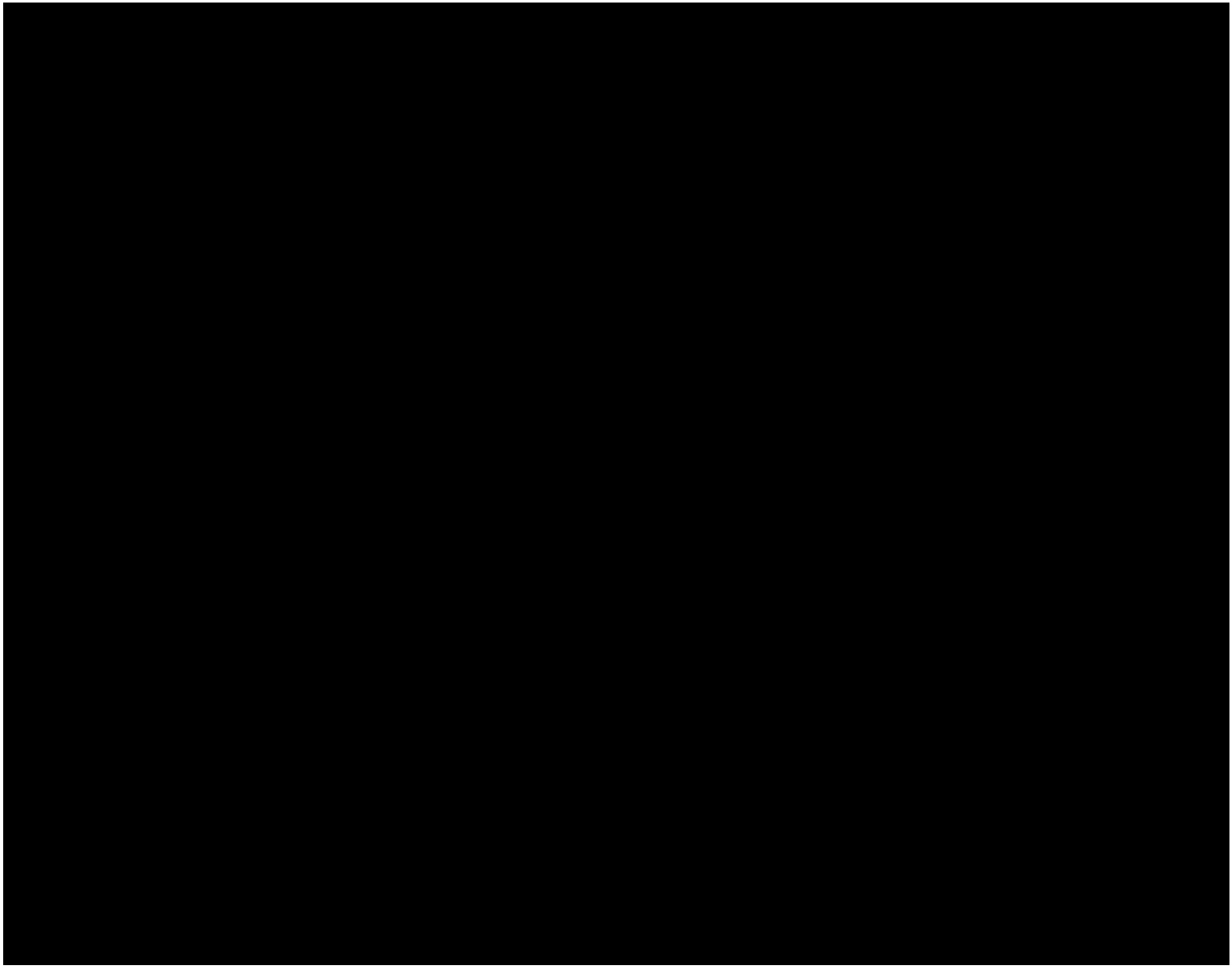

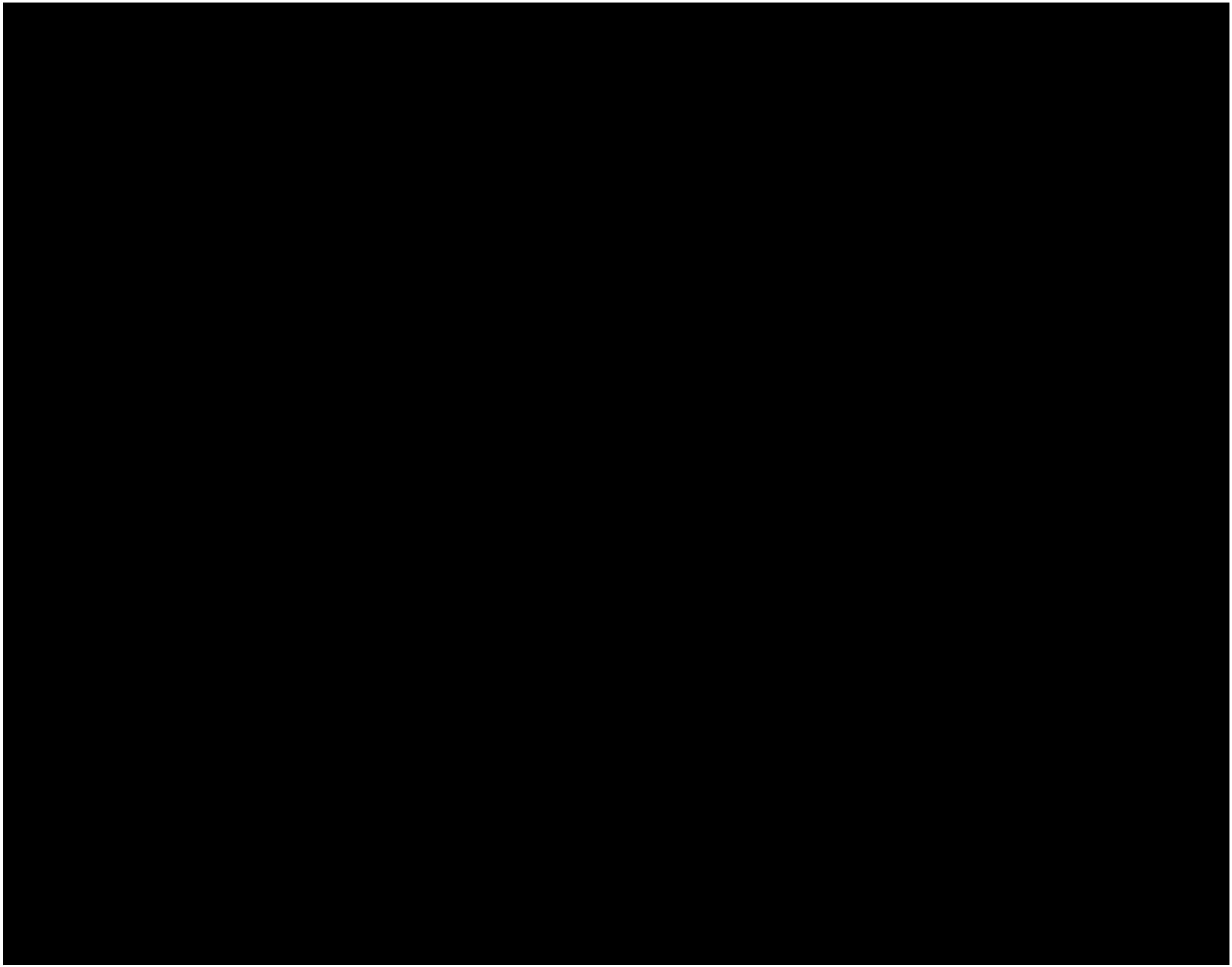

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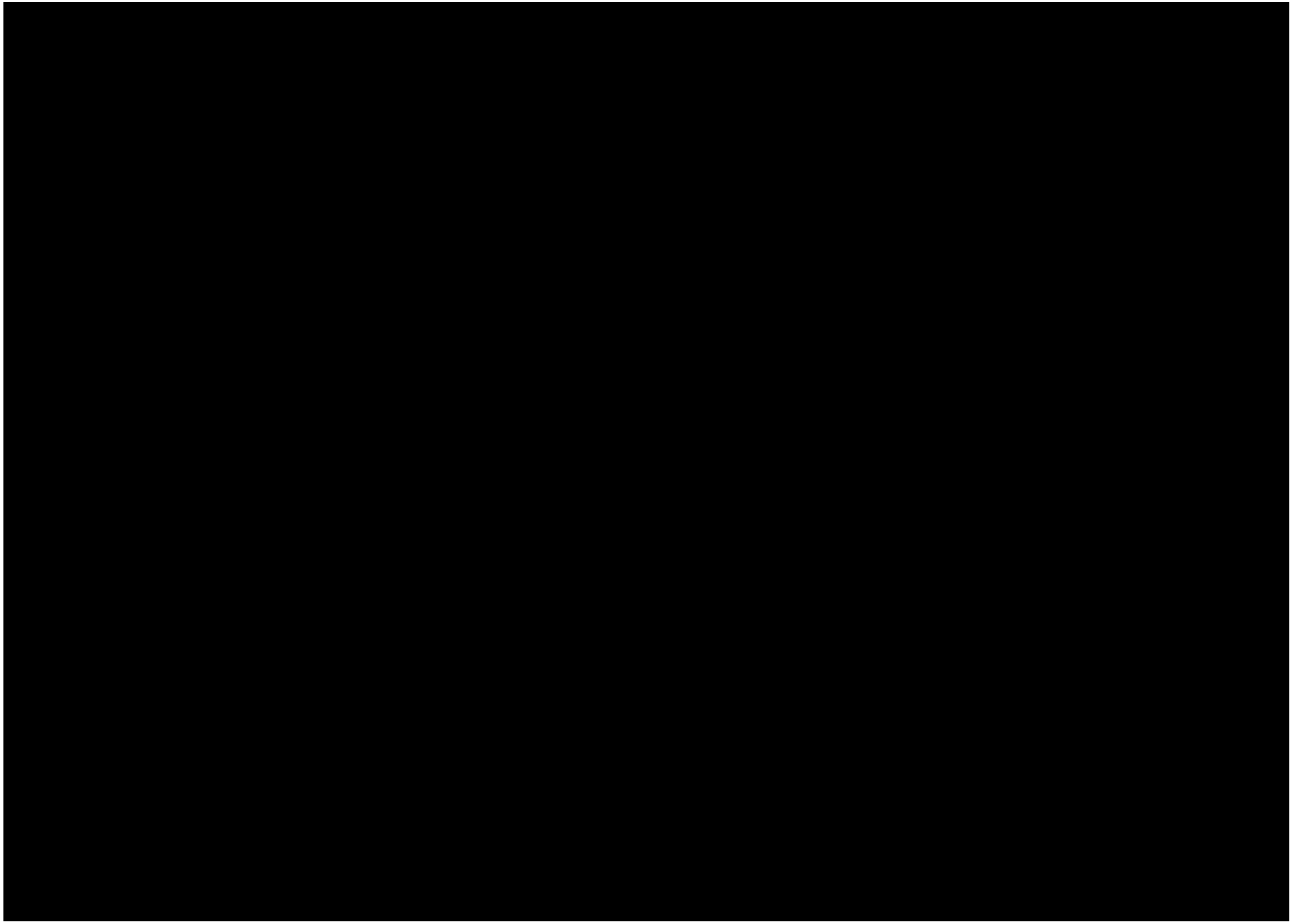

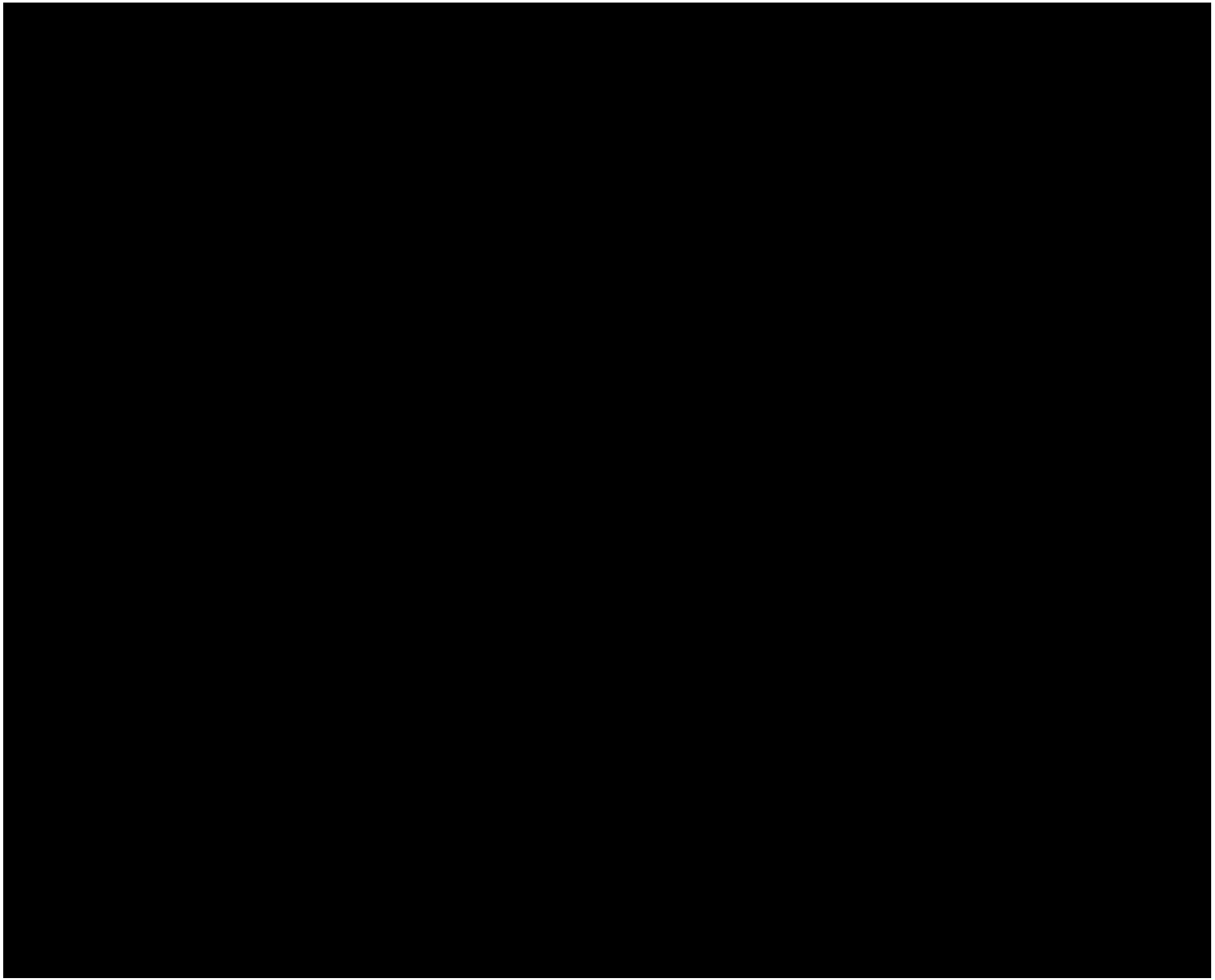

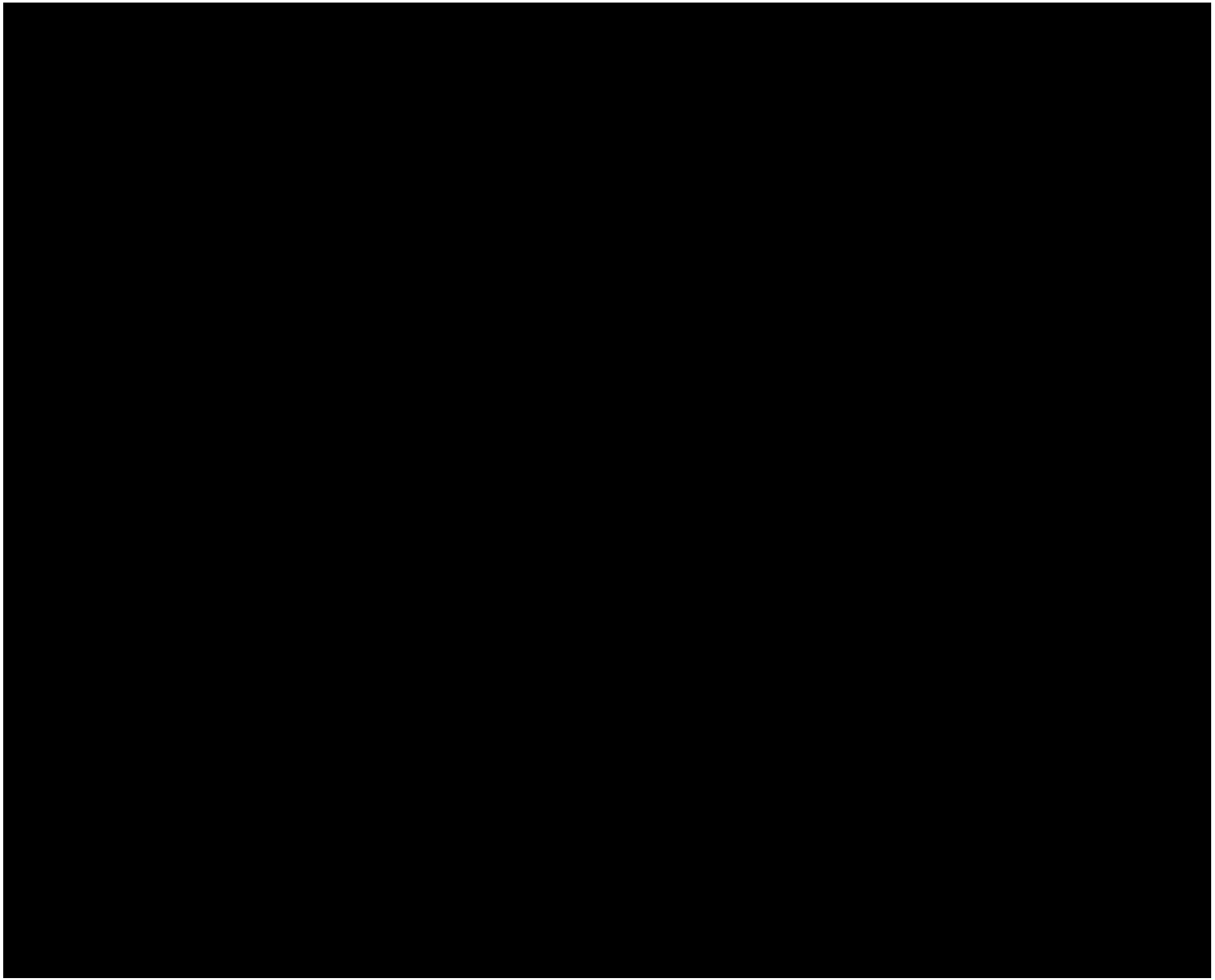

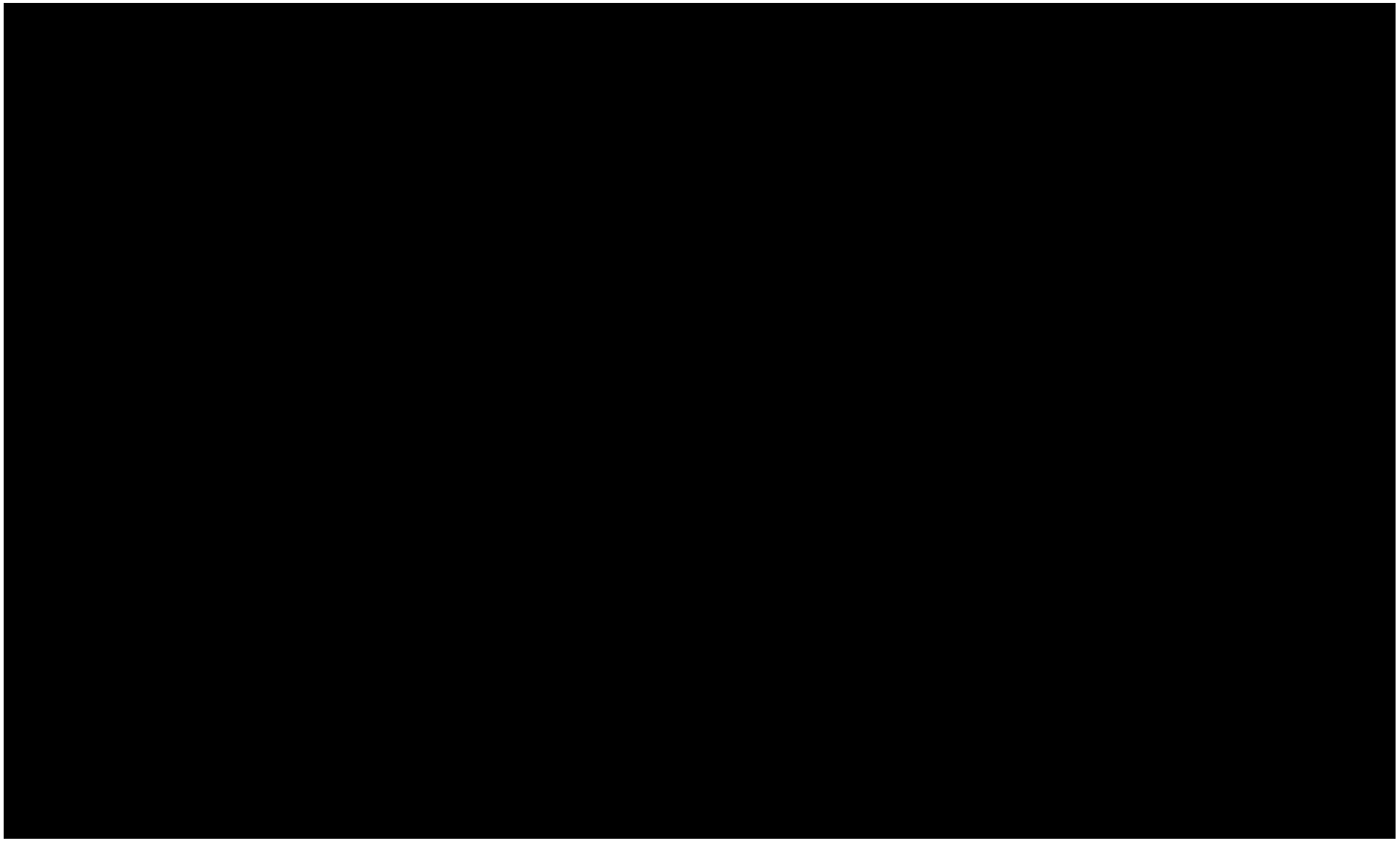

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Source: Form EIA-861M https://www.eia.gov/electricity/data/eia861m/

Utility Characteristics							Capacity MW					Customers				
Year	Month	State	Utility Number	Utility Name	Data Status	Type	Residential	Commercial	Industrial	C&I	Total	Residential	Commercial	Industrial	C&I	Total
2013	12	FL	7,801	Gulf Power Co	Final	-	1	0	-	0	1	208	98	-	98	306
2014	12	FL	7,801	Gulf Power Co	Final	-	1	0	.	0	2	267	100	.	100	367
2015	12	FL	7,801	Gulf Power Co	Final	-	2	0	-	0	2	362	106	-	106	468
2016	12	FL	7,801	Gulf Power Co	Final	-	2	0	-	0	3	396	110	-	110	506
2017	12	FL	7,801	Gulf Power Co	Final	AC	5	1	.	1	5	771	113	.	113	884
2018	12	FL	7,801	Gulf Power Co	Final	AC	7	1	.	1	8	1,050	117	.	117	1,167
2019	12	FL	7,801	Gulf Power Co	Preliminary	AC	15	0.75	.	1	16	2,082	128	.	128	2,210
2020	12	FL	7,801	Gulf Power Co	Preliminary	AC	38	2.10	.	2	40	4,836	133	.	133	4,964
Projected Year End							38			2.10		4,836			133	
2013	12	FL	6452	Florida Power &	Final	-	10	13	.	13	23	2,001	561	.	561	2,562
2014	12	FL	6452	Florida Power &	Final	-	14	16	.	16	30	2,530	704	.	704	3,234
2015	12	FL	6452	Florida Power &	Final	-	20	20	.	20	40	3,466	784	.	784	4,250
2016	12	FL	6452	Florida Power &	Final	-	27	22	.	22	49	4,606	805	.	805	5,411
2017	12	FL	6452	Florida Power &	Final	AC	41	25	1	27	68	6,671	829	15	844	7,515
2018	12	FL	6452	Florida Power &	Final	AC	69	28	1	29	98	10,304	887	14	901	11,205
2019	12	FL	6452	Florida Power &	Preliminary	AC	117	32	1	33	150	15,988	959	17	976	16,964
2020	12	FL	6452	Florida Power &	Preliminary	AC	178	37	1	38	216	22,738	1,037	17	1,054	23,792

Photovoltaic

		Storage Capacity (MW)					Storage Customers					Virtual Capacity (MW)					Virtual Customers					Energy Sold Back MWh				
Year	Utility Number	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total
2013	7,801	46	5	-	.	51	0	0	.	.	0	2	9	.	.	11	0	1	.	.	1	.	.	.	.	-
2014	7,801	80	10	.	.	90	0	0	.	.	0	2	5	.	.	7	0	0	.	.	0	.	.	.	.	-
2015	7,801	96	17	-	-	113	0	0	-	-	0	2	5	-	-	7	0	0	-	-	0	.	.	.	.	-
2016	7,801	114	17	-	-	131	0	0	-	-	0	1	5	-	-	6	0	0	-	-	0	.	.	.	.	-
2017	7,801	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	239	23	.	.	262
2018	7,801	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	306	13	.	.	320
2019	7,801	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	339	25	.	.	364
2020	7,801	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	936	41	.	.	978
2013	6452	356	661	.	.	1,017	0	0	.	.	0	5	5	.	.	10	0	-	.	.	0	-	1	.	.	1
2014	6452	413	970	.	.	1,383	0	0	.	.	0	5	7	.	.	12	0	.	.	.	0	.	4	.	.	4
2015	6452	476	751	.	.	1,227	0	0	.	.	0	5	7	.	.	12	-	-	.	.	-	-	4	.	.	4
2016	6452	1,284	360	.	.	1,644	0	0	.	.	0	3	7	.	.	10	0	0	.	.	0	-	6	.	.	6
2017	6452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,064	668	4	-	2,735
2018	6452	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	3,273	757	6	.	4,036
2019	6452	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	7,206	1,178	11	.	8,395
2020	6452	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-	8,259	875	8	.	9,143

Wind

		Capacity MW					Customers					Energy Sold Back MWh				
Year	Utility Number	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total
2013	7,801	.	.	.	.	-	.	.	.	.	-	1	0	-	-	1
2014	7,801	.	.	.	.	-	.	.	.	.	-	1	0	-	-	2
2015	7,801	.	.	.	.	-	.	.	.	.	-	2	0	-	-	2
2016	7,801	.	.	.	.	-	.	.	.	.	-	2	0	NM	-	3
2017	7,801	0	0	.	.	0	1	5	.	.	6	-	1	.	.	1
2018	7,801	0	0	.	.	0	1	5	.	.	6	.	.	.	.	-
2019	7,801	0	0	.	.	0	1	5	.	.	6	-	-	.	.	-
2020	7,801	0	0	.	.	0	1	4	.	.	5	-	-	.	.	-
2013	6452	-	1	.	.	1	-	-	.	.	-	10	13	-	-	23
2014	6452	.	3	.	.	3	.	.	.	.	-	14	20	-	-	34
2015	6452	-	3	.	.	3	-	37	.	.	37	20	24	-	-	44
2016	6452	-	4	.	.	4	-	-	.	.	-	27	28	NM	-	55
2017	6452	0	0	-	-	0	3	7	-	-	10	0	0	-	-	0
2018	6452	0	0	-	.	0	3	7	.	.	10	0	0	-	.	0
2019	6452	0	0	.	.	0	3	7	.	.	10	0	0	.	.	0
2020	6452	0	0	.	.	0	3	7	.	.	10	0	.	.	.	0

Other

		Capacity MW					Customers					Energy Sold Back MWh				
Year	Utility Number	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total
2013	7,801	210	107	-	-	317	46	6	-	-	52	-	-	-	-	-
2014	7,801	269	105	-	-	374	80	10	-	-	91	-	-	-	-	-
2015	7,801	364	111	-	-	475	96	17	-	-	113	-	-	-	-	-
2016	7,801	397	115	-	-	512	114	17	-	-	131	-	-	-	-	-
2017	7,801	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-
2018	7,801	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-
2019	7,801	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-
2020	7,801	.	.	.	.	-	.	.	.	.	-	.	.	.	.	-
2013	6452	2,006	567	-	-	2,573	357	661	-	-	1,017	-	-	-	-	-
2014	6452	2,535	714	-	-	3,249	414	970	-	-	1,383	-	-	-	-	-
2015	6452	3,471	794	-	-	4,265	476	788	-	-	1,263	-	-	-	-	-
2016	6452	4,609	816	-	-	5,425	1,285	360	-	-	1,644	-	-	-	-	-
2017	6452	-	1	5	-	6	-	1	3	-	4	-	-	91	-	91
2018	6452	.	1	5	.	6	.	1	3	.	4	.	.	190	.	190
2019	6452	.	1	5	.	6	.	1	3	.	4	.	.	.	.	-
2020	6452	.	1	5	.	6	.	1	3	.	4	.	.	.	.	-

All Technologies

		Capacity MW					Customers					Energy Sold Back MWh					
Year	Utility Number	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total	Residential	Commercial	Industrial	Transportation	Total	
2013	7,801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2014	7,801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2015	7,801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2016	7,801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2017	7,801	5	1	NM	-	5	772	118	-	-	890	239	24	-	-	263	
2018	7,801	7	1	NM	-	8	1,051	122	-	-	1,173	306	13	-	-	320	
2019	7,801	15	1	NM	-	16	2,083	133	-	-	2,216	339	25	-	-	364	
2020	7,801	38	2	NM	-	40	4,837	132	-	-	4,969	936	41	-	-	978	
2013	6452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2014	6452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2015	6452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2016	6452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2017	6452	41	26	6	-	74	6,674	837	18	-	7,529	2,064	668	95	-	2,827	-
2018	6452	69	29	6	-	104	10,307	895	17	-	11,219	3,273	757	196	-	4,226	-
2019	6452	117	32	6	-	156	15,991	967	20	-	16,978	7,207	1,178	11	-	8,395	-
2020	6452	178	38	6	-	222	22,741	1,045	20	-	23,806	8,260	875	8	-	9,143	-

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ref2021.d113020a

Report Annual Energy Outlook 2021
Scenario ref2021 Reference case
Datekey d113020a
Release Date January 2021

REM000 **17. Renewable Energy Consumption by Sector and Source**

(quadrillion Btu, unless otherwise noted)

	Sector and Source	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Compound Growth 2020-2050 (percent)
	Marketed Renewable Energy 1/																																
REM000:ca_Residential(	**Residential (wood)**	0.46	0.45	0.44	0.45	0.45	0.46	0.46	0.45	0.45	0.44	0.44	0.44	0.43	0.42	0.42	0.41	0.40	0.40	0.39	0.38	0.38	0.37	0.37	0.37	0.36	0.36	0.35	0.35	0.35	0.34	0.34	-1.0%
REM000:da_Commercial	**Commercial (biomass)**	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.0%
REM000:ea_Industrial	**Industrial 2/**	2.43	2.41	2.44	2.45	2.47	2.48	2.49	2.50	2.50	2.51	2.52	2.54	2.55	2.55	2.56	2.57	2.58	2.60	2.61	2.63	2.64	2.66	2.69	2.71	2.74	2.77	2.80	2.83	2.86	2.90	2.93	0.6%
REM000:ea_Conventiona	Conventional Hydroelectric Power	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	1.8%
REM000:ea_MunicipalSo	Municipal Waste 3/	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.2%
REM000:ea_Biomass	Biomass	1.35	1.35	1.39	1.40	1.41	1.42	1.43	1.43	1.44	1.44	1.45	1.46	1.47	1.47	1.47	1.47	1.48	1.48	1.49	1.50	1.51	1.52	1.53	1.55	1.57	1.58	1.60	1.62	1.64	1.66	1.68	0.7%
REM000:ea_BiomasHeat	Biofuels Heat and Coproducts	0.90	0.88	0.87	0.88	0.88	0.89	0.89	0.89	0.89	0.90	0.90	0.91	0.91	0.92	0.92	0.93	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.99	1.01	1.01	1.03	1.04	1.05	1.06	0.5%
REM000:fa_Transportatic	**Transportation**	1.33	1.52	1.54	1.58	1.58	1.59	1.60	1.60	1.61	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.61	1.61	1.62	1.62	1.62	1.63	1.64	1.65	1.66	1.67	1.68	1.70	0.8%
REM000:fa_Ethanolused	Ethanol used in E85 4/	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.2%
REM000:ga_Ethanolusec	Ethanol used in Gasoline Blending	1.01	1.12	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.12	1.12	1.12	1.13	1.13	1.13	1.14	1.14	1.15	1.16	1.16	1.17	1.18	1.18	1.19	1.20	1.21	0.6%
REM000:ga_BioDieselBle	Biodiesel used in Distillate Blending	0.23	0.27	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.28	0.7%
REM000:trans_biobute	Biobutanol	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
REM000:gb_LiquidfromB	Liquids from Biomass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
REM000:gb_GreenLiquid	Renewable Diesel and Gasoline 5/	0.07	0.11	0.16	0.18	0.19	0.19	0.20	0.20	0.21	0.22	0.22	0.22	0.22	0.22	0.21	0.21	0.21	0.21	0.21	0.20	0.19	0.20	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	3.5%
REM000:ha_ElectricPow	**Electric Power 6/**	6.99	7.65	8.16	9.03	10.06	10.55	10.73	11.06	11.25	11.56	11.97	12.22	12.43	12.66	12.98	13.41	13.66	13.85	14.03	14.11	14.22	14.42	14.54	14.71	14.87	15.13	15.41	15.74	15.94	16.18	16.41	2.9%
REM000:ha_Conventiona	Conventional Hydroelectric Power	2.52	2.47	2.55	2.62	2.56	2.52	2.45	2.43	2.42	2.41	2.41	2.40	2.39	2.38	2.38	2.37	2.37	2.36	2.35	2.34	2.33	2.33	2.32	2.32	2.30	2.30	2.29	2.29	2.28	2.28	2.27	-0.3%
REM000:ha_Geothermal	Geothermal	0.14	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.34	0.35	0.36	0.37	0.38	0.38	0.39	3.4%
REM000:ha_MunicipalSo	Biogenic Municipal Waste 7/	0.29	0.30	0.31	0.31	0.33	0.34	0.35	0.36	0.36	0.37	0.39	0.40	0.40	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.52	0.53	0.54	0.56	0.57	0.58	0.58	2.3%
REM000:ha_Biomass	Biomass	0.20	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	-0.1%
REM000:ha_DedicatedPl	Dedicated Plants	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	-0.1%
REM000:ha_Cofiring	Cofiring	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	-0.1%
REM000:ha_SolarTherma	Solar Thermal	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.6%
REM000:ha_SolarPhotov	Solar Photovoltaic	0.74	0.96	1.24	1.38	1.54	1.90	2.27	2.61	2.77	3.05	3.25	3.42	3.63	3.84	4.01	4.21	4.37	4.53	4.71	4.81	4.92	5.10	5.23	5.38	5.52	5.74	6.00	6.27	6.45	6.64	6.81	7.7%
REM000:ha_Wind	Wind	3.06	3.54	3.68	4.34	5.24	5.40	5.26	5.26	5.29	5.31	5.50	5.56	5.56	5.56	5.69	5.90	5.97	5.98	5.97	5.95	5.94	5.94	5.92	5.94	5.95	5.98	5.99	6.03	6.04	6.08	6.14	2.3%
REM000:ia_TotalMarkete	**Total Marketed Renewable Energy**	11.34	12.16	12.72	13.64	14.69	15.21	15.41	15.75	15.94	16.26	16.69	16.95	17.16	17.39	17.70	18.15	18.39	18.59	18.78	18.87	18.99	19.21	19.35	19.54	19.74	20.03	20.34	20.71	20.95	21.24	21.51	2.2%
	Sources of Ethanol																																
REM000:ja_FromCorn	From Corn and Other Starch	1.13	1.25	1.27	1.27	1.28	1.29	1.29	1.29	1.30	1.30	1.30	1.32	1.32	1.33	1.34	1.35	1.36	1.36	1.37	1.38	1.39	1.40	1.41	1.43	1.44	1.46	1.47	1.49	1.51	1.53	1.54	1.0%
REM000:ja_FromCellulos	From Cellulose	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.3%
REM000:ja_Imports	Net Imports	-0.10	-0.11	-0.14	-0.14	-0.15	-0.16	-0.16	-0.16	-0.17	-0.17	-0.18	-0.19	-0.19	-0.20	-0.20	-0.21	-0.21	-0.22	-0.23	-0.23	-0.24	-0.24	-0.25	-0.26	-0.26	-0.27	-0.28	-0.29	-0.30	-0.31	-0.32	4.0%
REM000:ja_Total	**Total U.S. Supply of Ethanol**	1.04	1.14	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.14	1.14	1.14	1.15	1.15	1.16	1.16	1.17	1.17	1.18	1.19	1.19	1.20	1.21	1.22	1.23	0.6%
	Nonmarketed Renewable Energy 8/																																
	Selected Consumption																																
REM000:la_Residential	**Residential**	0.28	0.32	0.35	0.38	0.41	0.43	0.46	0.49	0.52	0.55	0.58	0.61	0.64	0.67	0.71	0.74	0.78	0.82	0.85	0.89	0.93	0.97	1.01	1.05	1.09	1.13	1.17	1.21	1.26	1.30	1.34	5.4%
REM000:la_SolarHotWat	Solar Hot Water Heating	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.6%
REM000:la_Geothermall	Geothermal Heat Pumps	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	4.8%
REM000:la_SolarPhotovo	Solar Photovoltaic	0.22	0.26	0.29	0.32	0.34	0.36	0.39	0.42	0.45	0.47	0.51	0.54	0.57	0.60	0.63	0.66	0.70	0.73	0.77	0.80	0.84	0.88	0.91	0.95	0.99	1.03	1.07	1.11	1.16	1.20	1.24	5.9%
REM000:la_blowWindblo	Wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1%
REM000:ma_Commercia	**Commercial**	0.25	0.28	0.30	0.30	0.31	0.32	0.34	0.35	0.37	0.38	0.39	0.41	0.41	0.43	0.43	0.45	0.47	0.48	0.49	0.51	0.52	0.54	0.56	0.56	0.57	0.59	0.60	0.62	0.63	0.63	0.64	3.2%
REM000:ma_SolarTherm	Solar Thermal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	-0.3%
REM000:ma_SolarPhotor	Solar Photovoltaic	0.17	0.19	0.21	0.22	0.23	0.25	0.26	0.28	0.29	0.30	0.31	0.33	0.33	0.35	0.36	0.38	0.39	0.41	0.42	0.43	0.45	0.46	0.48	0.49	0.50	0.51	0.53	0.54	0.55	0.56	0.56	4.2%
REM000:ma_blowWindbl	Wind	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-0.2%

1/ Includes nonelectric renewable energy groups for which the energy source is bought and sold in the marketplace, although all transactions may not necessarily be marketed, and renewable energy inputs for electricity entering the marketplace on the electric power grid. Excludes electricity imports; see Table 2. Actual heat rates used to determine fuel consumption for all renewable fuels except hydroelectric, geothermal, solar, and wind. Consumption at hydroelectric, geothermal, solar, and wind facilities is determined by using the average electric power sector net heat rate for fossil fuels.

2/ Includes combined heat and power plants that have a non-regulatory status, and small on-site generating systems.

3/ Includes municipal waste, landfill gas, and municipal sewage sludge. All municipal waste is included, although a portion of the municipal waste stream contains petroleum-derived plastics and other non-renewable sources.

4/ Excludes motor gasoline component of E85.

5/ Renewable feedstocks for the on-site production of diesel and gasoline.

6/ Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.

7/ Includes biogenic municipal waste, landfill gas, and municipal sewage sludge. Incremental growth is assumed to be for landfill gas facilities.

8/ Includes selected renewable energy consumption data for which the energy is not bought or sold, either directly or indirectly as an input to marketed energy. The U.S. Energy Information Administration does not estimate or project total consumption of nonmarketed renewable energy.

- - = Not applicable.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding.

Sources: 2020: U.S. Energy Information Administration (EIA), Short-Term Energy Outlook, October 2020 and EIA, AEO2021 National Energy Modeling System run ref2021.d113020a. Projections: EIA, AEO2021 National Energy Modeling System run ref2021.d113020a.

Florida Power & Light Company
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	Codes & Standards	FPL customers	Gulf customers	FPL coefficient	Gulf coefficient	FPL MW	Gulf MW		
2021	0.814723962	5,227,485	478,217	-0.887736916	-1.227408423	-3,781	-478	-4,259	
2022	0.858159304	5,302,135	479,107	-0.887736916	-1.227408423	-4,039	-505	-4,544	
2023	0.881716224	5,374,903	483,974	-0.887736916	-1.227408423	-4,207	-524	-4,731	
2024	0.896272339	5,446,315	488,831	-0.887736916	-1.227408423	-4,333	-538	-4,871	
2025	0.917233657	5,516,177	493,368	-0.887736916	-1.227408423	-4,492	-555	-5,047	
2026	0.937196723	5,585,057	497,732	-0.887736916	-1.227408423	-4,647	-573	-5,219	
2027	0.957114967	5,653,463	502,051	-0.887736916	-1.227408423	-4,804	-590	-5,393	
2028	0.978997035	5,720,909	506,305	-0.887736916	-1.227408423	-4,972	-608	-5,580	
2029	0.978997035	5,787,299	510,479	-0.887736916	-1.227408423	-5,030	-613	-5,643	
2030	0.978997035	5,853,136	514,629	-0.887736916	-1.227408423	-5,087	-618	-5,705	
2031	1.001379382	5,918,556	518,817	-0.887736916	-1.227408423	-5,261	-638	-5,899	
								-1,640	<<< incremental reduction to Summer Peak demand from 2021 to 2031

Variable Descriptions

Codes & Standards: Summer Peak kW per customer reduction

FPL customers: the number of FPL legacy customers at the time of the Summer Peak (not the same as the annual average customers shown in TYSP schedule 2.3, column 21)

Gulf customers: the number of Gulf legacy customers at the time of the Summer Peak (not the same as the annual average customers shown in TYSP schedule 2.3, column 21)

FPL coefficient: model estimate coefficient for the codes & standard variable on FPL legacy summer peak

Gulf coefficient: model estimate coefficient for the codes & standard variable on Gulf legacy summer peak

FPL MW: the estimated cumulative impact of codes & standards on FPL legacy Summer Peak

Gulf MW: the estimated cumulative impact of codes & standards on Gulf legacy Summer Peak

Florida Power & Light Company
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Ten-Year Site Plan
Staff's Third Data Request
Request No. 14
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DATE	NEL MWh	Peak MW	Year	Month	Lookup	Customers	Peak/Cust	DailyAvg	Maximum	Minimum	Peak/Cust	Minimum
1/3/2010	317,155	15,820	2010	1	2010:1	4,502,130	3.514	49.6	56.1	44.6	3.514	44.6
1/4/2010	353,467	17,559	2010	1	2010:1	4,502,130	3.900	47.8	57.3	39.8	3.900	39.8
1/5/2010	373,992	18,807	2010	1	2010:1	4,502,130	4.177	46.6	54.8	39.3	4.177	39.3
1/6/2010	419,447	21,525	2010	1	2010:1	4,502,130	4.781	44.6	54.8	35.9	4.781	35.9
1/7/2010	395,588	21,021	2010	1	2010:1	4,502,130	4.669	48.5	60.5	39.2	4.669	39.2
1/8/2010	327,238	17,513	2010	1	2010:1	4,502,130	3.890	57.2	70.6	45.9	3.890	45.9
1/9/2010	411,024	22,229	2010	1	2010:1	4,502,130	4.937	43.0	55.2	35.4	4.937	35.4
1/10/2010	507,660	23,514	2010	1	2010:1	4,502,130	5.223	39.3	47.9	33.2	5.223	33.2
1/11/2010	465,143	24,353	2010	1	2010:1	4,502,130	5.409	45.0	58.7	33.4	5.409	33.4
1/12/2010	407,962	22,592	2010	1	2010:1	4,502,130	5.018	49.1	61.2	38.6	5.018	38.6
1/13/2010	371,221	20,587	2010	1	2010:1	4,502,130	4.573	51.9	64.1	41.7	4.573	41.7
2/11/2010	306,429	16,013	2010	2	2010:2	4,510,659	3.550	51.7	61.3	42.2	3.550	42.2
2/14/2010	320,447	16,311	2010	2	2010:2	4,510,659	3.616	50.5	58.8	42.0	3.616	42.0
2/17/2010	314,373	16,518	2010	2	2010:2	4,510,659	3.662	52.7	61.8	44.0	3.662	44.0
2/26/2010	304,868	16,912	2010	2	2010:2	4,510,659	3.749	53.0	64.9	42.5	3.749	42.5
3/4/2010	310,626	15,931	2010	3	2010:3	4,516,712	3.527	53.0	62.2	45.8	3.527	45.8
3/5/2010	319,271	17,779	2010	3	2010:3	4,516,712	3.936	52.9	63.1	42.0	3.936	42.0
12/6/2010	272,450	14,671	2010	12	2010:12	4,527,028	3.241	51.9	59.5	44.7	3.241	44.7
12/7/2010	333,454	16,487	2010	12	2010:12	4,527,028	3.642	47.8	57.4	39.7	3.642	39.7
12/8/2010	334,069	18,176	2010	12	2010:12	4,527,028	4.015	51.2	63.0	39.9	4.015	39.9
12/13/2010	313,836	17,331	2010	12	2010:12	4,527,028	3.828	51.6	59.1	41.7	3.828	41.7
12/14/2010	420,336	20,906	2010	12	2010:12	4,527,028	4.618	42.4	52.2	33.5	4.618	33.5
12/15/2010	404,898	21,196	2010	12	2010:12	4,527,028	4.682	47.1	59.6	36.1	4.682	36.1
12/16/2010	331,875	19,341	2010	12	2010:12	4,527,028	4.272	57.7	71.2	42.2	4.272	42.2
12/26/2010	259,636	14,773	2010	12	2010:12	4,527,028	3.263	56.1	66.9	44.8	3.263	44.8
12/27/2010	373,040	18,107	2010	12	2010:12	4,527,028	4.000	45.3	54.0	37.7	4.000	37.7
12/28/2010	390,303	20,344	2010	12	2010:12	4,527,028	4.494	47.4	60.8	36.1	4.494	36.1
12/29/2010	341,410	18,490	2010	12	2010:12	4,527,028	4.084	54.7	67.1	42.0	4.084	42.0
1/13/2011	339,721	17,955	2011	1	2011:1	4,533,029	3.961	50.0	60.8	39.8	3.961	39.8
1/14/2011	306,202	16,698	2011	1	2011:1	4,533,029	3.684	56.1	67.0	44.4	3.684	44.4
1/22/2011	242,549	12,359	2011	1	2011:1	4,533,029	2.726	59.4	65.8	44.7	2.726	44.7
1/23/2011	287,407	14,976	2011	1	2011:1	4,533,029	3.304	53.5	64.6	41.3	3.304	41.3
1/3/2012	290,319	16,202	2012	1	2012:1	4,560,015	3.553	49.2	52.6	41.6	3.553	41.6
1/4/2012	336,750	17,910	2012	1	2012:1	4,560,015	3.928	50.8	63.8	39.0	3.928	39.0
1/5/2012	301,711	16,238	2012	1	2012:1	4,560,015	3.561	55.6	68.0	44.8	3.561	44.8
1/15/2012	273,267	14,078	2012	1	2012:1	4,560,015	3.087	57.4	70.0	44.8	3.087	44.8
2/12/2012	274,358	13,968	2012	2	2012:2	4,565,707	3.059	50.2	57.3	43.8	3.059	43.8
2/13/2012	293,552	16,081	2012	2	2012:2	4,565,707	3.522	57.0	68.6	44.0	3.522	44.0
12/22/2012	255,828	12,413	2012	12	2012:12	4,588,119	2.705	53.5	64.8	45.2	2.705	45.2
12/23/2012	261,438	12,830	2012	12	2012:12	4,588,119	2.796	58.4	70.6	45.9	2.796	45.9
2/17/2013	269,883	13,328	2013	2	2013:2	4,599,265	2.898	50.5	57.8	44.0	2.898	44.0
2/18/2013	289,298	15,087	2013	2	2013:2	4,599,265	3.280	58.1	69.3	44.5	3.280	44.5
3/4/2013	295,290	15,899	2013	3	2013:3	4,605,771	3.452	53.8	66.5	41.8	3.452	41.8
3/27/2013	261,559	13,131	2013	3	2013:3	4,605,771	2.851	55.8	66.5	45.2	2.851	45.2
1/7/2014	307,098	15,946	2014	1	2014:1	4,679,556	3.408	50.1	54.2	45.6	3.408	45.6
1/17/2014	308,387	16,401	2014	1	2014:1	4,679,556	3.505	53.5	64.7	42.6	3.505	42.6
1/19/2014	299,350	15,892	2014	1	2014:1	4,679,556	3.396	55.3	67.6	42.4	3.396	42.4
1/23/2014	319,822	17,491	2014	1	2014:1	4,679,556	3.738	55.4	67.1	42.0	3.738	42.0
2/14/2015	284,553	14,363	2015	2	2015:2	4,753,351	3.022	54.6	65.7	44.6	3.022	44.6
2/19/2015	324,768	16,522	2015	2	2015:2	4,753,351	3.476	51.5	57.8	43.5	3.476	43.5
2/20/2015	356,456	19,732	2015	2	2015:2	4,753,351	4.151	51.2	61.4	38.2	4.151	38.2
1/24/2016	317,903	15,908	2016	1	2016:1	4,810,611	3.307	49.9	58.3	42.4	3.307	42.4
1/25/2016	311,689	16,915	2016	1	2016:1	4,810,611	3.516	59.1	69.9	45.8	3.516	45.8
2/8/2016	301,348	15,987	2016	2	2016:2	4,817,922	3.318	56.6	64.9	45.8	3.318	45.8
2/11/2016	311,560	16,941	2016	2	2016:2	4,817,922	3.516	55.8	67.8	45.2	3.516	45.2
1/8/2017	286,665	14,010	2017	1	2017:1	4,875,931	2.873	53.4	64.5	45.4	2.873	45.4
1/4/2018	369,930	18,483	2018	1	2018:1	4,928,305	3.750	48.5	57.1	39.3	3.750	39.3
1/5/2018	370,232	18,903	2018	1	2018:1	4,928,305	3.836	50.0	59.4	41.3	3.836	41.3
1/18/2018	361,207	18,733	2018	1	2018:1	4,928,305	3.801	48.8	58.2	38.8	3.801	38.8
1/19/2018	337,235	18,491	2018	1	2018:1	4,928,305	3.752	56.5	68.6	45.4	3.752	45.4
1/21/2019	293,675	14,907	2019	1	2019:1	5,029,142	2.964	54.9	66.0	43.0	2.964	43.0
1/21/2020	292,511	14,822	2020	1	2020:1	5,100,083	2.906	54.9	64.1	45.4	2.906	45.4
1/22/2020	341,224	17,461	2020	1	2020:1	5,100,083	3.424	51.1	60.8	39.4	3.424	39.4
12/26/2020	313,167	15,349	2020	12	2020:12	5,166,599	2.971	51.4	60.3	43.7	2.971	43.7

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Year	Month	Day	HR1	HR2	HR3	HR4	HR5	HR6	HR7	HR8	HR9	HR10	HR11	HR12	HR13	HR14	HR15	HR16	HR17	HR18	HR19	HR20	HR21	HR22	HR23	HR24				
1989	12	22	61	59	59	58	57	57	58	60	61	66	66	66	64	64	59	58	58	59	59	59	57	58	58	56				
1989	12	23	55	53	53	53	53	53	53	53	53	52	51	50	49	49	47	45	42	40	39	38	37	35	33	33				
1989	12	24	31	30	30	29	30	29	28	30	33	35	38	40	41	42	42	41	39	37	35	35	34	34	33	32	Min		Avg	
1989	12	25	31	30	29	29	30	29	31	35	41	45	49	51	52	54	54	52	49	46	43	42	42	41	39	39		29		45

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SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.816759
R Square	0.667096
Adjusted R Square	0.661726
Standard Error	0.363761
Observations	64

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	16.43965	16.43965	124.2396049	1.90758E-16
Residual	62	8.203975	0.132322		
Total	63	24.64363			

	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Jpper 95.0%*
Intercept	10.0098	0.567257	17.64599	7.40478E-26	8.87587393	11.14373	8.875874	11.14373
Minimum	-0.150596	0.013511	-11.14628	1.90758E-16	-0.177603431	-0.123588	-0.177603	-0.123588

	January *P50*	*Dec 1989 WX*
	40.22	29.00
Customers	5,243,160	5,243,160
MW/cust	3.9522	5.6425
Peak MW	20,722	29,585
		8,863
		42.8%
		142.8%

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	2022 TYSP Preliminary Peak	Wholesale FR	Wholesale non-FR	Wholesale Total	Solar	PHEV	EDR	DSM	Final	No DSM	Adjustment Factor	Preliminary Peak	No DSM			FPL SA	No DSM 2022 TYSP	No DSM 1989 Winter Scenario	MW Change	% Change
2022	19,323	733	355	1,088	-5	14	0	-21	20,400	20,421	1.427704146	28,635	29,000	42.01%		2022	20,421	29,000	8,579	42.0%
2023	19,685	746	365	1,110	-13	32	0	-34	20,780	20,814	1.427704146	29,169	29,553	41.98%		2023	20,814	29,553	8,738	42.0%
2024	19,997	754	384	1,138	-21	55	0	-48	21,120	21,168	1.427704146	29,626	30,043	41.93%		2024	21,168	30,043	8,876	41.9%
2025	20,297	760	287	1,047	-28	84	0	-48	21,352	21,400	1.427704146	30,064	30,407	42.09%		2025	21,400	30,407	9,007	42.1%
2026	20,595	766	284	1,050	-35	124	0	-48	21,685	21,733	1.427704146	30,497	30,869	42.04%		2026	21,733	30,869	9,136	42.0%
2027	20,891	772	194	966	-43	174	0	-48	21,939	21,987	1.427704146	30,928	31,253	42.14%		2027	21,987	31,253	9,265	42.1%
2028	21,189	777	168	945	-52	235	0	-48	22,270	22,318	1.427704146	31,361	31,713	42.10%		2028	22,318	31,713	9,395	42.1%
2029	21,479	783	168	951	-62	310	0	-48	22,629	22,678	1.427704146	31,783	32,199	41.99%		2029	22,678	32,199	9,522	42.0%
2030	21,752	788	154	942	-73	399	0	-48	22,972	23,020	1.427704146	32,180	32,660	41.88%		2030	23,020	32,660	9,640	41.9%
2031	22,063	794	154	948	-86	501	0	-48	23,378	23,426	1.427704146	32,633	33,202	41.73%		2031	23,426	33,202	9,776	41.7%
2032	22,382	800	154	954	-96	618	0	-48	23,810	23,858	1.427704146	33,097	33,773	41.56%		2032	23,858	33,773	9,915	41.6%
2033	22,691	805	154	959	-104	750	0	-48	24,248	24,296	1.427704146	33,545	34,345	41.36%		2033	24,296	34,345	10,049	41.4%
2034	22,995	809	154	964	-112	894	0	-48	24,693	24,741	1.427704146	33,986	34,923	41.15%		2034	24,741	34,923	10,181	41.2%
2035	23,302	813	154	967	-118	1,052	0	-48	25,154	25,202	1.427704146	34,428	35,516	40.92%		2035	25,202	35,516	10,313	40.9%
2036	23,629	817	154	971	-125	1,219	0	-48	25,646	25,694	1.427704146	34,902	36,150	40.69%		2036	25,694	36,150	10,456	40.7%
2037	23,955	822	154	976	-132	1,393	0	-48	26,144	26,192	1.427704146	35,374	36,789	40.46%		2037	26,192	36,789	10,597	40.5%
2038	24,277	826	154	980	-139	1,562	0	-48	26,633	26,681	1.427704146	35,840	37,418	40.24%		2038	26,681	37,418	10,737	40.2%
2039	24,604	830	154	984	-145	1,727	0	-48	27,122	27,170	1.427704146	36,312	38,048	40.04%		2039	27,170	38,048	10,878	40.0%
2040	24,938	834	154	988	-152	1,886	0	-48	27,613	27,661	1.427704146	36,796	38,685	39.85%		2040	27,661	38,685	11,023	39.9%

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DATE	NEL MWh	Peak MW	Year	Month	Lookup	Customers	Peak/Cust	DailyAvg	Maximum	Minimum	Peak/Cust	Minimum
1/1/2010	29,935	1,537	2010	1	2010:1	428,979	3.583	46.9	53.0	39.0	3.583	39.0
1/2/2010	37,305	1,757	2010	1	2010:1	428,979	4.096	39.8	50.0	32.0	4.096	32.0
1/3/2010	41,878	1,979	2010	1	2010:1	428,979	4.613	35.3	45.0	28.0	4.613	28.0
1/4/2010	45,475	2,216	2010	1	2010:1	428,979	5.166	33.6	44.0	28.0	5.166	28.0
1/5/2010	49,371	2,475	2010	1	2010:1	428,979	5.770	30.8	41.0	21.0	5.770	21.0
1/6/2010	47,705	2,455	2010	1	2010:1	428,979	5.723	33.6	47.0	25.0	5.723	25.0
1/7/2010	41,377	2,276	2010	1	2010:1	428,979	5.306	43.4	62.0	28.0	5.306	28.0
1/8/2010	47,305	2,296	2010	1	2010:1	428,979	5.352	30.3	36.0	25.0	5.352	25.0
1/9/2010	51,579	2,485	2010	1	2010:1	428,979	5.793	28.6	38.0	20.0	5.793	20.0
1/10/2010	51,483	2,477	2010	1	2010:1	428,979	5.774	29.8	40.0	22.0	5.774	22.0
1/11/2010	49,055	2,553	2010	1	2010:1	428,979	5.951	33.7	44.0	21.0	5.951	21.0
1/12/2010	41,846	2,218	2010	1	2010:1	428,979	5.170	42.5	56.0	32.0	5.170	32.0
1/13/2010	43,309	2,309	2010	1	2010:1	428,979	5.383	37.3	47.0	28.0	5.383	28.0
1/14/2010	39,510	2,090	2010	1	2010:1	428,979	4.872	44.7	55.0	35.0	4.872	35.0
1/15/2010	33,864	1,868	2010	1	2010:1	428,979	4.355	51.9	63.0	40.0	4.355	40.0
1/18/2010	28,858	1,402	2010	1	2010:1	428,979	3.268	51.2	60.0	45.0	3.268	45.0
1/19/2010	30,106	1,577	2010	1	2010:1	428,979	3.676	51.7	63.0	40.0	3.676	40.0
1/25/2010	27,223	1,385	2010	1	2010:1	428,979	3.229	53.3	61.0	46.0	3.229	46.0
1/26/2010	28,851	1,430	2010	1	2010:1	428,979	3.333	53.2	64.0	43.0	3.333	43.0
1/27/2010	31,603	1,648	2010	1	2010:1	428,979	3.842	47.2	60.0	39.0	3.842	39.0
1/28/2010	31,355	1,685	2010	1	2010:1	428,979	3.928	50.6	65.0	39.0	3.928	39.0
1/30/2010	27,589	1,541	2010	1	2010:1	428,979	3.592	47.7	66.0	36.0	3.592	36.0
1/31/2010	36,512	1,798	2010	1	2010:1	428,979	4.191	39.8	49.0	32.0	4.191	32.0
2/1/2010	36,385	1,830	2010	2	2010:2	429,059	4.265	44.8	54.0	36.0	4.265	36.0
2/2/2010	29,837	1,489	2010	2	2010:2	429,059	3.470	52.2	64.0	42.0	3.470	42.0
2/3/2010	30,081	1,559	2010	2	2010:2	429,059	3.634	51.5	60.0	43.0	3.634	43.0
2/6/2010	29,584	1,556	2010	2	2010:2	429,059	3.627	46.9	54.0	41.0	3.627	41.0
2/7/2010	33,987	1,629	2010	2	2010:2	429,059	3.797	40.7	47.0	36.0	3.797	36.0
2/8/2010	35,530	1,943	2010	2	2010:2	429,059	4.529	46.0	55.0	34.0	4.529	34.0
2/9/2010	31,148	1,663	2010	2	2010:2	429,059	3.876	50.5	59.0	35.0	3.876	35.0
2/10/2010	41,636	2,143	2010	2	2010:2	429,059	4.995	38.5	46.0	30.0	4.995	30.0
2/11/2010	41,586	1,992	2010	2	2010:2	429,059	4.643	38.4	43.0	34.0	4.643	34.0
2/12/2010	44,167	2,131	2010	2	2010:2	429,059	4.967	36.0	38.0	32.0	4.967	32.0
2/13/2010	41,084	2,083	2010	2	2010:2	429,059	4.855	40.0	51.0	29.0	4.855	29.0
2/14/2010	35,567	1,888	2010	2	2010:2	429,059	4.400	47.0	59.0	35.0	4.400	35.0
2/15/2010	34,355	1,759	2010	2	2010:2	429,059	4.100	44.4	55.0	36.0	4.100	36.0
2/16/2010	40,905	2,123	2010	2	2010:2	429,059	4.948	37.2	48.0	27.0	4.948	27.0
2/17/2010	39,369	2,144	2010	2	2010:2	429,059	4.997	42.5	54.0	30.0	4.997	30.0
2/18/2010	37,011	2,059	2010	2	2010:2	429,059	4.799	44.3	58.0	31.0	4.799	31.0
2/19/2010	33,027	1,802	2010	2	2010:2	429,059	4.200	48.7	59.0	37.0	4.200	37.0
2/20/2010	30,110	1,548	2010	2	2010:2	429,059	3.608	49.7	63.0	37.0	3.608	37.0
2/21/2010	28,706	1,378	2010	2	2010:2	429,059	3.212	53.6	61.0	42.0	3.212	42.0
2/23/2010	28,329	1,408	2010	2	2010:2	429,059	3.282	50.0	58.0	43.0	3.282	43.0
2/24/2010	35,103	1,819	2010	2	2010:2	429,059	4.240	43.6	49.0	39.0	4.240	39.0
2/25/2010	38,813	2,071	2010	2	2010:2	429,059	4.827	41.0	52.0	31.0	4.827	31.0
2/26/2010	35,696	2,025	2010	2	2010:2	429,059	4.720	45.1	56.0	32.0	4.720	32.0
2/27/2010	31,730	1,497	2010	2	2010:2	429,059	3.489	48.0	56.0	44.0	3.489	44.0
2/28/2010	30,954	1,558	2010	2	2010:2	429,059	3.631	51.0	65.0	39.0	3.631	39.0
3/1/2010	30,271	1,604	2010	3	2010:3	429,243	3.737	51.2	61.0	40.0	3.737	40.0
3/2/2010	34,099	1,857	2010	3	2010:3	429,243	4.326	44.6	50.0	42.0	4.326	42.0
3/3/2010	34,966	1,815	2010	3	2010:3	429,243	4.228	44.9	55.0	36.0	4.228	36.0
3/4/2010	35,403	1,934	2010	3	2010:3	429,243	4.506	45.8	58.0	34.0	4.506	34.0
3/5/2010	33,879	1,905	2010	3	2010:3	429,243	4.438	48.3	61.0	34.0	4.438	34.0
3/6/2010	31,311	1,600	2010	3	2010:3	429,243	3.727	50.3	64.0	38.0	3.727	38.0
3/7/2010	30,391	1,584	2010	3	2010:3	429,243	3.690	51.6	64.0	36.0	3.690	36.0
3/8/2010	28,458	1,470	2010	3	2010:3	429,243	3.425	56.5	66.0	44.0	3.425	44.0
3/14/2010	23,788	1,232	2010	3	2010:3	429,243	2.870	58.3	70.0	46.0	2.870	46.0
3/16/2010	27,552	1,387	2010	3	2010:3	429,243	3.231	53.6	63.0	46.0	3.231	46.0
3/17/2010	28,873	1,450	2010	3	2010:3	429,243	3.378	50.7	56.0	46.0	3.378	46.0
3/21/2010	24,581	1,302	2010	3	2010:3	429,243	3.033	53.4	60.0	45.0	3.033	45.0
3/22/2010	28,988	1,431	2010	3	2010:3	429,243	3.334	49.0	56.0	40.0	3.334	40.0
3/23/2010	27,170	1,399	2010	3	2010:3	429,243	3.259	58.3	69.0	45.0	3.259	45.0
3/27/2010	24,341	1,159	2010	3	2010:3	429,243	2.700	58.4	66.0	45.0	2.700	45.0
3/30/2010	25,133	1,204	2010	3	2010:3	429,243	2.805	58.3	68.0	46.0	2.805	46.0
11/5/2010	25,701	1,253	2010	11	2010:11	430,218	2.912	51.5	61.0	44.0	2.912	44.0
11/6/2010	27,160	1,275	2010	11	2010:11	430,218	2.964	49.5	60.0	38.0	2.964	38.0

11/7/2010	27,913	1,327	2010	11	2010:11	430,218	3.084	50.1	62.0	41.0	3.084	41.0
11/8/2010	28,241	1,426	2010	11	2010:11	430,218	3.315	53.4	68.0	39.0	3.315	39.0
11/9/2010	26,907	1,308	2010	11	2010:11	430,218	3.040	59.3	74.0	44.0	3.040	44.0
11/18/2010	27,078	1,300	2010	11	2010:11	430,218	3.022	58.6	69.0	46.0	3.022	46.0
11/26/2010	25,231	1,231	2010	11	2010:11	430,218	2.861	59.7	75.0	41.0	2.861	41.0
11/27/2010	26,785	1,286	2010	11	2010:11	430,218	2.989	45.0	58.0	34.0	2.989	34.0
11/28/2010	28,149	1,326	2010	11	2010:11	430,218	3.082	49.6	60.0	41.0	3.082	41.0
11/30/2010	26,434	1,311	2010	11	2010:11	430,218	3.047	61.7	76.0	43.0	3.047	43.0
12/1/2010	30,963	1,573	2010	12	2010:12	430,658	3.653	43.6	54.0	37.0	3.653	37.0
12/2/2010	33,013	1,720	2010	12	2010:12	430,658	3.994	46.8	61.0	35.0	3.994	35.0
12/3/2010	30,600	1,640	2010	12	2010:12	430,658	3.808	53.3	66.0	41.0	3.808	41.0
12/5/2010	27,409	1,513	2010	12	2010:12	430,658	3.513	47.3	60.0	38.0	3.513	38.0
12/6/2010	37,112	1,816	2010	12	2010:12	430,658	4.217	38.9	48.0	32.0	4.217	32.0
12/7/2010	39,360	2,016	2010	12	2010:12	430,658	4.681	39.1	52.0	28.0	4.681	28.0
12/8/2010	42,490	2,019	2010	12	2010:12	430,658	4.688	37.4	43.0	32.0	4.688	32.0
12/9/2010	41,933	2,203	2010	12	2010:12	430,658	5.115	37.7	52.0	27.0	5.115	27.0
12/10/2010	36,476	1,977	2010	12	2010:12	430,658	4.591	46.2	58.0	36.0	4.591	36.0
12/11/2010	30,198	1,499	2010	12	2010:12	430,658	3.481	58.5	69.0	45.0	3.481	45.0
12/12/2010	29,989	1,788	2010	12	2010:12	430,658	4.152	45.0	57.0	34.0	4.152	34.0
12/13/2010	44,053	2,173	2010	12	2010:12	430,658	5.046	33.5	40.0	28.0	5.046	28.0
12/14/2010	45,936	2,314	2010	12	2010:12	430,658	5.373	34.1	46.0	25.0	5.373	25.0
12/15/2010	38,633	2,007	2010	12	2010:12	430,658	4.660	50.1	61.0	30.0	4.660	30.0
12/18/2010	29,535	1,463	2010	12	2010:12	430,658	3.397	46.6	54.0	42.0	3.397	42.0
12/19/2010	32,766	1,571	2010	12	2010:12	430,658	3.648	43.4	56.0	34.0	3.648	34.0
12/20/2010	35,403	1,803	2010	12	2010:12	430,658	4.187	45.5	56.0	35.0	4.187	35.0
12/21/2010	31,200	1,492	2010	12	2010:12	430,658	3.464	57.2	66.0	42.0	3.464	42.0
12/23/2010	29,664	1,481	2010	12	2010:12	430,658	3.439	46.5	54.0	40.0	3.439	40.0
12/24/2010	32,059	1,594	2010	12	2010:12	430,658	3.701	45.5	54.0	36.0	3.701	36.0
12/25/2010	31,916	1,558	2010	12	2010:12	430,658	3.618	44.1	50.0	36.0	3.618	36.0
12/26/2010	40,564	1,977	2010	12	2010:12	430,658	4.591	35.6	40.0	30.0	4.591	30.0
12/27/2010	43,576	2,135	2010	12	2010:12	430,658	4.958	35.2	49.0	27.0	4.958	27.0
12/28/2010	42,276	2,211	2010	12	2010:12	430,658	5.134	38.0	49.0	25.0	5.134	25.0
12/29/2010	37,121	1,971	2010	12	2010:12	430,658	4.577	46.9	58.0	33.0	4.577	33.0
1/2/2011	26,798	1,443	2011	1	2011:1	430,874	3.349	50.0	59.0	39.0	3.349	39.0
1/3/2011	34,490	1,829	2011	1	2011:1	430,874	4.245	45.9	60.0	35.0	4.245	35.0
1/4/2011	30,434	1,480	2011	1	2011:1	430,874	3.435	52.8	61.0	44.0	3.435	44.0
1/6/2011	28,772	1,455	2011	1	2011:1	430,874	3.377	51.0	60.0	44.0	3.377	44.0
1/7/2011	31,136	1,662	2011	1	2011:1	430,874	3.857	53.3	63.0	40.0	3.857	40.0
1/8/2011	28,356	1,403	2011	1	2011:1	430,874	3.256	50.7	59.0	43.0	3.256	43.0
1/9/2011	36,277	1,796	2011	1	2011:1	430,874	4.168	41.5	45.0	39.0	4.168	39.0
1/10/2011	39,202	1,908	2011	1	2011:1	430,874	4.428	40.7	43.0	38.0	4.428	38.0
1/11/2011	39,935	1,981	2011	1	2011:1	430,874	4.598	40.0	47.0	35.0	4.598	35.0
1/12/2011	46,034	2,278	2011	1	2011:1	430,874	5.287	33.8	44.0	27.0	5.287	27.0
1/13/2011	48,890	2,495	2011	1	2011:1	430,874	5.791	32.1	44.0	23.0	5.791	23.0
1/14/2011	44,850	2,425	2011	1	2011:1	430,874	5.628	37.3	52.0	26.0	5.628	26.0
1/15/2011	39,376	2,088	2011	1	2011:1	430,874	4.846	45.0	59.0	30.0	4.846	30.0
1/16/2011	32,529	1,594	2011	1	2011:1	430,874	3.699	50.4	60.0	41.0	3.699	41.0
1/17/2011	31,478	1,480	2011	1	2011:1	430,874	3.435	51.9	61.0	46.0	3.435	46.0
1/19/2011	27,786	1,378	2011	1	2011:1	430,874	3.198	53.8	62.0	46.0	3.198	46.0
1/20/2011	30,044	1,494	2011	1	2011:1	430,874	3.467	53.0	59.0	45.0	3.467	45.0
1/21/2011	32,497	1,642	2011	1	2011:1	430,874	3.811	44.0	54.0	36.0	3.811	36.0
1/22/2011	39,254	1,973	2011	1	2011:1	430,874	4.579	38.9	51.0	28.0	4.579	28.0
1/23/2011	38,423	2,012	2011	1	2011:1	430,874	4.670	42.2	53.0	31.0	4.670	31.0
1/24/2011	35,177	1,871	2011	1	2011:1	430,874	4.342	50.5	57.0	41.0	4.342	41.0
1/26/2011	30,198	1,506	2011	1	2011:1	430,874	3.495	49.2	59.0	38.0	3.495	38.0
1/27/2011	35,812	1,906	2011	1	2011:1	430,874	4.424	45.0	55.0	33.0	4.424	33.0
1/28/2011	31,077	1,651	2011	1	2011:1	430,874	3.832	55.1	69.0	45.0	3.832	45.0
1/29/2011	27,764	1,377	2011	1	2011:1	430,874	3.196	56.0	68.0	43.0	3.196	43.0
2/2/2011	32,260	1,802	2011	2	2011:2	431,372	4.177	41.9	56.0	37.0	4.177	37.0
2/3/2011	39,648	1,880	2011	2	2011:2	431,372	4.358	39.7	44.0	37.0	4.358	37.0
2/4/2011	36,844	1,681	2011	2	2011:2	431,372	3.897	45.3	48.0	41.0	3.897	41.0
2/5/2011	34,281	1,660	2011	2	2011:2	431,372	3.848	42.0	46.0	35.0	3.848	35.0
2/6/2011	35,322	1,852	2011	2	2011:2	431,372	4.293	44.0	54.0	32.0	4.293	32.0
2/7/2011	33,256	1,616	2011	2	2011:2	431,372	3.746	50.3	61.0	40.0	3.746	40.0
2/8/2011	36,490	1,890	2011	2	2011:2	431,372	4.381	42.6	54.0	31.0	4.381	31.0
2/9/2011	37,651	1,826	2011	2	2011:2	431,372	4.233	45.6	52.0	40.0	4.233	40.0
2/10/2011	39,434	1,963	2011	2	2011:2	431,372	4.551	39.3	44.0	33.0	4.551	33.0
2/11/2011	39,773	2,107	2011	2	2011:2	431,372	4.884	38.8	52.0	30.0	4.884	30.0
2/12/2011	37,163	1,981	2011	2	2011:2	431,372	4.592	43.9	60.0	29.0	4.592	29.0
2/13/2011	33,453	1,779	2011	2	2011:2	431,372	4.124	49.3	62.0	33.0	4.124	33.0
2/14/2011	31,448	1,745	2011	2	2011:2	431,372	4.045	53.8	68.0	39.0	4.045	39.0
2/15/2011	28,222	1,444	2011	2	2011:2	431,372	3.347	56.5	68.0	45.0	3.347	45.0
2/17/2011	27,265	1,412	2011	2	2011:2	431,372	3.273	56.0	66.0	46.0	3.273	46.0
3/6/2011	26,154	1,398	2011	3	2011:3	431,743	3.238	49.1	56.0	40.0	3.238	40.0
3/7/2011	30,444	1,537	2011	3	2011:3	431,743	3.560	47.2	56.0	37.0	3.560	37.0

3/10/2011	26,977	1,358	2011	3	2011:3	431,743	3.145	53.1	61.0	46.0	3.145	46.0
3/11/2011	29,021	1,480	2011	3	2011:3	431,743	3.428	51.7	66.0	38.0	3.428	38.0
3/12/2011	26,802	1,245	2011	3	2011:3	431,743	2.884	56.1	66.0	43.0	2.884	43.0
4/6/2011	26,629	1,280	2011	4	2011:4	432,311	2.961	59.7	69.0	45.0	2.961	45.0
10/20/2011	25,173	1,236	2011	10	2011:10	432,405	2.858	54.7	66.0	44.0	2.858	44.0
10/21/2011	25,032	1,197	2011	10	2011:10	432,405	2.768	57.0	71.0	43.0	2.768	43.0
10/22/2011	24,034	1,129	2011	10	2011:10	432,405	2.611	57.6	71.0	44.0	2.611	44.0
10/30/2011	24,324	1,170	2011	10	2011:10	432,405	2.706	55.8	65.0	46.0	2.706	46.0
10/31/2011	25,225	1,167	2011	10	2011:10	432,405	2.699	58.8	73.0	45.0	2.699	45.0
11/4/2011	25,438	1,212	2011	11	2011:11	432,122	2.805	52.3	63.0	42.0	2.805	42.0
11/10/2011	26,488	1,360	2011	11	2011:11	432,122	3.147	50.3	58.0	46.0	3.147	46.0
11/11/2011	28,237	1,343	2011	11	2011:11	432,122	3.108	50.8	65.0	38.0	3.108	38.0
11/12/2011	27,330	1,309	2011	11	2011:11	432,122	3.029	54.5	66.0	39.0	3.029	39.0
11/17/2011	25,995	1,300	2011	11	2011:11	432,122	3.008	57.2	66.0	46.0	3.008	46.0
11/18/2011	27,223	1,364	2011	11	2011:11	432,122	3.157	52.7	61.0	41.0	3.157	41.0
11/28/2011	27,218	1,470	2011	11	2011:11	432,122	3.402	47.0	52.0	42.0	3.402	42.0
11/29/2011	30,223	1,467	2011	11	2011:11	432,122	3.395	46.9	59.0	37.0	3.395	37.0
11/30/2011	31,613	1,564	2011	11	2011:11	432,122	3.619	45.8	55.0	37.0	3.619	37.0
12/1/2011	33,503	1,771	2011	12	2011:12	432,536	4.094	46.2	62.0	36.0	4.094	36.0
12/2/2011	30,220	1,563	2011	12	2011:12	432,536	3.614	53.1	66.0	41.0	3.614	41.0
12/7/2011	28,600	1,610	2011	12	2011:12	432,536	3.722	46.2	54.0	39.0	3.722	39.0
12/8/2011	33,245	1,661	2011	12	2011:12	432,536	3.840	43.1	53.0	35.0	3.840	35.0
12/9/2011	32,750	1,719	2011	12	2011:12	432,536	3.974	47.5	59.0	37.0	3.974	37.0
12/10/2011	31,376	1,467	2011	12	2011:12	432,536	3.392	48.1	58.0	43.0	3.392	43.0
12/11/2011	33,582	1,556	2011	12	2011:12	432,536	3.597	46.5	52.0	39.0	3.597	39.0
12/17/2011	24,439	1,264	2011	12	2011:12	432,536	2.922	55.1	62.0	45.0	2.922	45.0
12/18/2011	28,532	1,354	2011	12	2011:12	432,536	3.130	50.0	62.0	41.0	3.130	41.0
12/19/2011	29,424	1,462	2011	12	2011:12	432,536	3.380	57.1	66.0	45.0	3.380	45.0
12/28/2011	29,076	1,398	2011	12	2011:12	432,536	3.232	48.8	57.0	41.0	3.232	41.0
12/29/2011	28,407	1,374	2011	12	2011:12	432,536	3.177	54.2	65.0	44.0	3.177	44.0
1/2/2012	28,154	1,498	2012	1	2012:1	432,660	3.462	48.9	57.0	42.0	3.462	42.0
1/3/2012	37,590	1,865	2012	1	2012:1	432,660	4.311	38.5	48.0	31.0	4.311	31.0
1/4/2012	39,515	2,139	2012	1	2012:1	432,660	4.944	44.3	56.0	29.0	4.944	29.0
1/12/2012	27,381	1,362	2012	1	2012:1	432,660	3.148	55.3	69.0	41.0	3.148	41.0
1/13/2012	34,717	1,776	2012	1	2012:1	432,660	4.105	40.5	50.0	32.0	4.105	32.0
1/14/2012	34,555	1,793	2012	1	2012:1	432,660	4.144	45.9	57.0	32.0	4.144	32.0
1/15/2012	29,637	1,446	2012	1	2012:1	432,660	3.342	50.2	62.0	39.0	3.342	39.0
1/18/2012	25,802	1,358	2012	1	2012:1	432,660	3.139	53.1	64.0	44.0	3.139	44.0
1/19/2012	29,697	1,581	2012	1	2012:1	432,660	3.654	53.8	64.0	41.0	3.654	41.0
1/27/2012	24,423	1,201	2012	1	2012:1	432,660	2.776	56.3	65.0	46.0	2.776	46.0
1/28/2012	25,769	1,222	2012	1	2012:1	432,660	2.824	55.5	67.0	43.0	2.824	43.0
1/29/2012	26,564	1,320	2012	1	2012:1	432,660	3.051	50.3	63.0	41.0	3.051	41.0
1/30/2012	30,478	1,668	2012	1	2012:1	432,660	3.855	51.7	65.0	36.0	3.855	36.0
2/9/2012	27,350	1,346	2012	2	2012:2	433,299	3.106	51.3	61.0	43.0	3.106	43.0
2/11/2012	29,310	1,590	2012	2	2012:2	433,299	3.670	45.3	53.0	33.0	3.670	33.0
2/12/2012	38,505	1,915	2012	2	2012:2	433,299	4.420	37.4	49.0	28.0	4.420	28.0
2/13/2012	36,263	1,917	2012	2	2012:2	433,299	4.424	47.4	60.0	34.0	4.424	34.0
2/20/2012	27,671	1,388	2012	2	2012:2	433,299	3.203	52.8	64.0	42.0	3.203	42.0
3/4/2012	25,561	1,256	2012	3	2012:3	433,927	2.894	55.4	65.0	44.0	2.894	44.0
4/24/2012	24,612	1,198	2012	4	2012:4	434,376	2.758	61.0	72.0	45.0	2.758	45.0
10/29/2012	27,404	1,361	2012	10	2012:10	434,750	3.131	52.8	63.0	44.0	3.131	44.0
10/30/2012	28,411	1,384	2012	10	2012:10	434,750	3.183	54.4	67.0	43.0	3.183	43.0
11/7/2012	26,244	1,310	2012	11	2012:11	434,666	3.014	56.2	67.0	46.0	3.014	46.0
11/8/2012	27,083	1,323	2012	11	2012:11	434,666	3.044	53.1	66.0	43.0	3.044	43.0
11/9/2012	27,186	1,319	2012	11	2012:11	434,666	3.035	55.9	69.0	42.0	3.035	42.0
11/13/2012	25,975	1,308	2012	11	2012:11	434,666	3.009	51.7	63.0	43.0	3.009	43.0
11/14/2012	26,760	1,279	2012	11	2012:11	434,666	2.942	53.7	67.0	42.0	2.942	42.0
11/17/2012	26,899	1,239	2012	11	2012:11	434,666	2.850	54.6	66.0	44.0	2.850	44.0
11/24/2012	25,098	1,265	2012	11	2012:11	434,666	2.910	52.7	62.0	41.0	2.910	41.0
11/25/2012	29,037	1,401	2012	11	2012:11	434,666	3.223	48.2	61.0	35.0	3.223	35.0
11/26/2012	29,025	1,437	2012	11	2012:11	434,666	3.306	57.7	67.0	45.0	3.306	45.0
11/29/2012	29,574	1,457	2012	11	2012:11	434,666	3.352	52.7	64.0	44.0	3.352	44.0
12/11/2012	27,005	1,480	2012	12	2012:12	434,571	3.406	47.3	54.0	44.0	3.406	44.0
12/12/2012	30,996	1,527	2012	12	2012:12	434,571	3.514	46.9	57.0	41.0	3.514	41.0
12/13/2012	31,036	1,553	2012	12	2012:12	434,571	3.574	50.0	64.0	39.0	3.574	39.0
12/14/2012	31,360	1,476	2012	12	2012:12	434,571	3.396	46.6	50.0	43.0	3.396	43.0
12/19/2012	26,886	1,308	2012	12	2012:12	434,571	3.010	61.0	72.0	46.0	3.010	46.0
12/20/2012	25,512	1,265	2012	12	2012:12	434,571	2.911	63.8	73.0	46.0	2.911	46.0
12/21/2012	30,924	1,513	2012	12	2012:12	434,571	3.482	45.6	57.0	38.0	3.482	38.0
12/22/2012	32,474	1,615	2012	12	2012:12	434,571	3.716	45.5	61.0	32.0	3.716	32.0
12/23/2012	30,703	1,455	2012	12	2012:12	434,571	3.348	51.5	63.0	40.0	3.348	40.0
12/26/2012	26,857	1,489	2012	12	2012:12	434,571	3.426	47.4	59.0	38.0	3.426	38.0
12/27/2012	33,473	1,601	2012	12	2012:12	434,571	3.684	41.5	49.0	36.0	3.684	36.0
12/28/2012	31,123	1,492	2012	12	2012:12	434,571	3.433	56.2	68.0	42.0	3.433	42.0
12/29/2012	28,733	1,564	2012	12	2012:12	434,571	3.599	47.1	63.0	37.0	3.599	37.0

12/30/2012	35,749	1,766	2012	12	2012:12	434,571	4.064	40.9	54.0	31.0	4.064	31.0
12/31/2012	32,248	1,595	2012	12	2012:12	434,571	3.670	51.8	62.0	40.0	3.670	40.0
1/3/2013	32,116	1,670	2013	1	2013:1	434,846	3.840	43.7	47.0	39.0	3.840	39.0
1/4/2013	34,729	1,739	2013	1	2013:1	434,846	3.999	45.4	57.0	36.0	3.999	36.0
1/5/2013	32,115	1,467	2013	1	2013:1	434,846	3.374	49.4	54.0	44.0	3.374	44.0
1/7/2013	30,662	1,556	2013	1	2013:1	434,846	3.578	51.1	63.0	40.0	3.578	40.0
1/16/2013	26,051	1,325	2013	1	2013:1	434,846	3.047	58.1	71.0	46.0	3.047	46.0
1/17/2013	31,108	1,673	2013	1	2013:1	434,846	3.847	43.8	49.0	39.0	3.847	39.0
1/18/2013	32,513	1,675	2013	1	2013:1	434,846	3.852	47.0	60.0	38.0	3.852	38.0
1/19/2013	29,671	1,444	2013	1	2013:1	434,846	3.321	52.2	63.0	43.0	3.321	43.0
1/20/2013	26,489	1,246	2013	1	2013:1	434,846	2.865	54.4	66.0	43.0	2.865	43.0
1/21/2013	27,426	1,330	2013	1	2013:1	434,846	3.059	56.1	67.0	46.0	3.059	46.0
1/22/2013	29,567	1,488	2013	1	2013:1	434,846	3.422	49.8	61.0	42.0	3.422	42.0
1/23/2013	30,756	1,648	2013	1	2013:1	434,846	3.790	53.0	64.0	40.0	3.790	40.0
1/30/2013	26,207	1,260	2013	1	2013:1	434,846	2.898	63.9	74.0	45.0	2.898	45.0
1/31/2013	29,169	1,488	2013	1	2013:1	434,846	3.422	48.3	60.0	38.0	3.422	38.0
2/1/2013	30,259	1,466	2013	2	2013:2	435,641	3.365	51.4	63.0	45.0	3.365	45.0
2/2/2013	30,111	1,558	2013	2	2013:2	435,641	3.576	50.8	61.0	38.0	3.576	38.0
2/14/2013	30,570	1,503	2013	2	2013:2	435,641	3.450	47.7	58.0	43.0	3.450	43.0
2/15/2013	30,146	1,634	2013	2	2013:2	435,641	3.751	52.6	65.0	40.0	3.751	40.0
2/16/2013	29,160	1,501	2013	2	2013:2	435,641	3.445	48.6	56.0	38.0	3.445	38.0
2/17/2013	34,406	1,731	2013	2	2013:2	435,641	3.973	42.8	52.0	32.0	3.973	32.0
2/18/2013	32,584	1,631	2013	2	2013:2	435,641	3.744	54.7	64.0	39.0	3.744	39.0
2/19/2013	26,597	1,293	2013	2	2013:2	435,641	2.968	61.3	69.0	45.0	2.968	45.0
2/20/2013	30,899	1,557	2013	2	2013:2	435,641	3.574	48.0	58.0	41.0	3.574	41.0
2/21/2013	30,018	1,518	2013	2	2013:2	435,641	3.485	56.9	65.0	44.0	3.485	44.0
3/1/2013	30,371	1,498	2013	3	2013:3	436,389	3.433	48.3	57.0	41.0	3.433	41.0
3/2/2013	34,097	1,620	2013	3	2013:3	436,389	3.712	41.8	51.0	34.0	3.712	34.0
3/3/2013	34,421	1,630	2013	3	2013:3	436,389	3.735	42.8	53.0	33.0	3.735	33.0
3/4/2013	32,916	1,840	2013	3	2013:3	436,389	4.216	53.4	64.0	38.0	4.216	38.0
3/6/2013	29,065	1,453	2013	3	2013:3	436,389	3.330	49.8	60.0	43.0	3.330	43.0
3/7/2013	30,798	1,642	2013	3	2013:3	436,389	3.763	49.7	64.0	39.0	3.763	39.0
3/8/2013	28,551	1,539	2013	3	2013:3	436,389	3.527	55.4	72.0	41.0	3.527	41.0
3/12/2013	28,386	1,446	2013	3	2013:3	436,389	3.314	52.7	65.0	42.0	3.314	42.0
3/13/2013	28,565	1,485	2013	3	2013:3	436,389	3.403	54.9	66.0	42.0	3.403	42.0
3/14/2013	29,701	1,559	2013	3	2013:3	436,389	3.573	51.5	65.0	40.0	3.573	40.0
3/15/2013	28,501	1,513	2013	3	2013:3	436,389	3.467	58.0	70.0	44.0	3.467	44.0
3/20/2013	25,457	1,245	2013	3	2013:3	436,389	2.853	59.1	66.0	46.0	2.853	46.0
3/21/2013	27,088	1,336	2013	3	2013:3	436,389	3.061	54.6	67.0	44.0	3.061	44.0
3/25/2013	26,739	1,338	2013	3	2013:3	436,389	3.066	49.9	62.0	40.0	3.066	40.0
3/26/2013	30,865	1,553	2013	3	2013:3	436,389	3.559	46.4	56.0	37.0	3.559	37.0
3/27/2013	31,401	1,676	2013	3	2013:3	436,389	3.841	48.1	60.0	36.0	3.841	36.0
3/28/2013	29,085	1,549	2013	3	2013:3	436,389	3.550	54.2	67.0	40.0	3.550	40.0
3/29/2013	26,619	1,301	2013	3	2013:3	436,389	2.981	58.2	70.0	45.0	2.981	45.0
11/12/2013	26,038	1,296	2013	11	2013:11	439,250	2.950	59.1	74.0	43.0	2.950	43.0
11/13/2013	30,835	1,504	2013	11	2013:11	439,250	3.424	45.5	57.0	36.0	3.424	36.0
11/14/2013	30,527	1,585	2013	11	2013:11	439,250	3.608	51.7	63.0	39.0	3.608	39.0
11/24/2013	26,432	1,353	2013	11	2013:11	439,250	3.080	49.7	57.0	43.0	3.080	43.0
11/25/2013	29,687	1,409	2013	11	2013:11	439,250	3.208	53.1	64.0	45.0	3.208	45.0
11/26/2013	26,925	1,374	2013	11	2013:11	439,250	3.128	57.9	69.0	46.0	3.128	46.0
11/27/2013	32,928	1,653	2013	11	2013:11	439,250	3.763	42.5	49.0	34.0	3.763	34.0
11/28/2013	35,922	1,783	2013	11	2013:11	439,250	4.059	39.5	52.0	29.0	4.059	29.0
11/29/2013	33,481	1,674	2013	11	2013:11	439,250	3.811	45.8	62.0	33.0	3.811	33.0
11/30/2013	30,027	1,474	2013	11	2013:11	439,250	3.356	51.2	67.0	36.0	3.356	36.0
12/1/2013	26,639	1,272	2013	12	2013:12	439,389	2.895	55.3	66.0	46.0	2.895	46.0
12/10/2013	27,923	1,521	2013	12	2013:12	439,389	3.462	50.9	67.0	42.0	3.462	42.0
12/11/2013	30,953	1,566	2013	12	2013:12	439,389	3.564	51.1	64.0	40.0	3.564	40.0
12/12/2013	29,757	1,490	2013	12	2013:12	439,389	3.391	49.8	59.0	41.0	3.391	41.0
12/13/2013	32,067	1,677	2013	12	2013:12	439,389	3.817	49.8	59.0	38.0	3.817	38.0
12/15/2013	29,014	1,610	2013	12	2013:12	439,389	3.664	44.9	57.0	37.0	3.664	37.0
12/16/2013	34,756	1,829	2013	12	2013:12	439,389	4.163	45.0	60.0	34.0	4.163	34.0
12/17/2013	32,533	1,711	2013	12	2013:12	439,389	3.894	51.2	66.0	38.0	3.894	38.0
12/18/2013	30,840	1,527	2013	12	2013:12	439,389	3.475	52.0	65.0	43.0	3.475	43.0
12/19/2013	30,084	1,536	2013	12	2013:12	439,389	3.496	57.1	66.0	46.0	3.496	46.0
12/23/2013	27,008	1,440	2013	12	2013:12	439,389	3.277	50.5	57.0	40.0	3.277	40.0
12/24/2013	33,617	1,664	2013	12	2013:12	439,389	3.787	42.2	54.0	34.0	3.787	34.0
12/25/2013	34,013	1,734	2013	12	2013:12	439,389	3.946	42.5	51.0	33.0	3.946	33.0
12/26/2013	30,599	1,436	2013	12	2013:12	439,389	3.268	48.5	58.0	40.0	3.268	40.0
12/27/2013	29,944	1,391	2013	12	2013:12	439,389	3.166	52.8	62.0	44.0	3.166	44.0
12/29/2013	27,570	1,368	2013	12	2013:12	439,389	3.113	50.2	59.0	44.0	3.113	44.0
12/30/2013	30,636	1,432	2013	12	2013:12	439,389	3.259	50.8	58.0	42.0	3.259	42.0
12/31/2013	31,726	1,648	2013	12	2013:12	439,389	3.751	47.0	52.0	45.0	3.751	45.0
1/1/2014	29,837	1,359	2014	1	2014:1	439,785	3.090	52.3	61.0	45.0	3.090	45.0
1/2/2014	29,861	1,617	2014	1	2014:1	439,785	3.677	51.9	60.0	37.0	3.677	37.0
1/3/2014	43,042	2,110	2014	1	2014:1	439,785	4.798	36.0	45.0	28.0	4.798	28.0

1/4/2014	37,869	1,781	2014	1 2014:1	439,785	4.050	47.1	58.0	35.0	4.050	35.0
1/6/2014	40,949	2,294	2014	1 2014:1	439,785	5.216	34.8	49.0	25.0	5.216	25.0
1/7/2014	56,519	2,694	2014	1 2014:1	439,785	6.126	25.9	33.0	19.0	6.126	19.0
1/8/2014	49,950	2,659	2014	1 2014:1	439,785	6.046	35.1	49.0	22.0	6.046	22.0
1/9/2014	37,856	1,866	2014	1 2014:1	439,785	4.243	47.9	59.0	36.0	4.243	36.0
1/12/2014	28,111	1,367	2014	1 2014:1	439,785	3.108	53.3	64.0	40.0	3.108	40.0
1/15/2014	32,757	1,655	2014	1 2014:1	439,785	3.763	47.6	55.0	36.0	3.763	36.0
1/16/2014	38,757	2,067	2014	1 2014:1	439,785	4.700	41.7	51.0	29.0	4.700	29.0
1/17/2014	32,744	1,559	2014	1 2014:1	439,785	3.545	52.8	63.0	38.0	3.545	38.0
1/18/2014	35,684	1,823	2014	1 2014:1	439,785	4.145	43.8	52.0	31.0	4.145	31.0
1/19/2014	29,645	1,345	2014	1 2014:1	439,785	3.058	53.9	65.0	46.0	3.058	46.0
1/20/2014	31,375	1,651	2014	1 2014:1	439,785	3.754	52.7	67.0	41.0	3.754	41.0
1/21/2014	30,298	1,599	2014	1 2014:1	439,785	3.636	52.6	61.0	34.0	3.636	34.0
1/22/2014	41,197	2,148	2014	1 2014:1	439,785	4.884	37.8	49.0	28.0	4.884	28.0
1/23/2014	39,392	2,014	2014	1 2014:1	439,785	4.580	44.3	55.0	34.0	4.580	34.0
1/24/2014	43,817	2,058	2014	1 2014:1	439,785	4.680	36.1	40.0	34.0	4.680	34.0
1/25/2014	36,873	1,722	2014	1 2014:1	439,785	3.916	46.2	59.0	36.0	3.916	36.0
1/26/2014	32,542	1,609	2014	1 2014:1	439,785	3.659	49.9	59.0	39.0	3.659	39.0
1/28/2014	41,522	2,272	2014	1 2014:1	439,785	5.166	34.6	47.0	26.0	5.166	26.0
1/29/2014	57,067	2,597	2014	1 2014:1	439,785	5.905	25.3	29.0	23.0	5.905	23.0
1/30/2014	53,324	2,646	2014	1 2014:1	439,785	6.017	31.8	43.0	20.0	6.017	20.0
1/31/2014	42,261	2,368	2014	1 2014:1	439,785	5.384	43.5	57.0	30.0	5.384	30.0
2/5/2014	26,220	1,438	2014	2 2014:2	440,436	3.265	55.0	68.0	39.0	3.265	39.0
2/6/2014	40,665	2,050	2014	2 2014:2	440,436	4.654	37.6	40.0	35.0	4.654	35.0
2/7/2014	37,693	2,117	2014	2 2014:2	440,436	4.807	44.9	60.0	32.0	4.807	32.0
2/8/2014	28,556	1,366	2014	2 2014:2	440,436	3.101	51.5	63.0	44.0	3.101	44.0
2/9/2014	27,337	1,340	2014	2 2014:2	440,436	3.042	55.3	68.0	42.0	3.042	42.0
2/12/2014	33,793	1,708	2014	2 2014:2	440,436	3.878	46.7	50.0	42.0	3.878	42.0
2/13/2014	35,072	1,814	2014	2 2014:2	440,436	4.119	46.6	58.0	39.0	4.119	39.0
2/14/2014	32,051	1,771	2014	2 2014:2	440,436	4.021	53.2	62.0	41.0	4.021	41.0
2/15/2014	28,084	1,344	2014	2 2014:2	440,436	3.052	51.5	62.0	44.0	3.052	44.0
2/16/2014	29,030	1,456	2014	2 2014:2	440,436	3.306	54.2	67.0	42.0	3.306	42.0
2/26/2014	27,897	1,574	2014	2 2014:2	440,436	3.574	50.9	65.0	41.0	3.574	41.0
2/27/2014	33,940	1,742	2014	2 2014:2	440,436	3.955	43.9	56.0	35.0	3.955	35.0
2/28/2014	33,559	1,891	2014	2 2014:2	440,436	4.293	48.3	58.0	33.0	4.293	33.0
3/3/2014	26,312	1,436	2014	3 2014:3	441,083	3.256	54.3	69.0	36.0	3.256	36.0
3/4/2014	35,357	1,728	2014	3 2014:3	441,083	3.918	40.7	44.0	36.0	3.918	36.0
3/5/2014	30,995	1,544	2014	3 2014:3	441,083	3.500	52.6	62.0	44.0	3.500	44.0
3/6/2014	30,013	1,536	2014	3 2014:3	441,083	3.482	51.9	56.0	44.0	3.482	44.0
3/7/2014	32,623	1,608	2014	3 2014:3	441,083	3.646	48.0	57.0	43.0	3.646	43.0
3/8/2014	28,725	1,393	2014	3 2014:3	441,083	3.158	54.6	64.0	42.0	3.158	42.0
3/13/2014	28,720	1,520	2014	3 2014:3	441,083	3.446	52.8	66.0	39.0	3.446	39.0
3/14/2014	28,010	1,516	2014	3 2014:3	441,083	3.437	56.7	67.0	43.0	3.437	43.0
3/26/2014	28,914	1,502	2014	3 2014:3	441,083	3.405	50.2	59.0	41.0	3.405	41.0
3/30/2014	24,685	1,218	2014	3 2014:3	441,083	2.761	58.0	73.0	46.0	2.761	46.0
3/31/2014	26,164	1,281	2014	3 2014:3	441,083	2.904	59.1	71.0	45.0	2.904	45.0
4/16/2014	27,232	1,380	2014	4 2014:4	441,201	3.128	53.6	67.0	42.0	3.128	42.0
11/1/2014	24,362	1,203	2014	11 2014:11	443,958	2.710	49.6	60.0	40.0	2.710	40.0
11/2/2014	25,949	1,232	2014	11 2014:11	443,958	2.775	50.9	66.0	39.0	2.775	39.0
11/3/2014	26,586	1,294	2014	11 2014:11	443,958	2.915	54.6	66.0	43.0	2.915	43.0
11/10/2014	25,891	1,243	2014	11 2014:11	443,958	2.800	57.2	70.0	42.0	2.800	42.0
11/13/2014	29,062	1,596	2014	11 2014:11	443,958	3.595	43.4	50.0	39.0	3.595	39.0
11/14/2014	33,954	1,671	2014	11 2014:11	443,958	3.764	41.0	51.0	33.0	3.764	33.0
11/15/2014	31,645	1,573	2014	11 2014:11	443,958	3.543	45.0	56.0	32.0	3.543	32.0
11/16/2014	26,908	1,277	2014	11 2014:11	443,958	2.876	63.0	72.0	46.0	2.876	46.0
11/17/2014	27,585	1,510	2014	11 2014:11	443,958	3.401	52.9	71.0	36.0	3.401	36.0
11/18/2014	38,805	1,895	2014	11 2014:11	443,958	4.268	36.1	46.0	29.0	4.268	29.0
11/19/2014	40,452	2,146	2014	11 2014:11	443,958	4.834	39.3	54.0	25.0	4.834	25.0
11/20/2014	34,787	1,941	2014	11 2014:11	443,958	4.372	49.8	65.0	35.0	4.372	35.0
11/21/2014	29,166	1,507	2014	11 2014:11	443,958	3.394	54.7	68.0	41.0	3.394	41.0
11/26/2014	29,662	1,442	2014	11 2014:11	443,958	3.248	52.0	64.0	40.0	3.248	40.0
11/27/2014	27,320	1,299	2014	11 2014:11	443,958	2.926	50.9	59.0	42.0	2.926	42.0
11/28/2014	30,729	1,494	2014	11 2014:11	443,958	3.365	45.2	58.0	36.0	3.365	36.0
11/29/2014	28,586	1,382	2014	11 2014:11	443,958	3.113	53.5	68.0	39.0	3.113	39.0
12/9/2014	29,572	1,481	2014	12 2014:12	444,047	3.335	51.0	64.0	37.0	3.335	37.0
12/10/2014	31,750	1,564	2014	12 2014:12	444,047	3.522	46.3	57.0	38.0	3.522	38.0
12/11/2014	33,100	1,663	2014	12 2014:12	444,047	3.745	47.4	60.0	38.0	3.745	38.0
12/12/2014	31,101	1,615	2014	12 2014:12	444,047	3.637	51.1	63.0	41.0	3.637	41.0
12/13/2014	29,207	1,432	2014	12 2014:12	444,047	3.225	53.3	67.0	43.0	3.225	43.0
12/14/2014	28,741	1,363	2014	12 2014:12	444,047	3.069	52.0	66.0	43.0	3.069	43.0
12/15/2014	29,168	1,508	2014	12 2014:12	444,047	3.396	57.0	69.0	42.0	3.396	42.0
12/17/2014	29,051	1,443	2014	12 2014:12	444,047	3.250	49.6	59.0	40.0	3.250	40.0
12/18/2014	29,839	1,475	2014	12 2014:12	444,047	3.322	51.7	60.0	41.0	3.322	41.0
12/20/2014	29,277	1,376	2014	12 2014:12	444,047	3.099	48.3	51.0	45.0	3.099	45.0
12/25/2014	27,164	1,313	2014	12 2014:12	444,047	2.957	46.3	57.0	38.0	2.957	38.0

12/26/2014	28,083	1,300	2014	12	2014:12	444,047	2.928	54.1	64.0	44.0	2.928	44.0
12/30/2014	26,317	1,382	2014	12	2014:12	444,047	3.112	51.7	56.0	42.0	3.112	42.0
12/31/2014	30,695	1,477	2014	12	2014:12	444,047	3.326	45.5	51.0	41.0	3.326	41.0
1/1/2015	28,485	1,303	2015	1	2015:1	444,593	2.931	50.5	57.0	45.0	2.931	45.0
1/5/2015	30,006	1,525	2015	1	2015:1	444,593	3.430	46.3	55.0	41.0	3.430	41.0
1/6/2015	32,707	1,714	2015	1	2015:1	444,593	3.855	48.2	62.0	38.0	3.855	38.0
1/7/2015	34,619	1,752	2015	1	2015:1	444,593	3.941	44.0	56.0	29.0	3.941	29.0
1/8/2015	48,336	2,485	2015	1	2015:1	444,593	5.589	28.8	38.0	19.0	5.589	19.0
1/9/2015	44,830	2,127	2015	1	2015:1	444,593	4.784	36.4	41.0	32.0	4.784	32.0
1/10/2015	38,212	1,906	2015	1	2015:1	444,593	4.287	42.0	53.0	33.0	4.287	33.0
1/11/2015	32,214	1,537	2015	1	2015:1	444,593	3.457	49.9	57.0	40.0	3.457	40.0
1/13/2015	26,388	1,398	2015	1	2015:1	444,593	3.144	55.0	62.0	46.0	3.144	46.0
1/14/2015	30,633	1,529	2015	1	2015:1	444,593	3.439	46.3	53.0	43.0	3.439	43.0
1/15/2015	33,484	1,633	2015	1	2015:1	444,593	3.673	45.6	48.0	43.0	3.673	43.0
1/16/2015	33,171	1,688	2015	1	2015:1	444,593	3.797	44.6	57.0	36.0	3.797	36.0
1/17/2015	31,582	1,589	2015	1	2015:1	444,593	3.574	49.9	61.0	38.0	3.574	38.0
1/18/2015	28,037	1,296	2015	1	2015:1	444,593	2.915	53.3	67.0	42.0	2.915	42.0
1/19/2015	31,202	1,678	2015	1	2015:1	444,593	3.774	51.1	64.0	36.0	3.774	36.0
1/20/2015	28,585	1,479	2015	1	2015:1	444,593	3.327	57.6	68.0	44.0	3.327	44.0
1/23/2015	27,049	1,290	2015	1	2015:1	444,593	2.902	52.4	62.0	46.0	2.902	46.0
1/24/2015	28,980	1,393	2015	1	2015:1	444,593	3.133	47.0	57.0	41.0	3.133	41.0
1/25/2015	30,012	1,543	2015	1	2015:1	444,593	3.471	52.4	62.0	39.0	3.471	39.0
1/26/2015	28,906	1,435	2015	1	2015:1	444,593	3.228	50.1	58.0	43.0	3.228	43.0
1/27/2015	30,247	1,554	2015	1	2015:1	444,593	3.495	54.5	68.0	44.0	3.495	44.0
1/28/2015	30,668	1,619	2015	1	2015:1	444,593	3.642	50.5	64.0	42.0	3.642	42.0
1/29/2015	29,233	1,560	2015	1	2015:1	444,593	3.509	57.9	68.0	45.0	3.509	45.0
1/30/2015	26,397	1,289	2015	1	2015:1	444,593	2.899	53.3	61.0	45.0	2.899	45.0
1/31/2015	29,500	1,498	2015	1	2015:1	444,593	3.369	48.8	57.0	39.0	3.369	39.0
2/2/2015	27,865	1,563	2015	2	2015:2	445,588	3.508	48.3	64.0	35.0	3.508	35.0
2/3/2015	37,347	1,939	2015	2	2015:2	445,588	4.352	41.5	50.0	33.0	4.352	33.0
2/4/2015	34,431	1,694	2015	2	2015:2	445,588	3.802	46.8	48.0	44.0	3.802	44.0
2/5/2015	31,495	1,577	2015	2	2015:2	445,588	3.539	49.7	60.0	41.0	3.539	41.0
2/6/2015	34,096	1,891	2015	2	2015:2	445,588	4.244	43.3	55.0	32.0	4.244	32.0
2/7/2015	30,816	1,637	2015	2	2015:2	445,588	3.674	51.8	64.0	38.0	3.674	38.0
2/10/2015	27,867	1,402	2015	2	2015:2	445,588	3.146	49.3	59.0	41.0	3.146	41.0
2/11/2015	31,623	1,750	2015	2	2015:2	445,588	3.927	48.5	59.0	34.0	3.927	34.0
2/12/2015	29,773	1,478	2015	2	2015:2	445,588	3.317	52.2	64.0	40.0	3.317	40.0
2/13/2015	36,268	1,965	2015	2	2015:2	445,588	4.410	40.8	52.0	30.0	4.410	30.0
2/14/2015	32,215	1,724	2015	2	2015:2	445,588	3.869	51.6	65.0	37.0	3.869	37.0
2/17/2015	35,480	1,925	2015	2	2015:2	445,588	4.320	37.4	47.0	32.0	4.320	32.0
2/18/2015	40,691	2,150	2015	2	2015:2	445,588	4.825	40.6	52.0	29.0	4.825	29.0
2/19/2015	42,506	2,159	2015	2	2015:2	445,588	4.845	35.7	45.0	28.0	4.845	28.0
2/20/2015	40,590	2,229	2015	2	2015:2	445,588	5.002	44.7	56.0	31.0	5.002	31.0
2/23/2015	26,808	1,500	2015	2	2015:2	445,588	3.366	49.1	63.0	43.0	3.366	43.0
2/24/2015	32,672	1,606	2015	2	2015:2	445,588	3.604	43.7	49.0	40.0	3.604	40.0
2/25/2015	35,318	1,748	2015	2	2015:2	445,588	3.923	43.0	46.0	40.0	3.923	40.0
2/26/2015	37,626	1,805	2015	2	2015:2	445,588	4.051	40.8	46.0	37.0	4.051	37.0
2/27/2015	36,094	1,949	2015	2	2015:2	445,588	4.374	45.2	57.0	34.0	4.374	34.0
2/28/2015	31,930	1,540	2015	2	2015:2	445,588	3.456	50.4	60.0	40.0	3.456	40.0
3/5/2015	26,854	1,453	2015	3	2015:3	446,114	3.257	54.1	69.0	36.0	3.257	36.0
3/6/2015	35,083	1,914	2015	3	2015:3	446,114	4.290	41.3	53.0	29.0	4.290	29.0
3/7/2015	29,790	1,542	2015	3	2015:3	446,114	3.457	50.1	65.0	38.0	3.457	38.0
3/8/2015	25,873	1,331	2015	3	2015:3	446,114	2.984	56.8	69.0	41.0	2.984	41.0
3/28/2015	23,946	1,136	2015	3	2015:3	446,114	2.546	52.5	63.0	42.0	2.546	42.0
3/29/2015	24,507	1,177	2015	3	2015:3	446,114	2.638	56.3	65.0	44.0	2.638	44.0
11/22/2015	24,791	1,289	2015	11	2015:11	449,004	2.871	50.1	58.0	41.0	2.871	41.0
11/23/2015	29,764	1,450	2015	11	2015:11	449,004	3.229	47.3	61.0	36.0	3.229	36.0
11/24/2015	29,578	1,411	2015	11	2015:11	449,004	3.143	51.9	61.0	43.0	3.143	43.0
12/3/2015	28,026	1,481	2015	12	2015:12	449,471	3.295	48.9	52.0	45.0	3.295	45.0
12/4/2015	28,973	1,451	2015	12	2015:12	449,471	3.228	51.5	63.0	40.0	3.228	40.0
12/5/2015	25,990	1,195	2015	12	2015:12	449,471	2.659	57.7	70.0	46.0	2.659	46.0
12/18/2015	27,208	1,370	2015	12	2015:12	449,471	3.048	49.0	58.0	42.0	3.048	42.0
12/19/2015	30,602	1,462	2015	12	2015:12	449,471	3.253	46.8	57.0	39.0	3.253	39.0
12/20/2015	29,450	1,435	2015	12	2015:12	449,471	3.193	52.8	60.0	41.0	3.193	41.0
1/1/2016	26,605	1,376	2016	1	2016:1	450,031	3.058	48.8	53.0	46.0	3.058	46.0
1/2/2016	30,250	1,452	2016	1	2016:1	450,031	3.226	46.9	50.0	43.0	3.226	43.0
1/3/2016	29,986	1,453	2016	1	2016:1	450,031	3.229	48.0	53.0	44.0	3.229	44.0
1/4/2016	31,657	1,539	2016	1	2016:1	450,031	3.420	46.2	57.0	37.0	3.420	37.0
1/5/2016	35,723	1,804	2016	1	2016:1	450,031	4.009	43.6	54.0	35.0	4.009	35.0
1/6/2016	33,524	1,714	2016	1	2016:1	450,031	3.809	48.5	60.0	39.0	3.809	39.0
1/7/2016	31,312	1,543	2016	1	2016:1	450,031	3.429	50.5	56.0	44.0	3.429	44.0
1/10/2016	29,257	1,573	2016	1	2016:1	450,031	3.495	46.7	55.0	36.0	3.495	36.0
1/11/2016	38,142	2,002	2016	1	2016:1	450,031	4.449	39.2	50.0	31.0	4.449	31.0
1/12/2016	36,115	1,925	2016	1	2016:1	450,031	4.277	46.5	61.0	34.0	4.277	34.0
1/13/2016	33,086	1,743	2016	1	2016:1	450,031	3.873	48.8	63.0	38.0	3.873	38.0

1/14/2016	32,917	1,646	2016	1 2016:1	450,031	3.658	51.3	59.0	41.0	3.658	41.0
1/17/2016	28,273	1,415	2016	1 2016:1	450,031	3.144	48.9	57.0	42.0	3.144	42.0
1/18/2016	33,917	1,689	2016	1 2016:1	450,031	3.753	45.3	56.0	34.0	3.753	34.0
1/19/2016	36,753	1,936	2016	1 2016:1	450,031	4.302	43.3	55.0	32.0	4.302	32.0
1/20/2016	33,434	1,782	2016	1 2016:1	450,031	3.960	57.0	67.0	41.0	3.960	41.0
1/22/2016	30,115	1,723	2016	1 2016:1	450,031	3.829	46.6	62.0	36.0	3.829	36.0
1/23/2016	39,155	1,853	2016	1 2016:1	450,031	4.117	37.9	45.0	34.0	4.117	34.0
1/24/2016	39,615	2,043	2016	1 2016:1	450,031	4.540	39.4	50.0	28.0	4.540	28.0
1/25/2016	35,888	1,911	2016	1 2016:1	450,031	4.246	50.6	61.0	36.0	4.246	36.0
1/28/2016	32,808	1,639	2016	1 2016:1	450,031	3.642	46.5	55.0	40.0	3.642	40.0
1/29/2016	32,160	1,731	2016	1 2016:1	450,031	3.846	53.1	67.0	41.0	3.846	41.0
1/30/2016	27,641	1,368	2016	1 2016:1	450,031	3.040	57.4	69.0	45.0	3.040	45.0
2/4/2016	28,569	1,478	2016	2 2016:2	450,547	3.280	50.4	58.0	42.0	3.280	42.0
2/5/2016	34,196	1,810	2016	2 2016:2	450,547	4.017	44.3	56.0	35.0	4.017	35.0
2/6/2016	33,115	1,699	2016	2 2016:2	450,547	3.771	46.8	59.0	36.0	3.771	36.0
2/7/2016	32,225	1,620	2016	2 2016:2	450,547	3.596	48.6	61.0	35.0	3.596	35.0
2/8/2016	31,960	1,587	2016	2 2016:2	450,547	3.522	51.6	62.0	42.0	3.522	42.0
2/9/2016	35,757	1,791	2016	2 2016:2	450,547	3.975	45.4	54.0	39.0	3.975	39.0
2/10/2016	38,302	2,005	2016	2 2016:2	450,547	4.450	43.5	54.0	29.0	4.450	29.0
2/11/2016	32,519	1,828	2016	2 2016:2	450,547	4.057	58.1	69.0	39.0	4.057	39.0
2/13/2016	26,835	1,302	2016	2 2016:2	450,547	2.890	51.6	61.0	45.0	2.890	45.0
2/14/2016	30,040	1,522	2016	2 2016:2	450,547	3.378	50.8	58.0	40.0	3.378	40.0
2/16/2016	26,153	1,292	2016	2 2016:2	450,547	2.868	56.1	64.0	46.0	2.868	46.0
2/18/2016	27,809	1,439	2016	2 2016:2	450,547	3.194	55.5	68.0	46.0	3.194	46.0
2/25/2016	29,421	1,491	2016	2 2016:2	450,547	3.309	53.6	64.0	43.0	3.309	43.0
2/26/2016	30,047	1,534	2016	2 2016:2	450,547	3.405	50.2	60.0	42.0	3.405	42.0
2/27/2016	29,745	1,506	2016	2 2016:2	450,547	3.343	51.1	62.0	39.0	3.343	39.0
2/28/2016	28,219	1,405	2016	2 2016:2	450,547	3.118	55.1	66.0	40.0	3.118	40.0
3/5/2016	26,415	1,237	2016	3 2016:3	451,226	2.741	57.8	72.0	44.0	2.741	44.0
3/21/2016	28,624	1,450	2016	3 2016:3	451,226	3.213	51.6	63.0	39.0	3.213	39.0
3/22/2016	27,707	1,429	2016	3 2016:3	451,226	3.167	56.9	66.0	42.0	3.167	42.0
11/20/2016	25,615	1,244	2016	11 2016:11	454,888	2.735	51.3	65.0	42.0	2.735	42.0
11/21/2016	28,059	1,373	2016	11 2016:11	454,888	3.018	52.9	70.0	40.0	3.018	40.0
11/22/2016	28,062	1,371	2016	11 2016:11	454,888	3.014	55.0	70.0	41.0	3.014	41.0
11/26/2016	23,668	1,158	2016	11 2016:11	454,888	2.546	56.4	69.0	45.0	2.546	45.0
11/27/2016	25,748	1,221	2016	11 2016:11	454,888	2.684	57.7	69.0	46.0	2.684	46.0
12/8/2016	27,602	1,415	2016	12 2016:12	455,415	3.106	51.2	56.0	44.0	3.106	44.0
12/9/2016	32,396	1,566	2016	12 2016:12	455,415	3.438	43.6	53.0	37.0	3.438	37.0
12/10/2016	33,986	1,665	2016	12 2016:12	455,415	3.656	44.0	56.0	35.0	3.656	35.0
12/11/2016	30,423	1,454	2016	12 2016:12	455,415	3.194	54.1	65.0	40.0	3.194	40.0
12/15/2016	26,169	1,340	2016	12 2016:12	455,415	2.942	52.5	60.0	45.0	2.942	45.0
12/16/2016	28,585	1,470	2016	12 2016:12	455,415	3.227	55.9	67.0	43.0	3.227	43.0
12/18/2016	25,372	1,248	2016	12 2016:12	455,415	2.739	61.6	79.0	41.0	2.739	41.0
12/19/2016	33,926	1,739	2016	12 2016:12	455,415	3.819	40.8	45.0	37.0	3.819	37.0
12/20/2016	32,247	1,497	2016	12 2016:12	455,415	3.287	47.5	51.0	43.0	3.287	43.0
12/21/2016	28,720	1,386	2016	12 2016:12	455,415	3.044	53.9	66.0	45.0	3.044	45.0
12/30/2016	29,590	1,474	2016	12 2016:12	455,415	3.237	47.0	55.0	41.0	3.237	41.0
1/5/2017	27,529	1,355	2017	1 2017:1	455,852	2.972	55.7	66.0	44.0	2.972	44.0
1/6/2017	29,500	1,581	2017	1 2017:1	455,852	3.468	46.8	60.0	36.0	3.468	36.0
1/7/2017	41,729	2,029	2017	1 2017:1	455,852	4.452	34.1	41.0	28.0	4.452	28.0
1/8/2017	44,681	2,211	2017	1 2017:1	455,852	4.850	36.8	48.0	26.0	4.850	26.0
1/9/2017	39,902	2,142	2017	1 2017:1	455,852	4.700	46.0	55.0	35.0	4.700	35.0
1/24/2017	25,469	1,261	2017	1 2017:1	455,852	2.766	55.9	68.0	44.0	2.766	44.0
1/27/2017	29,129	1,421	2017	1 2017:1	455,852	3.116	47.9	55.0	40.0	3.116	40.0
1/28/2017	30,999	1,466	2017	1 2017:1	455,852	3.216	47.8	52.0	44.0	3.216	44.0
1/29/2017	29,600	1,442	2017	1 2017:1	455,852	3.164	53.2	64.0	43.0	3.164	43.0
1/30/2017	29,404	1,603	2017	1 2017:1	455,852	3.517	54.4	65.0	41.0	3.517	41.0
2/4/2017	28,127	1,435	2017	2 2017:2	456,260	3.144	49.6	63.0	39.0	3.144	39.0
2/5/2017	26,773	1,259	2017	2 2017:2	456,260	2.759	57.7	70.0	44.0	2.759	44.0
2/10/2017	26,662	1,378	2017	2 2017:2	456,260	3.020	56.5	65.0	46.0	3.020	46.0
2/16/2017	26,781	1,355	2017	2 2017:2	456,260	2.970	52.5	65.0	41.0	2.970	41.0
2/17/2017	26,531	1,363	2017	2 2017:2	456,260	2.988	57.8	66.0	44.0	2.988	44.0
3/3/2017	26,160	1,313	2017	3 2017:3	457,196	2.872	58.7	71.0	46.0	2.872	46.0
3/14/2017	28,668	1,415	2017	3 2017:3	457,196	3.094	50.9	59.0	44.0	3.094	44.0
3/15/2017	32,989	1,682	2017	3 2017:3	457,196	3.679	45.8	57.0	37.0	3.679	37.0
3/16/2017	32,861	1,791	2017	3 2017:3	457,196	3.918	50.8	63.0	39.0	3.918	39.0
3/17/2017	27,979	1,447	2017	3 2017:3	457,196	3.165	57.8	67.0	46.0	3.165	46.0
10/29/2017	25,364	1,248	2017	10 2017:10	460,564	2.710	50.5	62.0	42.0	2.710	42.0
10/30/2017	26,823	1,341	2017	10 2017:10	460,564	2.911	58.6	72.0	45.0	2.911	45.0
11/19/2017	23,824	1,208	2017	11 2017:11	461,046	2.621	55.5	63.0	46.0	2.621	46.0
11/20/2017	27,962	1,346	2017	11 2017:11	461,046	2.920	49.0	58.0	43.0	2.920	43.0
11/23/2017	25,248	1,243	2017	11 2017:11	461,046	2.697	55.4	69.0	44.0	2.697	44.0
11/24/2017	24,696	1,169	2017	11 2017:11	461,046	2.535	56.5	68.0	46.0	2.535	46.0
11/25/2017	24,545	1,170	2017	11 2017:11	461,046	2.538	56.3	70.0	46.0	2.538	46.0
11/26/2017	25,195	1,222	2017	11 2017:11	461,046	2.650	57.9	71.0	46.0	2.650	46.0

11/28/2017	27,968	1,361	2017	11 2017:11	461,046	2.951	58.8	72.0	46.0	2.951	46.0
12/6/2017	27,778	1,515	2017	12 2017:12	461,806	3.280	49.6	61.0	43.0	3.280	43.0
12/7/2017	33,362	1,653	2017	12 2017:12	461,806	3.579	46.1	51.0	43.0	3.579	43.0
12/8/2017	37,896	1,851	2017	12 2017:12	461,806	4.009	40.5	43.0	36.0	4.009	36.0
12/9/2017	38,259	1,820	2017	12 2017:12	461,806	3.940	39.5	48.0	33.0	3.940	33.0
12/10/2017	36,618	1,841	2017	12 2017:12	461,806	3.988	43.7	55.0	32.0	3.988	32.0
12/11/2017	34,437	1,895	2017	12 2017:12	461,806	4.104	52.2	65.0	38.0	4.104	38.0
12/12/2017	29,612	1,442	2017	12 2017:12	461,806	3.123	53.7	63.0	44.0	3.123	44.0
12/13/2017	33,315	1,766	2017	12 2017:12	461,806	3.823	48.1	56.0	37.0	3.823	37.0
12/14/2017	30,473	1,495	2017	12 2017:12	461,806	3.238	54.2	64.0	44.0	3.238	44.0
12/15/2017	31,402	1,568	2017	12 2017:12	461,806	3.394	48.5	52.0	43.0	3.394	43.0
12/16/2017	31,079	1,510	2017	12 2017:12	461,806	3.270	50.2	60.0	41.0	3.270	41.0
12/25/2017	27,832	1,337	2017	12 2017:12	461,806	2.895	45.8	53.0	39.0	2.895	39.0
12/26/2017	31,168	1,549	2017	12 2017:12	461,806	3.354	49.2	60.0	38.0	3.354	38.0
12/27/2017	30,292	1,534	2017	12 2017:12	461,806	3.321	48.5	50.0	46.0	3.321	46.0
12/28/2017	33,929	1,652	2017	12 2017:12	461,806	3.577	45.4	48.0	42.0	3.577	42.0
12/29/2017	32,706	1,570	2017	12 2017:12	461,806	3.400	47.3	59.0	39.0	3.400	39.0
12/30/2017	31,614	1,522	2017	12 2017:12	461,806	3.295	50.8	60.0	39.0	3.295	39.0
12/31/2017	31,985	1,682	2017	12 2017:12	461,806	3.642	45.8	51.0	34.0	3.642	34.0
1/1/2018	46,556	2,215	2018	1 2018:1	462,663	4.787	30.8	38.0	26.0	4.787	26.0
1/2/2018	51,407	2,543	2018	1 2018:1	462,663	5.497	32.8	43.0	23.0	5.497	23.0
1/3/2018	47,392	2,215	2018	1 2018:1	462,663	4.787	36.8	45.0	32.0	4.787	32.0
1/4/2018	48,369	2,409	2018	1 2018:1	462,663	5.207	36.0	47.0	27.0	5.207	27.0
1/5/2018	46,650	2,422	2018	1 2018:1	462,663	5.236	38.0	52.0	29.0	5.236	29.0
1/6/2018	41,441	2,099	2018	1 2018:1	462,663	4.536	43.9	57.0	33.0	4.536	33.0
1/7/2018	38,490	1,881	2018	1 2018:1	462,663	4.065	47.6	56.0	39.0	4.065	39.0
1/12/2018	26,433	1,444	2018	1 2018:1	462,663	3.120	53.0	67.0	35.0	3.120	35.0
1/13/2018	41,498	2,040	2018	1 2018:1	462,663	4.409	34.5	45.0	29.0	4.409	29.0
1/14/2018	43,642	2,247	2018	1 2018:1	462,663	4.857	38.2	52.0	26.0	4.857	26.0
1/15/2018	38,923	2,058	2018	1 2018:1	462,663	4.448	45.6	59.0	36.0	4.448	36.0
1/16/2018	37,228	1,881	2018	1 2018:1	462,663	4.065	45.3	61.0	33.0	4.065	33.0
1/17/2018	51,166	2,465	2018	1 2018:1	462,663	5.327	28.1	35.0	22.0	5.327	22.0
1/18/2018	52,476	2,809	2018	1 2018:1	462,663	6.070	32.6	47.0	21.0	6.070	21.0
1/19/2018	43,867	2,468	2018	1 2018:1	462,663	5.334	41.5	57.0	27.0	5.334	27.0
1/20/2018	34,253	1,814	2018	1 2018:1	462,663	3.920	51.4	63.0	38.0	3.920	38.0
1/23/2018	26,744	1,343	2018	1 2018:1	462,663	2.903	55.9	67.0	46.0	2.903	46.0
1/24/2018	32,935	1,627	2018	1 2018:1	462,663	3.517	48.5	57.0	41.0	3.517	41.0
1/25/2018	33,260	1,823	2018	1 2018:1	462,663	3.941	51.0	65.0	40.0	3.941	40.0
1/30/2018	34,065	1,729	2018	1 2018:1	462,663	3.737	45.8	55.0	37.0	3.737	37.0
1/31/2018	35,168	1,920	2018	1 2018:1	462,663	4.150	51.8	60.0	39.0	4.150	39.0
2/2/2018	28,847	1,460	2018	2 2018:2	462,641	3.155	53.1	62.0	42.0	3.155	42.0
2/3/2018	32,173	1,661	2018	2 2018:2	462,641	3.591	48.8	59.0	37.0	3.591	37.0
2/5/2018	26,655	1,374	2018	2 2018:2	462,641	2.970	54.5	66.0	44.0	2.970	44.0
2/8/2018	26,187	1,275	2018	2 2018:2	462,641	2.757	56.0	68.0	46.0	2.757	46.0
3/7/2018	25,228	1,269	2018	3 2018:3	463,441	2.739	53.3	61.0	45.0	2.739	45.0
3/8/2018	27,725	1,390	2018	3 2018:3	463,441	2.999	51.2	62.0	39.0	2.999	39.0
3/9/2018	27,855	1,494	2018	3 2018:3	463,441	3.224	54.3	63.0	39.0	3.224	39.0
3/13/2018	28,658	1,498	2018	3 2018:3	463,441	3.232	51.1	62.0	41.0	3.232	41.0
3/14/2018	28,678	1,505	2018	3 2018:3	463,441	3.246	53.5	66.0	41.0	3.246	41.0
3/15/2018	29,121	1,622	2018	3 2018:3	463,441	3.501	54.8	67.0	39.0	3.501	39.0
3/22/2018	25,856	1,238	2018	3 2018:3	463,441	2.672	56.9	69.0	45.0	2.672	45.0
3/23/2018	26,059	1,265	2018	3 2018:3	463,441	2.729	58.8	69.0	46.0	2.729	46.0
4/8/2018	24,015	1,177	2018	4 2018:4	464,048	2.537	54.6	63.0	46.0	2.537	46.0
4/16/2018	24,903	1,181	2018	4 2018:4	464,048	2.545	57.6	71.0	44.0	2.545	44.0
11/10/2018	23,789	1,156	2018	11 2018:11	463,565	2.494	51.2	60.0	45.0	2.494	45.0
11/11/2018	24,202	1,152	2018	11 2018:11	463,565	2.486	56.4	67.0	45.0	2.486	45.0
11/14/2018	28,762	1,475	2018	11 2018:11	463,565	3.183	45.4	48.0	40.0	3.183	40.0
11/15/2018	33,747	1,641	2018	11 2018:11	463,565	3.539	40.9	50.0	35.0	3.539	35.0
11/16/2018	33,110	1,786	2018	11 2018:11	463,565	3.854	47.6	62.0	35.0	3.854	35.0
11/17/2018	27,871	1,359	2018	11 2018:11	463,565	2.931	54.5	67.0	43.0	2.931	43.0
11/18/2018	25,931	1,192	2018	11 2018:11	463,565	2.571	57.0	70.0	46.0	2.571	46.0
11/20/2018	25,274	1,248	2018	11 2018:11	463,565	2.692	57.0	66.0	46.0	2.692	46.0
11/21/2018	28,360	1,347	2018	11 2018:11	463,565	2.905	50.2	62.0	42.0	2.905	42.0
11/22/2018	28,348	1,414	2018	11 2018:11	463,565	3.051	50.9	61.0	44.0	3.051	44.0
11/26/2018	27,599	1,519	2018	11 2018:11	463,565	3.276	50.9	70.0	41.0	3.276	41.0
11/27/2018	34,702	1,752	2018	11 2018:11	463,565	3.779	42.5	53.0	33.0	3.779	33.0
11/28/2018	34,899	1,845	2018	11 2018:11	463,565	3.980	44.9	54.0	35.0	3.980	35.0
11/29/2018	29,786	1,534	2018	11 2018:11	463,565	3.310	60.1	69.0	44.0	3.310	44.0
12/4/2018	27,968	1,413	2018	12 2018:12	462,983	3.052	50.0	60.0	43.0	3.052	43.0
12/5/2018	33,109	1,626	2018	12 2018:12	462,983	3.512	44.5	55.0	38.0	3.512	38.0
12/6/2018	35,068	1,797	2018	12 2018:12	462,983	3.882	44.8	53.0	36.0	3.882	36.0
12/7/2018	31,708	1,621	2018	12 2018:12	462,983	3.502	51.1	59.0	43.0	3.502	43.0
12/9/2018	27,463	1,457	2018	12 2018:12	462,983	3.147	50.8	64.0	44.0	3.147	44.0
12/10/2018	36,422	1,794	2018	12 2018:12	462,983	3.874	42.6	44.0	40.0	3.874	40.0
12/11/2018	34,943	1,704	2018	12 2018:12	462,983	3.680	45.8	57.0	38.0	3.680	38.0

12/12/2018	35,515	1,971	2018	12	2018:12	462,983	4.258	50.2	61.0	34.0	4.258	34.0
12/17/2018	28,479	1,384	2018	12	2018:12	462,983	2.990	54.6	65.0	46.0	2.990	46.0
12/18/2018	29,136	1,500	2018	12	2018:12	462,983	3.240	53.2	65.0	41.0	3.240	41.0
12/21/2018	32,179	1,579	2018	12	2018:12	462,983	3.409	46.5	51.0	41.0	3.409	41.0
12/22/2018	32,070	1,640	2018	12	2018:12	462,983	3.543	47.7	58.0	36.0	3.543	36.0
12/23/2018	27,892	1,314	2018	12	2018:12	462,983	2.839	60.0	72.0	46.0	2.839	46.0
1/6/2019	26,315	1,228	2019	1	2019:1	462,872	2.654	55.5	68.0	44.0	2.654	44.0
1/7/2019	26,891	1,346	2019	1	2019:1	462,872	2.908	57.1	68.0	46.0	2.908	46.0
1/9/2019	26,478	1,368	2019	1	2019:1	462,872	2.955	54.4	61.0	46.0	2.955	46.0
1/10/2019	32,094	1,653	2019	1	2019:1	462,872	3.571	47.7	59.0	38.0	3.571	38.0
1/11/2019	32,040	1,705	2019	1	2019:1	462,872	3.683	48.0	57.0	39.0	3.683	39.0
1/14/2019	33,800	1,737	2019	1	2019:1	462,872	3.752	44.8	49.0	43.0	3.752	43.0
1/15/2019	34,023	1,646	2019	1	2019:1	462,872	3.557	44.8	55.0	40.0	3.557	40.0
1/16/2019	32,984	1,668	2019	1	2019:1	462,872	3.604	48.4	61.0	41.0	3.604	41.0
1/17/2019	31,293	1,644	2019	1	2019:1	462,872	3.553	53.6	64.0	40.0	3.553	40.0
1/20/2019	33,665	1,691	2019	1	2019:1	462,872	3.653	40.8	46.0	33.0	3.653	33.0
1/21/2019	38,099	1,983	2019	1	2019:1	462,872	4.284	40.8	46.0	33.0	4.284	33.0
1/22/2019	32,660	1,666	2019	1	2019:1	462,872	3.599	44.3	57.0	33.0	3.599	33.0
1/23/2019	25,360	1,250	2019	1	2019:1	462,872	2.701	55.4	64.0	46.0	2.701	46.0
1/24/2019	31,484	1,676	2019	1	2019:1	462,872	3.621	44.5	56.0	38.0	3.621	38.0
1/25/2019	36,162	1,926	2019	1	2019:1	462,872	4.161	44.5	55.0	34.0	4.161	34.0
1/26/2019	34,093	1,783	2019	1	2019:1	462,872	3.852	47.3	59.0	34.0	3.852	34.0
1/27/2019	33,156	1,581	2019	1	2019:1	462,872	3.416	47.8	55.0	40.0	3.416	40.0
1/28/2019	33,578	1,876	2019	1	2019:1	462,872	4.052	50.9	63.0	38.0	4.052	38.0
1/29/2019	34,276	1,807	2019	1	2019:1	462,872	3.905	45.8	53.0	36.0	3.905	36.0
1/30/2019	40,874	2,066	2019	1	2019:1	462,872	4.464	41.3	50.0	34.0	4.464	34.0
1/31/2019	35,784	1,872	2019	1	2019:1	462,872	4.044	48.1	57.0	40.0	4.044	40.0
2/1/2019	32,163	1,564	2019	2	2019:2	461,700	3.388	51.5	59.0	46.0	3.388	46.0
2/9/2019	27,722	1,393	2019	2	2019:2	461,700	3.017	52.7	63.0	43.0	3.017	43.0
2/13/2019	27,879	1,435	2019	2	2019:2	461,700	3.108	51.7	64.0	44.0	3.108	44.0
2/14/2019	28,827	1,524	2019	2	2019:2	461,700	3.301	57.2	67.0	43.0	3.301	43.0
3/4/2019	29,084	1,592	2019	3	2019:3	461,646	3.448	44.2	48.0	40.0	3.448	40.0
3/5/2019	34,217	1,737	2019	3	2019:3	461,646	3.762	43.1	53.0	35.0	3.762	35.0
3/6/2019	35,029	1,885	2019	3	2019:3	461,646	4.083	43.9	57.0	33.0	4.083	33.0
3/7/2019	30,587	1,701	2019	3	2019:3	461,646	3.685	53.2	61.0	39.0	3.685	39.0
3/18/2019	25,754	1,240	2019	3	2019:3	461,646	2.687	57.7	65.0	45.0	2.687	45.0
3/22/2019	24,603	1,177	2019	3	2019:3	461,646	2.548	58.3	73.0	45.0	2.548	45.0
3/23/2019	24,237	1,128	2019	3	2019:3	461,646	2.444	59.6	73.0	46.0	2.444	46.0
4/2/2019	26,540	1,271	2019	4	2019:4	462,659	2.747	59.7	72.0	46.0	2.747	46.0
10/31/2019	28,878	1,508	2019	10	2019:10	467,127	3.228	62.2	79.0	41.0	3.228	41.0
11/1/2019	27,078	1,372	2019	11	2019:11	467,871	2.933	48.6	63.0	38.0	2.933	38.0
11/2/2019	25,392	1,194	2019	11	2019:11	467,871	2.552	54.0	67.0	42.0	2.552	42.0
11/3/2019	25,286	1,194	2019	11	2019:11	467,871	2.552	55.3	67.0	46.0	2.552	46.0
11/10/2019	23,802	1,131	2019	11	2019:11	467,871	2.417	55.6	66.0	46.0	2.417	46.0
11/12/2019	28,116	1,633	2019	11	2019:11	467,871	3.491	46.6	71.0	33.0	3.491	33.0
11/13/2019	36,091	1,951	2019	11	2019:11	467,871	4.170	42.7	55.0	29.0	4.170	29.0
11/14/2019	32,232	1,527	2019	11	2019:11	467,871	3.264	48.0	53.0	44.0	3.264	44.0
11/15/2019	29,858	1,427	2019	11	2019:11	467,871	3.050	50.9	60.0	46.0	3.050	46.0
11/16/2019	27,853	1,343	2019	11	2019:11	467,871	2.871	50.9	63.0	42.0	2.871	42.0
11/17/2019	25,951	1,200	2019	11	2019:11	467,871	2.564	56.1	68.0	45.0	2.564	45.0
11/18/2019	26,262	1,297	2019	11	2019:11	467,871	2.772	55.3	68.0	43.0	2.772	43.0
11/19/2019	26,782	1,372	2019	11	2019:11	467,871	2.933	57.8	71.0	45.0	2.933	45.0
11/24/2019	24,882	1,225	2019	11	2019:11	467,871	2.619	51.7	62.0	43.0	2.619	43.0
11/25/2019	27,380	1,362	2019	11	2019:11	467,871	2.912	53.3	64.0	42.0	2.912	42.0
12/2/2019	27,664	1,439	2019	12	2019:12	468,283	3.074	48.5	54.0	41.0	3.074	41.0
12/3/2019	32,894	1,683	2019	12	2019:12	468,283	3.594	45.9	58.0	35.0	3.594	35.0
12/4/2019	30,335	1,588	2019	12	2019:12	468,283	3.390	53.1	67.0	43.0	3.390	43.0
12/5/2019	28,146	1,461	2019	12	2019:12	468,283	3.120	54.3	66.0	43.0	3.120	43.0
12/12/2019	30,851	1,463	2019	12	2019:12	468,283	3.125	50.1	57.0	44.0	3.125	44.0
12/17/2019	27,611	1,519	2019	12	2019:12	468,283	3.243	57.0	73.0	41.0	3.243	41.0
12/18/2019	35,255	1,776	2019	12	2019:12	468,283	3.792	42.5	52.0	36.0	3.792	36.0
12/19/2019	35,765	1,862	2019	12	2019:12	468,283	3.977	44.0	55.0	35.0	3.977	35.0
12/20/2019	32,193	1,669	2019	12	2019:12	468,283	3.565	52.0	67.0	40.0	3.565	40.0
12/31/2019	27,588	1,323	2019	12	2019:12	468,283	2.826	51.6	63.0	43.0	2.826	43.0
1/1/2020	27,120	1,233	2020	1	2020:1	468,736	2.630	54.0	63.0	45.0	2.630	45.0
1/4/2020	23,949	1,186	2020	1	2020:1	468,736	2.531	58.5	66.0	44.0	2.531	44.0
1/5/2020	28,241	1,388	2020	1	2020:1	468,736	2.962	48.5	59.0	39.0	2.962	39.0
1/6/2020	28,325	1,454	2020	1	2020:1	468,736	3.102	55.4	68.0	44.0	3.102	44.0
1/8/2020	30,267	1,633	2020	1	2020:1	468,736	3.484	50.8	61.0	42.0	3.484	42.0
1/19/2020	25,419	1,350	2020	1	2020:1	468,736	2.881	54.0	68.0	45.0	2.881	45.0
1/20/2020	34,964	1,679	2020	1	2020:1	468,736	3.582	41.1	49.0	36.0	3.582	36.0
1/21/2020	41,943	2,111	2020	1	2020:1	468,736	4.504	36.3	44.0	29.0	4.504	29.0
1/22/2020	39,766	2,129	2020	1	2020:1	468,736	4.543	42.2	52.0	32.0	4.543	32.0
1/25/2020	28,375	1,420	2020	1	2020:1	468,736	3.029	49.8	61.0	38.0	3.029	38.0
1/26/2020	30,064	1,441	2020	1	2020:1	468,736	3.075	49.2	55.0	43.0	3.075	43.0

1/28/2020	29,400	1,568	2020	1	2020:1	468,736	3.345	53.6	65.0	44.0	3.345	44.0
1/30/2020	29,817	1,562	2020	1	2020:1	468,736	3.332	51.9	60.0	45.0	3.332	45.0
2/1/2020	28,764	1,383	2020	2	2020:2	469,131	2.947	51.3	57.0	44.0	2.947	44.0
2/2/2020	29,231	1,523	2020	2	2020:2	469,131	3.246	53.7	69.0	40.0	3.246	40.0
2/7/2020	31,059	1,670	2020	2	2020:2	469,131	3.559	46.4	58.0	37.0	3.559	37.0
2/8/2020	27,872	1,377	2020	2	2020:2	469,131	2.936	56.7	68.0	42.0	2.936	42.0
2/14/2020	27,284	1,355	2020	2	2020:2	469,131	2.889	52.3	64.0	43.0	2.889	43.0
2/15/2020	27,845	1,403	2020	2	2020:2	469,131	2.991	52.4	64.0	42.0	2.991	42.0
2/21/2020	30,967	1,512	2020	2	2020:2	469,131	3.224	48.2	57.0	41.0	3.224	41.0
2/22/2020	31,778	1,640	2020	2	2020:2	469,131	3.496	47.2	61.0	35.0	3.496	35.0
2/23/2020	28,277	1,432	2020	2	2020:2	469,131	3.052	53.5	64.0	40.0	3.052	40.0
2/26/2020	25,967	1,342	2020	2	2020:2	469,131	2.861	55.0	60.0	46.0	2.861	46.0
2/27/2020	31,985	1,653	2020	2	2020:2	469,131	3.524	46.0	56.0	36.0	3.524	36.0
2/28/2020	31,287	1,768	2020	2	2020:2	469,131	3.768	50.7	63.0	37.0	3.768	37.0
2/29/2020	27,113	1,372	2020	2	2020:2	469,131	2.924	56.5	71.0	44.0	2.924	44.0
3/7/2020	26,050	1,261	2020	3	2020:3	468,642	2.691	51.5	63.0	42.0	2.691	42.0
11/30/2020	27,811	1,479	2020	11	2020:11	473,103	3.126	49.0	57.0	35.0	3.126	35.0
12/1/2020	36,808	1,853	2020	12	2020:12	473,630	3.912	40.9	56.0	30.0	3.912	30.0
12/2/2020	35,723	1,891	2020	12	2020:12	473,630	3.993	48.3	60.0	36.0	3.993	36.0
12/4/2020	27,282	1,274	2020	12	2020:12	473,630	2.690	57.0	69.0	43.0	2.690	43.0
12/5/2020	29,051	1,396	2020	12	2020:12	473,630	2.947	51.0	62.0	41.0	2.947	41.0
12/7/2020	29,952	1,513	2020	12	2020:12	473,630	3.194	49.6	59.0	42.0	3.194	42.0
12/8/2020	33,765	1,750	2020	12	2020:12	473,630	3.695	48.3	61.0	36.0	3.695	36.0
12/10/2020	29,428	1,475	2020	12	2020:12	473,630	3.114	57.7	69.0	46.0	3.114	46.0
12/14/2020	27,524	1,409	2020	12	2020:12	473,630	2.974	55.7	72.0	45.0	2.974	45.0
12/15/2020	29,695	1,510	2020	12	2020:12	473,630	3.187	51.2	61.0	40.0	3.187	40.0
12/16/2020	28,427	1,421	2020	12	2020:12	473,630	3.001	53.1	57.0	46.0	3.001	46.0
12/17/2020	36,825	1,827	2020	12	2020:12	473,630	3.858	41.0	47.0	35.0	3.858	35.0
12/18/2020	38,688	2,068	2020	12	2020:12	473,630	4.367	43.8	58.0	32.0	4.367	32.0
12/19/2020	32,422	1,642	2020	12	2020:12	473,630	3.466	51.5	61.0	41.0	3.466	41.0
12/22/2020	28,196	1,389	2020	12	2020:12	473,630	2.933	55.8	71.0	45.0	2.933	45.0
12/24/2020	28,873	1,594	2020	12	2020:12	473,630	3.365	52.3	69.0	35.0	3.365	35.0
12/25/2020	36,638	1,772	2020	12	2020:12	473,630	3.742	40.4	50.0	33.0	3.742	33.0
12/26/2020	38,329	1,924	2020	12	2020:12	473,630	4.063	40.4	53.0	29.0	4.063	29.0
12/27/2020	35,191	1,837	2020	12	2020:12	473,630	3.879	47.6	60.0	34.0	3.879	34.0
12/28/2020	30,191	1,539	2020	12	2020:12	473,630	3.249	54.2	66.0	44.0	3.249	44.0

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Year	Month	Day	HR1	HR2	HR3	HR4	HR5	HR6	HR7	HR8	HR9	HR10	HR11	HR12	HR13	HR14	HR15	HR16	HR17	HR18	HR19	HR20	HR21	HR22	HR23	HR24	Avg	Min
1989	12	22	33	31	30	29	28	26	25	24	24	24	24	26	24	24	24	24	23	21	20	20	21	19	18	18	24.16667	18
1989	12	23	17	16	15	15	14	14	13	13	15	17	19	20	21	23	24	23	20	19	18	17	16	15	15	14	17.20833	13
1989	12	24	13	13	13	12	12	11	11	14	17	21	25	28	31	34	35	34	31	28	26	24	22	26	27	28	22.33333	11
1989	12	25	28	29	29	29	27	24	27	31	34	38	40	42	44	45	45	44	41	39	36	35	35	34	35	35	35.25	24

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SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.873782
R Square	0.763496
Adjusted R Square	0.763158
Standard Error	0.336751
Observations	702

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	256.2611	256.2611	2259.777198	2.406E-221
Residual	700	79.38072	0.113401		
Total	701	335.6418			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	7.733914	0.087806	88.07996	0	7.561520078	7.906308	7.56152	7.906308
Minimum	-0.106381	0.002238	-47.53711	2.406E-221	-0.110774637	-0.101987	-0.110775	-0.101987

	P50	*1989 Scenario*
	26.18	11.00
Customers	476,889	476,889
MW/cust	4.9494	6.5637
Peak MW	2,360	3,130
		770
		132.6%

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	2022 TYSP Preliminary Peak	Solar	PHEV	EDR	DSM	Final	No DSM	Adjustment Factor	Preliminary Peak	No DSM			Gulf SA	No DSM 2022 TYSP	No DSM 1989 Scenario	MW Change	% Change
2022	2,397	-4	1	0	0	2,394	2,394	1.326167408	3,179	3,176	32.67%		2022	2,394	3,176	782	32.7%
2023	2,390	-5	1	0	0	2,386	2,386	1.326167408	3,169	3,165	32.66%		2023	2,386	3,165	779	32.7%
2024	2,454	-8	2	0	0	2,448	2,448	1.326167408	3,255	3,249	32.70%		2024	2,448	3,249	801	32.7%
2025	2,472	-11	3	0	0	2,464	2,464	1.326167408	3,278	3,271	32.73%		2025	2,464	3,271	806	32.7%
2026	2,487	-13	5	0	0	2,479	2,479	1.326167408	3,299	3,291	32.75%		2026	2,479	3,291	812	32.7%
2027	2,503	-16	7	0	0	2,493	2,493	1.326167408	3,319	3,310	32.73%		2027	2,493	3,310	816	32.7%
2028	2,520	-19	9	0	0	2,510	2,510	1.326167408	3,343	3,333	32.77%		2028	2,510	3,333	823	32.8%
2029	2,538	-23	12	0	0	2,528	2,528	1.326167408	3,366	3,355	32.75%		2029	2,528	3,355	828	32.8%
2030	2,553	-26	16	0	0	2,543	2,543	1.326167408	3,386	3,375	32.74%		2030	2,543	3,375	833	32.7%
2031	2,570	-31	20	0	0	2,559	2,559	1.326167408	3,408	3,397	32.75%		2031	2,559	3,397	838	32.7%
2032	2,586	-34	24	0	0	2,577	2,577	1.326167408	3,430	3,420	32.73%		2032	2,577	3,420	844	32.7%
2033	2,603	-37	30	0	0	2,596	2,596	1.326167408	3,452	3,445	32.70%		2033	2,596	3,445	849	32.7%
2034	2,620	-39	35	0	0	2,616	2,616	1.326167408	3,474	3,470	32.66%		2034	2,616	3,470	854	32.7%
2035	2,636	-42	41	0	0	2,636	2,636	1.326167408	3,496	3,496	32.61%		2035	2,636	3,496	860	32.6%
2036	2,653	-44	48	0	0	2,657	2,657	1.326167408	3,518	3,522	32.55%		2036	2,657	3,522	865	32.6%
2037	2,670	-46	55	0	0	2,678	2,678	1.326167408	3,540	3,548	32.50%		2037	2,678	3,548	870	32.5%
2038	2,686	-49	62	0	0	2,699	2,699	1.326167408	3,563	3,576	32.48%		2038	2,699	3,576	877	32.5%
2039	2,703	-51	68	0	0	2,720	2,720	1.326167408	3,585	3,602	32.42%		2039	2,720	3,602	882	32.4%
2040	2,720	-54	74	0	0	2,741	2,741	1.326167408	3,607	3,628	32.37%		2040	2,741	3,628	887	32.4%

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Case name:	Business As Usual Resource Plan

			System Fixed Costs				System Variable Costs								
	Year	Annual Discount Factor 7.38%	Generation Capital Costs (Millions)	Fixed O&M & Capital Replacement Costs (Millions)	Transmission Interconnection Costs (Millions)	Total Fixed Costs (Millions)	System Net Fuel (Millions)	Startup Costs (Millions)	VOM Costs (Millions)	Emission Costs (Millions)	Total Variable Costs (Millions)	Total Annual Costs (Millions)	NPV Total Annual Cost (Millions)	NPV Cumulative Total Costs (Millions)	Year
1	**2022**	1.000	0	0	0	**0**	3,142	106	306	1	**3,555**	3,555	3,555	3,555	**2022**
2	**2023**	0.931	0	0	0	**0**	2,545	94	303	1	**2,943**	2,943	2,740	6,295	**2023**
3	**2024**	0.867	0	0	0	**0**	2,203	93	304	1	**2,601**	2,601	2,256	8,551	**2024**
4	**2025**	0.808	0	0	0	**0**	2,107	96	305	1	**2,508**	2,508	2,026	10,577	**2025**
5	**2026**	0.752	73	2	19	**95**	2,060	101	310	42	**2,513**	2,608	1,962	12,539	**2026**
6	**2027**	0.700	141	5	38	**184**	2,054	106	318	67	**2,545**	2,729	1,911	14,450	**2027**
7	**2028**	0.652	222	9	60	**291**	2,200	117	327	114	**2,759**	3,049	1,989	16,440	**2028**
8	**2029**	0.607	366	18	86	**470**	2,301	118	335	159	**2,912**	3,382	2,055	18,494	**2029**
9	**2030**	0.566	517	29	112	**657**	2,396	115	341	195	**3,047**	3,704	2,095	20,589	**2030**
10	**2031**	0.527	646	37	136	**819**	2,476	117	349	231	**3,173**	3,991	2,103	22,692	**2031**
11	**2032**	0.491	809	61	137	**1,008**	2,590	119	356	278	**3,343**	4,351	2,135	24,827	**2032**
12	**2033**	0.457	774	68	133	**975**	2,740	125	374	336	**3,575**	4,550	2,079	26,906	**2033**
13	**2034**	0.426	812	72	128	**1,012**	2,879	127	388	399	**3,794**	4,806	2,045	28,951	**2034**
14	**2035**	0.396	855	92	124	**1,070**	3,072	129	409	528	**4,137**	5,207	2,063	31,014	**2035**
15	**2036**	0.369	901	108	119	**1,128**	3,266	140	347	684	**4,437**	5,565	2,054	33,068	**2036**
16	**2037**	0.344	948	118	115	**1,181**	3,405	138	361	855	**4,759**	5,940	2,041	35,110	**2037**
17	**2038**	0.320	1,035	125	111	**1,271**	3,584	147	381	1,059	**5,170**	6,441	2,061	37,171	**2038**
18	**2039**	0.298	1,158	155	106	**1,420**	3,736	154	394	1,288	**5,572**	6,992	2,084	39,255	**2039**
19	**2040**	0.278	1,204	165	102	**1,471**	3,856	155	406	1,530	**5,947**	7,419	2,059	41,314	**2040**
20	**2041**	0.258	1,169	174	98	**1,441**	3,961	158	425	1,784	**6,328**	7,768	2,008	43,322	**2041**
21	**2042**	0.241	1,212	191	93	**1,497**	4,043	164	442	2,055	**6,703**	8,200	1,974	45,296	**2042**
22	**2043**	0.224	1,179	219	90	**1,487**	4,111	165	457	2,345	**7,078**	8,566	1,920	47,217	**2043**
23	**2044**	0.209	1,229	201	86	**1,515**	4,207	173	473	2,688	**7,541**	9,056	1,891	49,107	**2044**
24	**2045**	0.194	1,274	249	82	**1,606**	4,300	173	490	3,067	**8,029**	9,634	1,873	50,981	**2045**
25	**2046**	0.181	1,234	261	79	**1,575**	4,373	177	507	3,465	**8,523**	10,097	1,828	52,809	**2046**
26	**2047**	0.169	1,286	279	76	**1,641**	4,478	181	525	3,724	**8,908**	10,549	1,779	54,588	**2047**
27	**2048**	0.157	1,249	307	74	**1,630**	4,565	186	546	3,983	**9,280**	10,910	1,713	56,301	**2048**
28	**2049**	0.146	1,285	335	71	**1,691**	4,649	191	561	4,248	**9,649**	11,340	1,658	57,959	**2049**
29	**2050**	0.136	1,223	356	68	**1,648**	4,757	197	586	4,565	**10,105**	11,753	1,601	59,560	**2050**
30	**2051**	0.127	1,266	382	65	**1,713**	4,852	195	604	4,722	**10,373**	12,086	1,533	61,093	**2051**
31	**2052**	0.118	1,422	399	63	**1,883**	5,008	199	634	4,971	**10,812**	12,695	1,499	62,592	**2052**
32	**2053**	0.110	1,574	447	60	**2,081**	5,292	207	691	5,460	**11,650**	13,731	1,510	64,103	**2053**
33	**2054**	0.102	1,524	441	57	**2,022**	5,437	209	726	5,742	**12,114**	14,136	1,448	65,551	**2054**
34	**2055**	0.095	1,584	491	54	**2,129**	5,526	220	734	5,908	**12,388**	14,518	1,385	66,936	**2055**
35	**2056**	0.089	1,750	520	52	**2,322**	5,774	227	790	6,370	**13,161**	15,483	1,375	68,311	**2056**
36	**2057**	0.083	1,802	532	49	**2,383**	5,898	222	819	6,635	**13,575**	15,958	1,320	69,631	**2057**
37	**2058**	0.077	1,745	550	47	**2,342**	5,969	230	844	6,820	**13,862**	16,204	1,248	70,880	**2058**
38	**2059**	0.072	1,808	570	44	**2,423**	6,071	235	876	7,061	**14,243**	16,666	1,196	72,076	**2059**
39	**2060**	0.067	1,874	639	42	**2,556**	6,156	238	904	7,280	**14,577**	17,133	1,145	73,220	**2060**
40	**2061**	0.062	1,803	630	36	**2,468**	6,234	244	932	7,487	**14,897**	17,365	1,081	74,301	**2061**
41	**2062**	0.058	1,842	647	30	**2,519**	6,352	246	965	7,752	**15,315**	17,834	1,034	75,335	**2062**
42	**2063**	0.054	2,010	697	24	**2,730**	6,558	251	1,022	8,211	**16,043**	18,772	1,013	76,348	**2063**
43	**2064**	0.050	2,052	702	16	**2,769**	6,690	260	1,066	8,554	**16,570**	19,340	972	77,320	**2064**
44	**2065**	0.047	1,957	730	9	**2,696**	6,786	262	1,103	8,823	**16,974**	19,670	921	78,240	**2065**
45	**2066**	0.044	1,993	789	3	**2,784**	6,879	273	1,141	9,097	**17,389**	20,173	879	79,120	**2066**
46	**2067**	0.041	2,060	847	2	**2,909**	6,975	276	1,179	9,379	**17,808**	20,717	841	79,961	**2067**
47	**2068**	0.038	2,007	855	2	**2,864**	7,068	280	1,219	9,666	**18,233**	21,097	798	80,758	**2068**
48	**2069**	0.035	2,078	883	2	**2,963**	7,168	289	1,259	9,969	**18,685**	21,648	762	81,520	**2069**
49	**2070**	0.033	2,149	944	2	**3,095**	7,267	295	1,301	10,278	**19,141**	22,236	729	82,249	**2070**
	Total NPV =		**$9,027**	**$1,668**	**$896**	**$11,591**	**$44,786**	**$1,891**	**$5,769**	**$18,212**	**$70,658**	**82,249**			

Case name:	**Recommended Plan (~True Bill Impact, P50 load forecast)**

			System Fixed Costs				**System Variable Costs**								
	Year	**Annual Discount Factor 7.38%**	**Generation Capital Costs (Millions)**	**Fixed O&M & Capital Replacement Costs (Millions)**	**Transmission Interconnection Costs (Millions)**	**Total Fixed Costs (Millions)**	**System Net Fuel (Millions)**	**Startup Costs (Millions)**	**VOM Costs (Millions)**	**Emission Costs (Millions)**	**Total Variable Costs (Millions)**	**Total Annual Costs (Millions)**	**NPV Total Annual Cost (Millions)**	**NPV Cumulative Total Costs (Millions)**	**Year**
1	**2022**	1.000	0	0	0	**0**	3,142	106	306	1	**3,555**	3,555	3,555	3,555	**2022**
2	**2023**	0.931	0	0	0	**0**	2,544	95	303	1	**2,943**	2,943	2,741	6,295	**2023**
3	**2024**	0.867	0	0	0	**0**	2,203	93	304	1	**2,601**	2,601	2,256	8,551	**2024**
4	**2025**	0.808	0	0	0	**0**	2,107	96	305	1	**2,509**	2,509	2,026	10,578	**2025**
5	**2026**	0.752	73	2	19	**95**	2,060	101	310	42	**2,513**	2,608	1,962	12,539	**2026**
6	**2027**	0.700	175	8	38	**221**	2,053	102	316	67	**2,538**	2,759	1,932	14,471	**2027**
7	**2028**	0.652	296	14	60	**370**	2,199	108	323	114	**2,744**	3,114	2,031	16,503	**2028**
8	**2029**	0.607	474	26	86	**586**	2,298	100	332	158	**2,888**	3,475	2,111	18,614	**2029**
9	**2030**	0.566	608	41	112	**761**	2,394	97	340	195	**3,026**	3,787	2,143	20,756	**2030**
10	**2031**	0.527	769	52	138	**960**	2,472	99	346	231	**3,147**	4,107	2,164	22,920	**2031**
11	**2032**	0.491	925	77	140	**1,142**	2,587	101	352	277	**3,317**	4,459	2,188	25,108	**2032**
12	**2033**	0.457	884	79	135	**1,098**	2,738	106	371	336	**3,550**	4,647	2,123	27,232	**2033**
13	**2034**	0.426	848	98	130	**1,076**	2,883	111	389	400	**3,783**	4,860	2,068	29,300	**2034**
14	**2035**	0.396	887	106	126	**1,119**	3,068	109	409	527	**4,114**	5,233	2,074	31,373	**2035**
15	**2036**	0.369	931	115	121	**1,167**	3,262	120	347	684	**4,412**	5,579	2,059	33,432	**2036**
16	**2037**	0.344	974	138	117	**1,229**	3,401	118	361	854	**4,734**	5,963	2,049	35,481	**2037**
17	**2038**	0.320	1,061	133	112	**1,306**	3,580	127	381	1,058	**5,147**	6,453	2,065	37,547	**2038**
18	**2039**	0.298	1,105	156	108	**1,369**	3,731	134	399	1,287	**5,551**	6,920	2,062	39,609	**2039**
19	**2040**	0.278	1,151	172	104	**1,426**	3,851	133	410	1,528	**5,923**	7,349	2,040	41,649	**2040**
20	**2041**	0.258	1,192	181	99	**1,472**	3,958	136	425	1,782	**6,301**	7,774	2,009	43,658	**2041**
21	**2042**	0.241	1,233	186	95	**1,514**	4,040	144	442	2,054	**6,679**	8,193	1,972	45,631	**2042**
22	**2043**	0.224	1,197	220	91	**1,509**	4,108	142	456	2,343	**7,049**	8,558	1,919	47,549	**2043**
23	**2044**	0.209	1,244	203	87	**1,534**	4,203	152	475	2,686	**7,516**	9,050	1,889	49,439	**2044**
24	**2045**	0.194	1,203	240	84	**1,527**	4,295	153	493	3,065	**8,006**	9,533	1,853	51,292	**2045**
25	**2046**	0.181	1,248	271	81	**1,600**	4,370	154	507	3,464	**8,494**	10,094	1,828	53,120	**2046**
26	**2047**	0.169	1,201	275	78	**1,553**	4,473	158	529	3,721	**8,881**	10,435	1,760	54,879	**2047**
27	**2048**	0.157	1,242	298	75	**1,615**	4,562	163	546	3,980	**9,252**	10,867	1,706	56,586	**2048**
28	**2049**	0.146	1,266	340	72	**1,678**	4,645	168	562	4,245	**9,621**	11,299	1,652	58,238	**2049**
29	**2050**	0.136	1,207	337	69	**1,613**	4,755	174	585	4,563	**10,078**	11,691	1,592	59,830	**2050**
30	**2051**	0.127	1,242	383	66	**1,691**	4,848	172	606	4,719	**10,346**	12,037	1,527	61,357	**2051**
31	**2052**	0.118	1,399	402	64	**1,864**	5,006	176	632	4,969	**10,784**	12,648	1,494	62,851	**2052**
32	**2053**	0.110	1,552	433	61	**2,046**	5,289	183	691	5,458	**11,622**	13,667	1,503	64,354	**2053**
33	**2054**	0.102	1,503	438	58	**1,999**	5,434	185	727	5,740	**12,087**	14,086	1,443	65,797	**2054**
34	**2055**	0.095	1,563	510	55	**2,129**	5,524	198	735	5,905	**12,361**	14,490	1,382	67,180	**2055**
35	**2056**	0.089	1,730	525	53	**2,307**	5,772	205	790	6,368	**13,135**	15,442	1,372	68,551	**2056**
36	**2057**	0.083	1,782	554	50	**2,386**	5,896	199	820	6,633	**13,549**	15,935	1,318	69,870	**2057**
37	**2058**	0.077	1,726	572	48	**2,345**	5,967	207	843	6,818	**13,834**	16,180	1,247	71,116	**2058**
38	**2059**	0.072	1,790	604	45	**2,440**	6,070	212	875	7,059	**14,216**	16,656	1,195	72,311	**2059**
39	**2060**	0.067	1,742	642	43	**2,427**	6,153	215	906	7,278	**14,551**	16,978	1,135	73,446	**2060**
40	**2061**	0.062	1,789	675	37	**2,502**	6,232	222	932	7,485	**14,871**	17,373	1,081	74,527	**2061**
41	**2062**	0.058	1,830	664	31	**2,524**	6,351	221	966	7,750	**15,288**	17,812	1,032	75,559	**2062**
42	**2063**	0.054	1,998	687	24	**2,709**	6,557	226	1,023	8,210	**16,016**	18,725	1,011	76,570	**2063**
43	**2064**	0.050	1,917	717	17	**2,651**	6,687	237	1,069	8,551	**16,544**	19,195	965	77,535	**2064**
44	**2065**	0.047	1,951	751	10	**2,712**	6,784	235	1,103	8,822	**16,944**	19,656	920	78,454	**2065**
45	**2066**	0.044	1,986	783	3	**2,771**	6,877	249	1,141	9,094	**17,360**	20,131	877	79,332	**2066**
46	**2067**	0.041	1,922	827	2	**2,751**	6,973	251	1,180	9,377	**17,781**	20,533	833	80,165	**2067**
47	**2068**	0.038	2,005	833	2	**2,839**	7,068	250	1,218	9,666	**18,201**	21,040	795	80,961	**2068**
48	**2069**	0.035	2,077	890	2	**2,969**	7,167	260	1,260	9,966	**18,653**	21,622	761	81,722	**2069**
49	**2070**	0.033	2,011	925	2	**2,938**	7,265	268	1,304	10,276	**19,113**	22,051	723	82,445	**2070**
	Total NPV =		**$9,353**	**$1,745**	**$908**	**$12,006**	**$44,761**	**$1,712**	**$5,762**	**$18,203**	**$70,439**	**82,445**			

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ANNUAL BILL IMPACT: Business As Usual Plan*

Year	Fixed Costs Annual Bill Impact ($/1,000 kWh)	Variable Costs Annual Bill Impact ($/1,000 kWh)	Total Costs Annual Bill Impact ($/1,000 kWh)
2022	0.00	26.00	26.00
2023	0.00	21.30	21.30
2024	0.00	18.66	18.66
2025	0.00	17.83	17.83
2026	0.67	17.70	18.37
2027	1.29	17.82	19.11
2028	2.02	19.12	21.13
2029	3.22	19.94	23.16
2030	4.44	20.61	25.06
2031	5.48	21.22	26.70
10-Year Average	1.71	20.02	21.73
Levelized	1.76	26.20	27.96

ANNUAL BILL IMPACT: Recommended Plan*

Year	Fixed Costs Annual Bill Impact ($/1,000 kWh)	Variable Costs Annual Bill Impact ($/1,000 kWh)	Total Costs Annual Bill Impact ($/1,000 kWh)
2022	0.00	26.00	26.00
2023	0.00	21.30	21.30
2024	0.00	18.66	18.66
2025	0.00	17.83	17.83
2026	0.67	17.70	18.37
2027	1.54	17.77	19.32
2028	2.56	19.01	21.58
2029	4.01	19.77	23.79
2030	5.15	20.47	25.62
2031	6.42	21.05	27.47
10-Year Average	2.04	19.96	21.99
Levelized	2.10	26.14	28.24

INCREMENTAL
ANNUAL BILL IMPACT: Recommended Plan

Year	Fixed Costs Annual Bill Impact ($/1,000 kWh)	Variable Costs Annual Bill Impact ($/1,000 kWh)	Total Costs Annual Bill Impact ($/1,000 kWh)
2022	0.00	(0.00)	(0.00)
2023	0.00	0.00	0.00
2024	0.00	(0.00)	(0.00)
2025	0.00	0.00	0.00
2026	0.00	0.00	0.00
2027	0.26	(0.05)	0.21
2028	0.55	(0.10)	0.45
2029	0.80	(0.16)	0.63
2030	0.70	(0.14)	0.57
2031	0.94	(0.17)	0.78
10-Year Average	0.33	(0.06)	0.26
Levelized	0.34	(0.06)	0.27

*The projected bill impacts were calculated by using the Recommended Plan for severe Winter, but using the Business As Usual P50 load forecast.

Florida Power & Light Company
Docket No. 20220000-OT
Ten-Year Site Plan
Staff's Third Data Request
Request No. 24
Attachment 1 of 1
Tab 1 of 1

Solar PV Additions - Nameplate and Firm MW						
	Recommended Plan			Business as Usual Plan		
	Nameplate Solar PV	Firm Summer Solar PV	Firm Winter Solar PV	Nameplate Solar PV	Firm Summer Solar PV	Firm Winter Solar PV
Year	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
2022	447	190	12	447	190	12
2023	1192	528	17	1192	528	17
2024	1639	715	45	1639	715	45
2025	1490	542	88	1490	542	88
2026	596	178	35	596	178	35
2027	596	156	35	596	156	35
2028	745	195	44	745	195	44
2029	894	190	53	894	190	53
2030	894	58	53	894	58	53
2031	969	63	57	969	58	53

Florida Counties by FPL As-Available Price Zone

Northwest	**Northeast**	**West**
Walton	Duval	Hendry
Escambia	Alachua	Highlands
Bay	Bradford	Glades
Holmes	Nassau	Sarasota
Okaloosa	Columbia	Lee
Washington	Indian River	Desoto
Santa Rosa	Brevard	Collier
Calhoun	Martin	Manatee
Jackson	St. Lucie	Charlotte
	Baker	
	Volusia	**Southeast**
	Clay	Palm Beach
	Seminole	Broward
	Union	
	St. Johns	**South**
	Putnam	Dade
	Flagler	Monroe
	Suwannee	
	Okeechobee	

Florida Power & Light

Geographic Zones for As-Available Energy Cost Calculations