

ORIGINAL

TAMPA ELECTRIC COMPANY  
DOCKET NO. 990001-EI  
FILED: 10/1/99

1                   BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

2                               PREPARED DIRECT TESTIMONY

3   OF

4   CHARLES R. BLACK  
5

6   Q.   Please state your name, address, occupation and employer.

7  
8   A.   My name is Charles R. Black. My business address is 702  
9       North Franklin Street, Tampa, Florida 33602. I am Vice  
10      President-Energy Supply for Tampa Electric Company  
11      ("Tampa Electric" or "company").

12  
13   Q.   Please provide a brief outline of your educational  
14      background and business experience.

15  
16   A.   I graduated from the University of South Florida in  
17      August 1973 with a Bachelor of Science degree in  
18      Engineering, majoring in Chemical Engineering. I am a  
19      Registered Professional Engineer in the State of Florida.  
20      I began my career with Tampa Electric in September 1973  
21      as a staff engineer in the Production Department.  
22      Between 1973 and 1989, I held various engineering and  
23      management positions in the Production Department, Power  
24      Plant Engineering Department, and the Budget Department.

DOCUMENT NUMBER-DATE  
11906 OCT-1 8  
FPSC-RECORDS/REPORTING

1 In March of 1989, I joined our affiliated company, TECO  
2 Power Services as Director Engineering and Construction.  
3 In December of 1990, I was elected Vice President of  
4 Engineering and Construction. In December of 1991, I  
5 returned to Tampa Electric as Vice President of Project  
6 Management. In December 1996 I assumed my present role  
7 as Vice President, Energy Supply.

8  
9 **Q.** Have you previously testified before this Commission?

10  
11 **A.** Yes. I testified in support of the prudence of Polk Unit  
12 One in Docket No. 960409-EI and in support of cost  
13 estimates associated with the proposed flue gas  
14 desulfurization system in Docket No. 980693-EI.

15  
16 **Q.** What is the purpose of your testimony in this proceeding?

17  
18 **A.** The purpose of my testimony is to provide support for a  
19 Commission determination that Tampa Electric had in place  
20 reasonable procedures and requirements that should have  
21 prevented the accident during the maintenance outage of  
22 F. J. Gannon ("Gannon") Unit 6, and the company acted  
23 prudently in its actions following the accident on April  
24 8, 1999. I will provide an overview of events related to  
25 the Gannon Unit 6 accident, an overview of system

1 recovery for Gannon Units 1 through 6, and a current  
2 assessment of Gannon Unit 6.

3  
4 **Q.** Have you prepared an exhibit to support your testimony?

5  
6 **A.** Yes I have. My Exhibit No. \_\_\_\_ (CRB-1) was prepared  
7 under my direction and supervision and consists of two  
8 documents.

9  
10 **Q.** Please describe the Gannon Unit 6 accident.

11  
12 **A.** On April 8, 1999, an explosion occurred on the  
13 turbine/generator floor at Tampa Electric's Gannon Unit  
14 6, a 375-megawatt generator. At the time of the  
15 accident, Gannon Unit 6 was not operational and was in  
16 the third week of an eight week planned maintenance  
17 outage. The accident occurred as hydrogen, used to cool  
18 the unit's generator during normal operations, exploded  
19 when one of four generator maintenance access covers was  
20 removed prior to purging the hydrogen from the unit. The  
21 accident resulted in three fatalities and injuries to 45  
22 employees and sub-contractors. The explosion damaged  
23 Units 5 and 6 and caused the immediate emergency shutdown  
24 of the five Gannon units that were operating at the time  
25 of the accident.

1 Q. Does Tampa Electric have sufficient safety practices and  
2 procedures in place to prevent against accidents such as  
3 the one which occurred at Gannon Station?  
4

5 A. Yes. One of the company's highest priorities is to  
6 provide a safe and healthy work environment for all  
7 employees and assure that employees have the knowledge,  
8 skills, and equipment to perform their jobs safely. The  
9 company has in place rigorous and specific procedures for  
10 maintenance outage activities. These safety procedures  
11 are designed to be in compliance with OSHA and industry  
12 standards, including ANSI standards, National Electric  
13 Safety Code and others.  
14

15 In this case, prior to beginning any work, the company's  
16 safe work practices require the supervisor of the crew to  
17 conduct a job briefing with the crew before the start of  
18 each job. The briefing requires the supervisor to cover  
19 the hazards associated with the job, work procedures,  
20 special precautions, energy source controls, and personal  
21 protective equipment requirements for maintenance  
22 procedures that are to be performed.  
23

24 Further, the company's safe work practices require that  
25 before work is performed on a generator it should have

1           been purged of hydrogen and then tested and proper  
2           clearance should have been obtained in accordance with  
3           the tagging procedures applicable to Energy Supply.  
4           Employees undergo safety training routinely on all topics  
5           associated with the various power plant maintenance  
6           activities and the company's safe work practices.

7  
8   **Q.**   Was the crew assigned to Gannon Unit 6 experienced and  
9           trained?

10  
11   **A.**   Yes.   The crew foreman and his maintenance crew were  
12           highly experienced.  All but one member of the crew were  
13           journeyman power plant mechanics who had worked together  
14           for many years.  The journeymen were in a specially  
15           designated job classification that denoted and provided  
16           extra compensation for their specialized skills in heavy-  
17           duty power plant maintenance work.  As of April 1999, the  
18           number of years that the members of the crew had  
19           performed in the classification of power plant  
20           maintenance mechanic ranged from 6.5 years to 21 years.  
21           For the crew assigned to this job, the work they were to  
22           perform on Unit 6 was routine.

23  
24   **Q.**   Did Tampa Electric have training procedures in place to  
25           ensure employees are properly trained?

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**A.** Yes. Company employees are provided various forms of training. Core training includes annual safety and environmental training. This training covers tagging procedures as well as confined space procedures and hazardous material training. The company also provides periodic CPR and first-aid training. In addition to core training, the company requires periodic refresher training, safety meetings, and on-the-job training.

**Q.** Was the employee who removed the access cover of the generator properly trained?

**A.** Yes. The employee who removed the access cover was a production apprentice for six years. He had completed an outage at the company's Big Bend facility before he was assigned to the outage at Gannon. He had attended an annual two-day, safety and environmental refresher-training program and tagging procedures training within the year prior to the accident and other safety programs on specific topics throughout the years. He had extensive hours of on-the-job training and routinely attended safety meetings.

1 Q. Who made the decision to open the access cover of the  
2 generator?

3  
4 A. From the best the company has ascertained, the employee  
5 who opened the access cover made the decision based on  
6 his belief that it was safe to do so.

7  
8 Q. Did the company act prudently in performing maintenance  
9 on Gannon Unit 6 on April 8, 1999?

10  
11 A. Yes. The maintenance being performed when the explosion  
12 occurred was planned spring maintenance. Gannon Unit 6  
13 was taken out of service on March 26, 1999 for inspection  
14 and maintenance of the boiler, turbine and generator.  
15 Details of the planned maintenance activities have been  
16 provided to Staff in response to Interrogatory No. 35b  
17 and are included as Document 1 of my exhibit. This type  
18 of scheduled major maintenance is typically performed  
19 routinely in preparation for high system demands in the  
20 summer months. Gannon Unit 6 was originally scheduled to  
21 return to service on May 23, 1999.

22  
23 Q. Once the explosion occurred at Unit 6, how were Units 1  
24 through 5 impacted?

25

1    **A.**    Due to the quick response of the Gannon Station employees  
2           operating Units 1 through 5, they were able to implement  
3           a safe and orderly shutdown procedure and the company was  
4           able to minimize the amount of damage to the other units.  
5           Unit 5 sustained damage primarily due to the explosion  
6           from Unit 6 while the other four units suffered little or  
7           no damage.   Units 1 through 3 went back in service on  
8           April 10 and Unit 4 was back in service on April 12.  
9           Unit 5 was returned to service on May 16.

10

11   **Q.**    Please describe the procedures Tampa Electric employed  
12           for overall system restoration as a result of the Gannon  
13           6 accident.

14

15   **A.**    The company's immediate response and concern was for the  
16           safety of employees.   After the explosion, the units were  
17           shutdown without any significant problems.   The operators  
18           initially purged the hydrogen from the remaining  
19           generators to minimize the risk of any further fire or  
20           explosions.   To ensure the units could be returned to  
21           service safely, the damage assessment teams from within  
22           and outside the company began inspections as early as two  
23           hours after the accident.   Units 1 though 4 were safely  
24           returned to service as soon as these inspections were  
25           complete.



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Gannon Unit 5 received more direct physical damage to the electrical equipment since it is located adjacent to Unit 6. All safety systems worked properly and the operators responded to ensure the safety of the employees and equipment. No damages occurred to the boiler or turbine as a result of the explosion. Detailed inspections were made on all of the equipment and structures immediately following the accident. Motors, switchgear, cables, and other equipment were repaired or sent out for inspection and cleaning. Equipment was secured to minimize damage from the elements. Details of the additional maintenance and repair activities beyond those contemplated in the outage have been provided to Staff in response to Interrogatory No. 35c and is provided in Document 2 of my exhibit.

**Q.** What is the current status and assessment of Gannon Unit 6?

**A.** Gannon Unit 6 returned to full service on June 22, 1999. All of the originally planned maintenance was performed in addition to those activities that needed to be performed as the result of the explosion. Since the unit was returned to service, it has operated normally.

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Q. Please summarize your testimony.

A. My testimony demonstrates that Tampa Electric Company took reasonable precautions to guard against an explosion of hydrogen gas during the maintenance outage of Gannon Unit 6, and the company acted prudently in performing maintenance on April 8, 1999. The company had sufficient safety practices and procedures in place to prevent against accidents such as the one that occurred. The crew assigned to Gannon Unit 6 were experienced and trained. The employee who opened the access cover made the decision based on his belief that it was safe to do so. After the accident occurred, the company was able to restore its system by taking prudent and reasonable actions to ensure the safety of its employees while completing all necessary maintenance and restoration of its units.

Q. Does this conclude your testimony?

A. Yes, it does.

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- 35b.** Please list all maintenance activities that TECO, prior to the explosion, expected to be performed on Gannon Unit 6 before the unit could be brought back on-line. Please provide a timeline showing when these maintenance activities would have been performed if the explosion had not occurred.
- A.** Attached is "Gannon Unit #6 1999 Major Outage Original Plan March 26 through May 23," a list of maintenance activities with completion dates that TECO, prior to the explosion, expected to perform on Gannon Unit 6 before the unit could be brought back on-line.

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**GANNON UNIT #6 1999 MAJOR OUTAGE  
ORIGINAL PLAN\*  
March 26<sup>th</sup> through May 23<sup>rd</sup>**

Unit off line .....	March 26
Boiler cool down .....	March 27
Open boiler .....	March 27
Turbine cooldown .....	April 05
Boiler de-slag .....	March 27 - March 29
Precipitator wash .....	March 30 - April 02
Ash removal (hoppers, nose void, penthouse) .....	March 30 - April 03
Slag tank (inspect) .....	March 30 - April 03
Remove turbine insulation .....	April 06
HP turbine disassembly .....	April 06
Generator disassembly .....	April 06
Air preheater (unload baskets) .....	April 06 - April 09
Boiler inspection .....	April 07
Chip & clean furnace floor .....	April 07 - April 10
External burner repairs .....	April 09 - May 18
Main pass pressure wash .....	April 10 - April 11
Back pass wash .....	April 10 - April 14
Air preheater (inspect & repair) .....	April 10 - April ?
Turbine valve disassembly .....	April 12
Install full boiler scaffold .....	April 12 - April 17
Slag tank neck replacement .....	April 14 - May 14
Back pass repairs .....	April 15 - April 27
First radiant bends replacement .....	April 18 - May 13
Lower furnace tube repair .....	April 18 - April 22
Internal burner repairs .....	April 18 - May 15
Nose arch sandblast .....	April 23
Sandblast for weld overlay .....	April 23 - April 25
Vacuum furnace floor .....	April 26
Install nose void studs .....	April 27 - May 1
Lower furnace weld overlay .....	April 27 - May 1
Stud furnace floor .....	May 02 - May 13
Install generator rotor .....	May 06
Install HP turbine rotor .....	May 07
Reassemble reheat stop valves .....	May 07

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Reassemble throttle valves . . . . .	May 10
Reheat hydro . . . . .	May 12
Repairs from reheat hydro . . . . .	May 13
Main steam hydro . . . . .	May 14
Repairs from main steam hydro . . . . .	May 14
Seal oil system in service . . . . .	May 15
Initial generator air test off turning gear . . . . .	May 15
Slag tank (check out & repair) . . . . .	May 15 – May 20
Move boiler internal scaffold . . . . .	May 15 – May 17
Turbine oil flush . . . . .	May 17
Close boiler for air test . . . . .	May 17
Boiler air test . . . . .	May 18
Vacuum & clean debris from furnace floor . . . . .	May 19
Repairs from boiler air test . . . . .	May 19 – May 21
Install furnace refractory . . . . .	May 20
Turbine on turning gear . . . . .	May 20
Final generator air test . . . . .	May 20
Install turbine & turbine valve insulation . . . . .	May 20
Stroke turbine valves . . . . .	May 20
Install slag tank refractory . . . . .	May 21
Furnace refractory air cure . . . . .	May 22 (24 hrs)
Close boiler for service . . . . .	May 22
Turbine roll on steam . . . . .	May 22
Unit start up . . . . .	May 22
Firm load . . . . .	May 23 (PM)

\* This is the original plan and was subject to change as work progresses. In the case of the Generator disassembly, such activity was not to occur until after April 6 due to difficulty in obtaining satisfactory electrical test results.

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- 35c.** Please list all additional maintenance and repair activities, beyond those activities listed in response to Interrogatory No. 35b, that TECO performed due to the explosion to bring Gannon Unit 6 back on-line.
- A.** Attached is Tampa Electric's – Work Management System: *Gannon Incident Related Work* (18614 – Opened after 4/8/99). It is a list of additional maintenance and repair activities, beyond those listed in response to Interrogatory No. 35b, that TECO performed due to the explosion to bring Gannon Unit 6 back on-line. This list does not include repairs to other units or additional Gannon Unit 6 repairs not critical to getting Unit 6 back on line.



# WorkMan- Work Management System

## Gannon Incident Related Work (18614 - Opened after 4/8/99)

Work Order	Task	Open Date	Completion Date	Description
1326829	20	04/10/1999	06/02/1999	UNIT 6 VENT FAN ON NORTH WALL NEEDS TO BE SECURED IT HAS BEEN SHAKEN LOOSE FROM THE EXPLOSION
	33	04/10/1999	05/29/1999	TRANSITE CLEANUP - PLEASE CLEANUP ALL TRANSITE FROM IMMEDIATE AREA OF EXPLOSION AND PARKING LOT AREA FOR 5 AND 6 AREAS - 1-4 WILL BE COVERED UNDER TASK-3
	35	04/10/1999	04/23/1999	TURBINE BUILDING VENTILATION DAMPERS -THE TURBINE BUILDING DAMPERS BETWEEN THE 5 AND 6 UNITS ARE DAMAGED . SECURE REPAIR AND REPLACE THE DAMPERS AND DAMPER ACTUATERS . THE ONE CLOSEST TO THE UNIT 6 IS IN DANGER OF FALLING THROUGH THE ROOF TO THE TURBINE DECK.
	38	04/11/1999	04/15/1999	SERVICE AIR LINE - PLEASE FIX THE SERVICE AIR LINE THAT PENETRATES THE EAST WALL ON UNIT 6, IT HAS BEEN SEVERED BY FALLING TRANSITE DURING DURING THE EXPLOSION.
	53	04/11/1999	05/29/1999	UNITS 5& 6 I/O ROOM - EXTENSIVE DAMAGE, INSPECT CLEAN AND REPAIR AS NECESSARY.
	54	04/11/1999	05/19/1999	UNITS 5&6 I/O ROOM - REPAIR AS NECESSARY EQUIPMENT IN THE I/O ROOM . INITIALLY NEED TO GET CONTROL ROOM INDICATION OF UNIT 5 BOILER TUBE METAL AND STEAM DRUM TEMPERATURES.
	57	04/11/1999	05/19/1999	UNIT 5 & 6 UPS ROOM - INSPECT, CLEAN AND REPAIR AS NECESSARY.
	127	04/14/1999	05/26/1999	UNITS #1 THRU #6 PROVIDE MANPOWER TO ASSIST WITH CLEANING OF UNITS # 1 THRU #6 AS NECESSARY.
	128	04/14/1999	05/04/1999	UNITS # 5 & #6 - PROVIDE MANPOWER TO ASSIST WITH CLEAN-UP OF UNITS #5 & # 6 AS NECESSARY.
	134	04/14/1999	05/04/1999	UNIT #6 - PLEASE REPLACE THE EMPTY CO2 BOTTLES WITH FULL BOTTLES. THE NEW BOTTLES ARE LOCATED ON THE GROUND FLOOR UNDER #1 AIR EJECTOR. SET UP TOOLS AND BREAK THE HOSE FITTINGS FROM THE BOTTLES. RECONNECT THE NEW BOTTLES TO THE MANIFOLD.
	148	04/15/1999	06/02/1999	UNIT #6 A-B-C- PRIMARY AIR FANS - EACH FAN HAS DUST AND DEBRIS ON THE WHEEL & HOUSING THAT NEEDS TO BE CLEANED. VACUUM EACH PRIMARY AIR FAN WHEEL, VEINS AND HOUSING USE HEPA FILTER VACUUM METHOD.
	153	04/16/1999	05/27/1999	UNIT #6 - PROVIDE SERVICES TO CHECK OUT THE DELUGE SYSTEMS ON TRANSFORMER AND BOILER FEED PUMP.
				* SERVICES WERE PROVIDED FOR THE CHECK OUT OF THE SYSTEM AT NO COST*
	154	04/16/1999	06/15/1999	UNIT #6 C PULVERIZER - FIRE PROTECTION PANEL JUST NORTH OF "C" MILL IS IN ALARM. THIS IS THE PANEL FOR THE BFP. THERE IS NO WATER PRESSURE AT THIS PANEL AT THIS TIME. THIS MAY BE WHY IT IS IN ALARM. TROUBLESHOOT AND REPAIR AS NEEDED.

EXHIBIT NO. \_\_\_\_\_  
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Work Order	Task	Open Date	Completion Date	Description
1326829	155	04/16/1999	05/24/1999	UNIT #6 TURBINE OIL RESERVOIR - THERE IS A DAMAGED GAUGE ON TOP OF THE TURBINE LUBE OIL TANK. THE GAUGE JUST AS YOU GET TO THE TOP OF THE STAIRS IS BAD. IT IS A 0-160 PSI ASHCROFT. 600-4948.
	157	04/16/1999	04/27/1999	UNIT #6 - REPAIR THE DAMAGED GRATING WEST OF THE GENERATOR.
	158	04/16/1999	04/29/1999	UNIT #6 - REPAIR DAMAGED CHECKER PLATE ON THE NORTHEAST SIDE OF THE TURBINE.
	164	04/17/1999	06/14/1999	UNIT #6 P. A. FAN "B" - SEND MOTOR OU_T TO BE CLEANED AND INSPECTED, REINSTALL WHEN MOTOR IS RETURNED.
	165	04/17/1999	06/08/1999	UNIT #6 P. A. FAN "B" - BREAK MOTOR COUPLING TO ALLOW MOTOR TO BE SENT OU_T FOR INSPECTION. WHEN MOTOR IS RETURNED MAKE ALIGNMENT & MAKE - UP COUPLING.
	166	04/17/1999	06/23/1999	UNIT #6 "B" P. A. FAN - PROVIDE SERVICES TO CLEAN & INSPECT MOTOR FOR POSSIBLE DAMAGE.
	167	04/17/1999	06/14/1999	UNIT #6 P. A. FAN "C" - SEND MOTOR OU_T TO BE CLEANED AND INSPECTED. REINSTALL WHEN MOTOR IS RETURNED.
	168	04/17/1999	06/07/1999	UNIT #6 P. A. FAN "C" - BREAK MOTOR COUPLING TO ALLOW MOTOR TO BE SENT OU_T FOR REPAIRS. WHEN MOTOR IS RETURNED MAKE MOTOR ALIGNMENT AND MAKE UP COUPLING.
	169	04/17/1999	06/23/1999	UNIT #6 P. A. FAN "C" - PROVIDE SERVICES TO CLEAN & INSPECT MOTOR FOR POSSIBLE DAMAGE.
	170	04/17/1999	06/14/1999	UNIT #6 PULVERIZER MOTOR "A" - SEND MOTOR OU_T TO BE CLEANED AND INSPECTED. INSTALL WHEN WORK IS COMPLETED.
	171	04/17/1999	06/07/1999	UNIT # 6 PULVERIZER MOTOR "A" - BREAK MOTOR COUPLING TO ALLOW MOTOR TO BE SENT OU_T FOR REPAIRS. WHEN MOTOR IS RETURNED MAKE MOTOR ALIGNMENT & MAKE UP COUPLING.
	172	04/17/1999	06/06/1999	UNIT #6 PULVERIZER MOTOR "B" - PROVIDE SERVICES TO CLEAN & INSPECT MOTOR FOR POSSIBLE DAMAGE.
	174	04/17/1999	04/27/1999	TURBINE ROOM CRANE - BUILD SCAFFOLD ON THE NORTH END OF THE OVERHEAD CRANE FOR EME TO MAKE ELECTRICAL RAIL REPAIRS. REMOVE SCAFFOLD WHEN REPAIRS HAVE BEEN COMPLETED.
	176	04/17/1999	06/23/1999	TURBINE ROOM CRANE RAILS - REPAIR ELECTRICAL CRANE RAILS OVER #5 & #6 UNITS AS NECESSARY.
	187	04/19/1999	06/04/1999	UNIT #6 TURBINE STEAM LINES - INSPECT (BOROSCOPE) THE INTERNALS OF THE STEAM LINES AT THE TURBINE THAT WERE OPEN AT THE TIME OF THE EXPLOSION. CLEAN OU_T THE LINES AS NECESSARY.
	189	04/19/1999	06/21/1999	UNIT #6 STATOR COOLING PANEL - DAMAGE TO THE STATOR COOLING H2 PANELS.

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Work Order	Task	Open Date	Completion Date	Description
1326829	191	04/19/1999	05/25/1999	UNIT #6 4160 SWITCHGEAR - PROVIDE 4 ELECTRICIANS TO LABEL AND REMOVE ALL WIRE ON THE 4160 VOLT SWITCHGEAR DOORS.
	193	04/19/1999	05/14/1999	HAVE EQUIPMENT TAGGED OU_T OF SERVICE.UNITS #5 & 6 COOLING TOWERS - THE COVERS FOR THE ACID PUMP RESERVOIRS ARE MISSING. PUMPS NEED FLUSHED , OIL CHANGED . THE COVERS ARE MISSING AND NEED TO BE REPLACED. EL. 9' . WE DO NOT HAVE ANY COVERS IN STOCK. SUGGEST GOING TO FAB SHOP AND SHEARING SOME 1/4" S/S PLATE FOR THE COVERS. THEN CUT AND INSTALL SOME FOAM OR RUBBER GASKET MATERIAL FOR SEAL.
	194	04/19/1999	05/10/1999	UNITS #5 & 6 COOLING TOWERS - THE 2" PVC PROTECTIVE PIPE IS BROKEN AT THE PUMPS DISCHARGE AND THE JUNCTION BOX BEFORE IT GOES VERTICAL UP THE SIDE OF THE BUILDING, ALSO 1/2" POLY TUBING NEEDS REPLACED FROM PUMP DISCHARGE TO THE COOLING TOWERS. REPLACE THE BOWL ON THE EMERGENCY EYE WASH STATION. EL. 9'
	196	04/19/1999	09/10/1999	UNITS #5 & 6 COOLING TOWER ACID PUMPS - LIGHTING OVER THE COOLING TOWER ACID PUMP CONTAINMENT AREA NEEDS REPAIRED/REPLACED. EL9'
	197	04/19/1999	05/10/1999	UNIT #6 COOLING TOWER ACID SYSTEM - REPAIR/REPLACE THE 2" PVC BROKEN AT THE JUNCTION BOX BOTH SIDES, THE 2" PVC BROKEN AT THE TOWER FEED BOX, 2" PVC JUST EAST OF THE JUNCTION BOX HAS DROPPED DOWN CAUSING A SAG IN THE LINE, IT NEEDS TO BE REATTACHED TO BRACES. (THESE REPAIRS ARE LOCATED ON THE TURBINE ROOM ROOF SOU_TH OF #6 COOLING TOWER. ALSO REPAIR/REPLACE THE 2" PVC BROKEN AT THE JUNCTION BOX (THIS JOB IS LOCATED ON THE TURBINE ROOM ROOF BETWEEN #5 & #6 COOLING TOWERS.
	199	04/19/1999	06/17/1999	UNIT #6 - ASSIST PDS AND DUDLEY EAGER AS NECESSARY TO HANDLE, REMOVE & INSTALL NEW OR REBUILT CIRCUIT BREAKERS IN #6 SWITCHGEAR. DETERMINATE WIRES FOR BROKEN RELAYS, RETERMINATE AFTER REPAIRS ARE COMPLETED.
	203	04/20/1999	06/17/1999	UNIT #6 HYDROGEN PANEL - THE ENGRAVED LENSES WERE BLOWN OFF THE TWO ANNUNCIATOR PANELS IN THE HYDROGEN PANEL. PURCHASE REPLACEMENT LENSES AND ANY OTHER COMPONENTS THAT MIGHT HAVE BEEN DAMAGED.FUNCTIONALLY CHECK OU_T PANEL FOR ANY OTHER DAMAGE.
	205	04/20/1999	05/28/1999	UNIT #6 BOILER FEED PUMP/TURBINE ANNUNCIATOR - INSPECT, CLEAN , TEST & REPAIR ANY PROBLEMS FOUND RELATED TO THE EXPLOSION, ALSO REPAIR & CALIBRATE GAUGES & SWITCHES AS PER J. WILLIAMS.
	208	04/20/1999	06/11/1999	UNIT #6 MAIN TURBINE - REPAIR & CALIBRATE INSTRUMENTATION AS NECESSARY (GAUGES & SWITCHES) AS PER J. WILLIAMS
	209	04/20/1999	06/15/1999	UNIT #6 GENERATOR - REPAIR & CALIBRATE INSTRUMENTATION AS NECESSARY (GAUGES & SWITCHES), AS PER J. WILLIAMS
	210	04/20/1999	06/17/1999	UNIT #6 BOILER FEED PUMP TURBINE - REPAIR & CALIBRATE GAUGES & SWITCHES AS NECESSARY AS PER J. WILLIAMS.
	211	04/20/1999	06/17/1999	UNIT #6 GENERATOR HYDROGEN SEAL OIL SYSTEM - REPAIR/ CALIBRATE GAUGES AND SWITCHES ON THE SEAL OIL SYSTEM.

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1326829	212	04/20/1999	06/17/1999	UNIT #6 GENERATOR STATOR WATER COOLING SYSTEM - REPAIR & CALIBRATE STATOR WATER SYSTEM INSTRUMENTATION GAUGE AND SWITCHES.
	223	04/20/1999	05/06/1999	UNIT #6 A-B-C- PRIMARY AIR FANS - EACH FAN HAS DUST AND DEBRIS ON THE WHEEL & HOUSING THAT NEEDS TO BE CLEANED. VACUUM EACH PRIMARY AIR FAN WHEEL, VEINS AND HOUSING USE HEPA FILTER VACUUM METHOD.
	228	04/21/1999	06/17/1999	# 6 4160 VOLT BREAKERS & #3 4160 V BREAKERS. MOVE THE BREAKERS FROM THE THIRD FLOOR TO THE FIRST FLOOR THERE WILL BE A TRUCK PROVIDED TO TRANSPORT THE BREAKERS. LIFTING RIG IS AT THE ELECTRIC SHOP. USING A FORK LIFT TRANSPORT THE BREAKERS TO THE WAREHOUSE TO BE PLACED INSPECIAL PROJECTS.
	243	04/23/1999	05/24/1999	#6 BOILER IGNITOR CONTROLS - REPAIR/REPLACED DAMAGED IGNITOR CONTROL RELAYS AS NECESSARY TO RETURN SYSTEM TO OPERATION
	251	04/26/1999	09/17/1999	UNIT 6 "A" P. A. FAN MOTOR - PROVIDE SERVICES TO CLEAN & INSPECT MOTOR FOR POSSIBLE DAMAGE.
	252	04/26/1999	06/03/1999	UNIT 6C PULV -PROVIDE SERVICES TO CLEAN & INSPECT MOTOR FOR POSSIBLE DAMAGE.
	253	04/26/1999	06/04/1999	UNIT #6 - REPLACE H. P. SHELL INSULATION BLANKETS THAT ARE DAMAGED OR MISSING DUE TO THE INCIDENT.
	254	04/26/1999	09/14/1999	UNIT # 6 PULV. MOTOR "C" - BREAK MOTOR COUPLING TO ALLOW MOTOR TO BE SENT OUT FOR INSPECTION. WHEN MOTOR IS RETURNED, MAKE ALIGNMENT AND MAKE-UP COUPLING.
	255	04/26/1999	06/07/1999	UNIT #6 "A" P. A. FAN MOTOR - BREAK COUPLING TO ALLOW MOTOR TO BE SENT OUT FOR INSPECTION. WHEN MOTOR IS RETURNED, MAKE COUPLING ALIGNMENT & MAKE-UP COUPLING.
	265	04/26/1999	05/28/1999	UNIT #6 PULVERIZERS ANNUNCIATOR PANEL - INSPECT , CLEAN , TEST & REPAIR ANY PROBLEMS FOUND RELATED TO THE EXPLOSION.
	266	04/26/1999	06/09/1999	UNIT #6 "A" CONDENSATE PUMP MOTOR - REMOVE MOTOR AND SEND TO T. A. W. FOR INSPECTION/REPAIRS. WHEN MOTOR IS RETURNED REINSTALL ON PUMP.
	267	04/26/1999	06/10/1999	UNIT #6 "A" CONDENSATE PUMP MOTOR - UNLOAD MECH. SEAL & BREAK COUPLING TO ALLOW MOTOR TO BE REMOVED. WHEN MOTOR IS RETURNED ALIGN. MOTOR , MAKE - UP COUPLING AND SET MECH. SEAL.
	268	04/26/1999	06/08/1999	UNIT #6 "A" CONDENSATE PUMP MOTOR - PROVIDE SERVICES TO CLEAN & INSPECT MOTOR FOR POSSIBLE DAMAGE.
	269	04/26/1999	06/09/1999	UNIT #6 "B" CONDENSATE PUMP MOTOR - REMOVE MOTOR AND SEND TO T. A. W. FOR INSPECTION/REPAIRS. WHEN MOTOR IS RETURNED, REINSTALL ON PUMP.
	270	04/26/1999	06/14/1999	UNIT #6 "B" CONDENSATE PUMP MOTOR - UNLOAD MECH. SEAL & BREAK COUPLING TO ALLOW MOTOR TO BE REMOVED. WHEN MOTOR IS RETURNED ALIGN. MOTOR, MAKE - UP COUPLING AND SET MECH. SEAL.

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1326829	271	04/26/1999	06/08/1999	UNIT #6 "B" CONDENSATE PUMP MOTOR - PROVIDE SERVICES TO CLEAN & INSPECT MOTOR FOR POSSIBLE DAMAGE.
	305	05/10/1999	06/04/1999	UNITS #5 & #6 HYDROGEN HEADER - HEADER HAS PULLED AWAY FROM THE STRUCTURE ABOVE THE NORTH FLOOD WALL FROM BEHIND #5 TRANSFORMER TO UNIT #6. CUT HOLES IN THE RESILITE SIDING AND REATTACH HEADER SUPPORT BRACKETS AND HEADER TO THE STEEL STRUCTURE. HEADER RUNS FROM BEHIND #5 TRANSFORMER, RUNS EAST ABOVE THE RAILROAD DOOR, CONTINUES BEHIND #6 TRANSFORMER AND PENETRATES BACK THROUGH THE RESILITE WALL AT #6 UNIT. IF FURTHER DETAILS ARE REQUIRED, CONTACT W. CROWLEY EXT. 35-443.
	306	05/10/1999	06/14/1999	UNITS #5 & #6 HYDROGEN HEADER - HEADER HAS PULLED AWAY FROM THE STRUCTURE ABOVE THE NORTH FLOOD WALL FROM BEHIND #5 TRANSFORMER TO UNIT #6. MAKE WELD CONNECTION ON HYDROGEN HEADER SOUTH OF #5 TRANSFORMER. CUT AND CAP THE HEADER BETWEEN #5 & #6 UNIT TO ALLOW #5 UNIT TO BE CHARGED AND PURGED. IF FURTHER DETAILS ARE NEEDED CONTACT W. CROWLEY AT EXT. 35-443.
	308	05/12/1999	05/13/1999	UNIT #5 & #6 AIR COMPRESSORS - 2 MAJOR PLANT COMPRESSORS HAVE NOT BEEN ABLE TO RUN DUE TO DAMAGES ON THE UNIT #6 POWER DISTRIBUTION EQUIPMENT ( WHERE THE COMPRESSORS POWER ORIGINATES FROM ), SINCE ONE OF THESE COMPRESSORS IS NECESSARY TO OPERATE UNIT #5, TEMPORARY FEEDS & EQUIPMENT MUST BE INSTALLED UNTIL REPAIRS ARE COMPLETED. INSTALL & REMOVE AS REQUIRED.
	315	05/18/1999	06/09/1999	#6 GENERATOR ACCESS COVER. PLEASE FABRICATE A NEW ACCESS COVER TO REPLACE THE ONE THAT WAS REMOVED DURING THE EXPLOSION. GANNON MACHINE SHOP TO FABRICATE. SAMPLE COVER TO BE PROVIDED BY S. COMBAST. ALSO, INSTALL ONE THREADED INSERT AS DIRECTED BY SAMCOMBAST AND RETAP ALL BOLT HOLES.
	316	05/19/1999	05/25/1999	#6 GEN VAPOR EXTRACTOR- BREAK COUPLING SO ELECTRIC SHOP CAN REMOVE MOTOR FOR OVERHAUL. MAKE SHAFT ALIGNMENT WHEN MOTOR IS REPLACED.
	317	05/19/1999	06/07/1999	#6 GEN VAPOR EXTRACTOR- OVERHAUL/REPLACE MOTOR THAT WAS DAMAGED IN THE EXPLOSION.
	321	05/22/1999	05/25/1999	UNIT #6 GENERATOR- PLEASE CUT ONE PIECE OF PLATE ( 1 1/2" THICK ) LARGE ENOUGH IN DIAMETER TO FINISH MACHINING TO 20". PLATE IS LOCATED AT PLATE RACK.
	323	05/24/1999	06/12/1999	UNIT #6 - THERE ARE BURNED CABLES IN THE CABLE TRAY ABOVE THE MAIN TRANSFORMER CAUSED BY THE FIRE DURING THE INCIDENT. REMOVE BURNED CABLES AND REPLACE AS REQUIRED. DETERMINE TO & FROM LOCATION AND TERMINATE WIRES. SCAFFOLD WILL BE SET-UP AND LATER REMOVED ON WORKORDER/TASK 1326829-324.

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**WorkMan- Work Management System**  
**Gannon Incident Related Work (18614 - Opened after 4/8/99)**

Work Order	Task	Open Date	Completion Date	Description
1326829	324	05/24/1999	06/15/1999	UNIT #6 - INSTALL SCAFFOLD UNDER THE MAIN TRANSFORMER CABLE TRAY, WHERE CABLES HAVE BEEN DAMAGED. REMOVE SCAFFOLD WHEN REPAIRS ON WORKORDER/TASK 1326829-323 HAVE BEEN COMPLETED.
	336	06/01/1999	06/12/1999	UNIT #6 - REMOVE & INSTALL #6 A & #6B SUBSTATION 480 VOLT BREAKERS AS REQUIRED. THESE BREAKERS WERE DAMAGED DURING INCIDENT.
	337	06/01/1999	06/12/1999	UNIT #6 - CLEAN & REPAIR #6A & #6B SUBSTATION 480 VOLT BREAKERS AS REQUIRED. THESE BREAKERS WERE DAMAGED DURING INCIDENT.
				GPR 48159            N66253
	338	06/02/1999	06/17/1999	UNIT #6 L. P. TURBINE - PLEASE CLEAN-UP INSULATION DEBRIS FOUND INSIDE THE LOW PRESS TURBINE SHELL. CONTACT LARRY CHANDLER OR GARY YERTY @ 35-129 FOR ADDITIONAL INFORMATION.
	354	06/09/1999	06/15/1999	NITROGEN HEADER - RESTORE THE NITROGEN LINES FOR THE STATION SERVICE & MAIN TRANSFORMERS THAT WERE DAMAGED DUE TO THE UNIT #6 INCIDENT.
	355	06/10/1999	06/23/1999	#6 STATION SERVICE TRANSFORMER SECONDARY FEEDER CABLES WHICH ARE IN CABLE TRAYS ABOVE THE UNIT , HAVE COME LOOSE (DUE TO THE INCIDENT ) IN THE VERTICAL SECTION THUS CREATING A STRAIN THAT COULD DAMAGE THESE CABLES. THESE CABLES NEED TO BE PULLED BACK AND RESUPPORTED WITH TIE-RAPS TO THE VERTICAL TRAY AS REQUIRED.
1329528	1	04/21/1999	06/11/1999	Provide new excitation switchgear - PO N72047
	2	04/23/1999		Provide AC and DC Bus duct sections as required for the new excitation switchgear. PO N 72391 to Powell. Technical assistance during installation also included.
	3	04/23/1999	06/23/1999	Determinate cables and bus work to Unit 6 excitation switchgear. Cables to be taped and pulled down to the cable trays. Bus work to be unbolted, shunt sections removed and flanges (ou_ter enclosure) removed. This work is in preparation to remove the excitation switchgear. Bolting, shunts, flanges and related hardware are to be bagged, identified and saved for reuse. Wiring drawings will be provided by engineering. As a minimum the DC bus section adjacent to the collector housing will be sent ou_t for rework. Remove all sections & related equipment, dispose as directed.
	4	04/27/1999	06/02/1999	UNIT #6 - PROVIDE ASSISTANCE TO E.M.E. FOR REMOVAL OF SWITCHGEAR AS REQUESTED.
	5	04/27/1999	06/18/1999	UNIT #6 - PROVIDE STRUCTURAL SERVICES FOR INSTALLATION OF SUPPORT MODIFICATIONS FOR THE NEW EQUIPMENT.
	6	04/27/1999	05/11/1999	UNIT #6 - PROVIDE ASSISTANCE TO E.M.E. FOR INSTALLATION OF NEW SWITCHGEAR AS MAY BE REQUESTED.
	9	04/27/1999	06/21/1999	UNIT #6 - PROVIDE ELECTRICAL SERVICES TO CHECK-OU_T AND START-UP OF EXCITATION SYSTEM. PROVIDE START UP SUPPORT DURING INITIAL PHASE OF PUTTING UNIT 6 IN SERVICE

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1329528	21	06/07/1999	06/17/1999	<p>Modify copper DC bus. Modification includes cutting the bus and drilling slotted holes in the bus. Bus consists of (2) - 1/2 inch X 6 inch copper busses per polarity (total 4 bars). Cut off length and hole locations will be provided by EME. Bus bars will be provided to shop by EME.</p> <p>This effort is in support the Unit 6 return to service. (TJ Tomes Ext. 46-135)</p>

**Grand Total: 79 Tasks**

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