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July 9, 2012

-VIA HAND DELIVERY -

Ms. Ann Cole, Director
Division of the Commission Clerk and Administrative Services
Florida Public Service Commission
2540 Shumard Oak Blvd
Tallahassee, FL 32399-0850

Re: Docket No. 120009-EI

Dear Ms. Cole:

Please find enclosed for filing in the above referenced docket the original and fifteen (15) copies of the rebuttal testimony and exhibits of the following Florida Power & Light Company witnesses: T. Jones; S. Sim; T. Deason, Radey Thomas Yon and Clark; J. Reed, Concentric Energy Advisors; N. Diaz, The ND2 Group, LLC; and A. Ferrer, Burns & Roe Enterprises, Inc.

If there are any questions regarding this transmittal, please contact me at 561-304-5253.

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Jones - DN 04554-12
Sim - DN 04555-12
Deason - DN 04556-12
Reed - DN 04557-12
Diaz - DN 04558-12
Ferrer - DN 04559-12

Sincerely,

Nancy Rebmith

for Bryan S. Anderson
Fla. Authorized House Counsel No. 219511
Admitted in IL, Not Admitted in FL

Enclosures
cc: Counsel for Parties of Record (w/encl.)

CERTIFICATE OF SERVICE
DOCKET NO. 120009-EI

I HEREBY CERTIFY that true and correct copies of the rebuttal testimony of T. Jones; S. Sim; T. Deason, Radey Thomas Yon and Clark; J. Reed, Concentric Energy Advisors; N. Diaz, The ND2 Group, LLC; and A. Ferrer, Burns & Roe Enterprises, Inc. were served by hand delivery* or U.S. Mail this 9th day of July, 2012 to the following:

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 120009-EI
FLORIDA POWER & LIGHT COMPANY

IN RE: NUCLEAR POWER PLANT COST RECOVERY AMOUNT TO BE RECOVERED DURING THE PERIOD JANUARY - DECEMBER 2013

REBUTTAL TESTIMONY & EXHIBITS OF:

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

REBUTTAL TESTIMONY OF TERRY O. JONES

DOCKET NO. 120009-EI

JULY 9, 2012

Q. Please state your name and business address.

A. My name is Terry Jones and my business address is 700 Universe Blvd, Juno Beach, FL 33408. I am employed by Florida Power & Light Company (FPL) as Vice President, Nuclear Power Uprate.

Q. Have you previously provided testimony in this docket?

A. Yes.

Q. What is the purpose of your rebuttal testimony?

A. My rebuttal testimony addresses the direct testimony provided by Brian Smith and William Jacobs on behalf of the Office of Public Counsel (OPC). Additionally, I respond to the testimony of Staff witnesses Lynn Fisher and David Rich.

Q. Please summarize your rebuttal testimony with respect to OPC's positions.

A. FPL is working hard to complete the EPU project and remains on track to complete the project during early 2013. Five out of eight EPU outages are now complete, and the sixth – the final outage at Turkey Point Unit 3 – is transitioning to the start-up phase. The uprate equipment already installed at the plants is working well and providing additional nuclear generation to customers. The remaining two outages will be very similar to outages already performed. With respect to engineering, engineering designs are essentially complete, with 95% of design packages complete

and approved and 99% of design packages at 90% or greater completion, in support of detailed construction planning. Additionally, on June 15th, FPL received approval of its Turkey Point License Amendment Request (LAR) satisfying the key nuclear regulatory requirements needed to operate that plant in the uprated condition.

Against this backdrop of hard work, for the third consecutive proceeding OPC claims that an arbitrary cap should be set on cost recovery for FPL's EPU project. OPC's claim should be rejected yet again because it is illegal, as our company's counsel will explain, and bad regulatory policy as other FPL witnesses testify. OPC supports its claim through a series of inaccurate and poorly supported criticisms of the EPU project. My testimony rebuts these criticisms and provides the correct information.

Q. Please summarize your rebuttal testimony with respect to the positions stated by Messrs. Fisher and Rich.

A. FPL respects and appreciates the large amount of work that the Commission's staff auditors are spending year-in and year-out to understand and to report to the Commission with respect to the EPU project.

On this occasion I respectfully but firmly disagree with some of the arguments and conclusions stated in the Internal Controls Audit Report attached to the testimony of Mr. Fisher and Mr. Rich. I disagree with their recommendation to disallow $3.5 million in costs required to repair damage to the St. Lucie Unit 2 generator stator core.

I am the manager responsible for the EPU project, and have spent my entire career in the nuclear industry performing work in and related to nuclear power plants. I am certain that FPL took every reasonable management action, and then some, to prevent damage like that which occurred to FPL's plant due to a vendor employee's error. My testimony describes those actions in detail, and FPL's position is supported by several other witnesses as well.

Staff's recommendation should not be accepted because FPL acted prudently and satisfied the prudence standard as explained by FPL witnesses Reed and Ferrer. This is demonstrated by the facts that my testimony and other FPL witnesses provide. In this instance, Staff's recommendation is based entirely on impermissible hindsight, relies on an out-of-context quotation of a nuclear safety speech given years ago by FPL witness Diaz, and does not rely on applicable commercial nuclear industry standards, as described by FPL witnesses Ferrer and Diaz.

Q. Are you sponsoring any rebuttal exhibits in this case?

A. Yes. I am sponsoring the following exhibits, which are attached to my rebuttal testimony:

- TOJ-26, Developmental References for FPL's Foreign Material Exclusion Procedure
- TOJ-27, Excerpts of DOE Documents Referred to by Staff

RESPONSE TO OPC TESTIMONY

Q. What is your reaction to the GDS recommendation to cap cost recovery for the Turkey Point uprate work at $1.6 billion?

A. GDS's recommendation should be rejected for several reasons. First, GDS's recommendation is contrary to prior Commission decisions as well as Florida statutes and the Nuclear Cost Recovery Rule for the legal reasons discussed by FPL's counsel. Second, GDS's recommendation is contrary to sound regulatory practice and policy as explained by FPL witnesses Reed and Deason in their rebuttal testimony. Third, GDS's recommendation is incorrectly premised on separating the EPU work at Turkey Point from the EPU project, of which it is only a part. Fourth, as explained by FPL witness Dr. Sim, GDS's recommendation relies on an incorrect presumption that natural gas prices and environmental compliance costs will never be higher than those included in FPL's 2012 forecasts.

Q. Did FPL's 2012 non-binding cost estimate include $1.6 billion for the Turkey Point construction work as GDS implies?

A. No, and this highlights another problem with the GDS recommendation. OPC's witnesses used an early 2012 cost forecast as the source of its $1.6 billion cost cap proposal. In contrast, the fully vetted Turkey Point estimate included in the Company's non-binding cost estimate provided in my April 27, 2012 testimony is $1.673 billion. As a result, even if the project performs consistent with the current non-binding estimate, accepting OPC's proposal could ultimately result in the

disallowance of $73 million without any finding or consideration of the prudence of the costs that have been incurred.

Q. Would FPL have undertaken the EPU project subject to a cost recovery cap as recommended by GDS?

A. Absolutely not. As explained in prior years' testimony, including that of now retired FPL president and CEO Armando Olivera, FPL's decision to undertake the EPU project relied upon the availability of the Nuclear Cost Recovery framework established by statute and Commission rule. This framework provides for recovery of all prudently incurred costs and the reporting each year of a non-binding cost estimate, along with submission of an annual feasibility analysis. Once again, no intervenor has identified a single imprudently incurred cost or disagreed with the results of FPL's EPU project feasibility analysis. Accordingly, FPL requests that the Commission apply its established standards and policy direction to this year's EPU nuclear cost recovery request, just as it has in past years.

Q. Witness Jacobs claims there are four changes to circumstances that the Commission should consider, starting with the fact that the total project cost estimate has increased. Please respond.

A. FPL has always been upfront about the fact that additional cost certainty would be available as the project progressed. In my May 2011 testimony describing the need to present the nonbinding cost estimate as a range, I stated at page 32, "However, the project is still in the design engineering phase and there remains an expected level of uncertainty with respect to project scope. Accordingly, it is only appropriate to provide the total project cost in terms of a range." Again in my March 2012

testimony on project scope continuing to evolve, I stated at page 13, "Once the modification packages are final and the work order planning is complete, the implementation scope will be fully defined allowing the final refinement of the detailed implementation cost estimates and outage schedule durations. These activities lead to increased cost certainty with the achievement of each milestone." This is hardly a change in circumstances; rather it is an unsurprising development as we near the end of such a large, complex project. The drivers of the 2012 non-binding cost estimate increase are explained in detail in my April 2012 testimony.

Q. What is your reaction to his comparison of the cost of the EPU project to the cost of new nuclear?

A. Witness Jacobs's comparison is simply wrong. As I explained in my April 2012 testimony, the EPU project is providing the equivalent output of half a new nuclear plant in about half the time and at significantly less than the estimated cost per kW installed of a new nuclear plant – a strong value proposition. The EPU project will result in nuclear generation capacity installed at a significantly lower cost per kW now as compared to a new nuclear power plant ten years from now. Of course, this includes the entire uprate project, as that is the only evaluation that matters.

As explained by Dr. Sim, witness Jacobs is comparing the "all-in" cost of the EPU project including escalation and AFUDC to the overnight cost estimate of Turkey Point 6 & 7. This is an apples-to-oranges comparison. When one compares total estimated project costs to total estimated project costs, my statement is proven accurate. The Turkey Point 6 & 7 total nonbinding cost is estimated to be $18.7

billion with an electrical output of approximately 2,200 MWe or $8,500 per KWe to be completed in 2022 and 2023 respectively, compared to the EPU Project high end nonbinding cost estimate of $3.15 billion with an electrical output of approximately 490 MWe or $6,429 per KWe to be completed in 2013, ten years earlier. Witness Jacobs improperly focuses on the Turkey Point EPU cost per kilowatt which, even using his cost value, is still less expensive than new nuclear on a cost per kilowatt basis ($7,520/kW versus $8,500/kW).

Witness Jacobs also points out that the uprated plants will have a shorter operating life than new nuclear units and therefore will have less time to "overcome the hurdle of initially high capital costs through lower fuel costs" (page 11). However, the uprated plants *have* overcome this hurdle as demonstrated by the direct testimony of FPL witness Dr. Sim in this case, which shows that completing the EPU project is cost effective in 6 out of 7 scenarios this year. Witness Jacobs's observation is without consequence or merit.

Q. Witness Jacobs also criticizes FPL's use of contingency in its non-binding cost estimates for the EPU project. Does FPL include an appropriate amount of contingency in its estimate?

A. Yes. Witness Jacobs asserts that FPL included only 0-7% contingency in its 2011 non-binding cost estimate. This assertion is not correct. As noted in my rebuttal testimony last year, it is not a contingency value; rather it simply represents the spread between the low end and high end of the 2011 non-binding cost estimate range provided in May 2011. The contingency FPL used in its May 2011 non-binding cost

estimate range was systematically comprised of (i) 2 – 5% on a line-item basis of the well defined to-go engineering, materials, and FPL internal costs; and (ii) 18 - 30% on a line-item basis of the less defined to-go construction costs. This process is more robust than assigning an arbitrary percentage value to a total cost estimate. FPL used a similar approach in its April 2012 non-binding cost estimate range. The drivers of the 2012 non-binding cost estimate increase are explained in detail in my April 2012 testimony.

Q. Witness Jacobs also questions FPL's confidence in its non-binding cost estimate range by pointing to the fact that the "spread" between the high end and the low end is slightly higher this year. Please respond.

A. The spread between the high end and the low end of the 2011 and 2012 cost estimate ranges is 6.7% (2011) and 6.6% (2012), which is not significant and in any event says nothing about FPL's confidence in its non-binding cost estimate range.

Q. As his second "changed circumstance," witness Jacobs points out that a majority of the increase is attributable to the Turkey Point uprate activities. Is it surprising that most of the cost estimate increase relates to Turkey Point work?

A. No, it is not surprising that most of the 2012 cost estimate increase relates to the Turkey Point EPU work for two reasons: first, the Turkey Point EPU work is more complicated and extensive; and second, the St. Lucie work was substantially further developed and more complete at the time the previous cost estimate was prepared.

It has been clear from the beginning that the Turkey Point EPU work would be more complicated and extensive than the St. Lucie EPU work, and thus would be more

costly. The Turkey Point operating license is based on an earlier vintage of licensing bases and thus requires more work to meet current NRC license requirements. The Turkey Point nuclear units 3 & 4 were built with a small turbine deck that is common with the Turkey Point fossil units 1 & 2; thus, the space available for upgrade of turbine related equipment is significantly less than the St. Lucie plant and costs more to perform. Further, at the time of the 2011 non-binding cost estimate, the St. Lucie EPU was more complete than Turkey Point EPU, so naturally more of the discovery in 2011 and 2012 resulting in project cost estimate increases would come from Turkey Point.

FPL has never claimed that the cost of the uprate work at each site would reflect 50% of the total project cost. What's important to the Company – and its customers – is that completion of the EPU project as a whole is projected to be cost-effective and highly beneficial for customers.

Q. Are there benefits to performing the uprate work on the Turkey Point units that are not reflected in FPL's feasibility analysis?

A. Yes. Due to the increased capacity at the Turkey Point site, the EPU project will help maintain balance between generation and load in heavily populated Southeastern Florida. Moreover, it will provide ideally-located generation without relying on natural gas or existing pipeline infrastructure. Therefore, the Turkey Point EPU generation is of critical value in maintaining reliable service – especially in the event of fossil fuel curtailment due to any cause.

Q. Could FPL extend the operating licenses for Turkey Point Units 3 & 4 beyond 2032 and 2033?

A. Yes. The NRC and the nuclear industry are currently working on a process for licensees to extend the operating license of a nuclear plant beyond 60 years. The NRC included in its final report on long-term research for fiscal year 2009: "The staff expects the regulatory process for evaluating applications for license renewal beyond 60 years to be the same as the current license renewal process. However, research may be necessary to provide additional information to aid the staff's license renewal review of structures and components for plant life extension beyond 60 years and reasonable assurance of safe plant operation during the renewal period." When appropriate, FPL will evaluate the costs and benefits of further extending the Turkey Point operating licenses.

Q. Witness Jacobs's third changed circumstance is a claim that a 2011 Bechtel report undermines certain project benefits you testified to last year. Please respond.

A. The 2011 Bechtel report to which Witness Jacobs refers has nothing to do with the fact that the EPU project was proposed, approved, and is progressing as a single project to provide FPL's customers with the benefit of additional nuclear generation and the economies of scale afforded by the project. The report from Bechtel simply points out that the Turkey Point EPU scope will require substantially more pipe, cable, valves, etc. than the St. Lucie EPU scope. But I have stated many times that the two plants were significantly different and that they would require different amounts of work and materials. This has been readily apparent to anyone who has

visited the sites, as the FPSC internal controls auditors can confirm. Witness Jacobs has not been to the Turkey Point or St. Lucie EPU sites.

As summarized by Witness Jacobs, in 2011 I testified that performing the EPU work on all four units at the two plants would allow the project team to share resources and lessons learned thereby increasing efficiency, that engineering and construction strategy for one unit can be used to support engineering and construction for the other units, and that FPL could realize cost savings and leverage purchasing power by purchasing multiple pieces of the same equipment. Those statements – and those benefits of performing a singular EPU project – remain true regardless of how many feet of pipe Turkey Point requires.

Specific examples of the benefits of performing the St. Lucie and Turkey Point Extended Power Uprates simultaneously include achieving economies of scale and cost avoidance for personnel, rental and purchase of tools, materials and equipment, volume discounts on major equipment purchases and synergies through design engineering, work package planning, the sharing of lessons learned, best practices and key resources.

FPL proposed, obtained approval for, and is currently executing one EPU project. Witness Jacobs's observations regarding the cost per kilowatt of the Turkey Point work as compared to the St. Lucie work and the currently licensed operating life of

Turkey Point as compared to St. Lucie do not change the fact that completing the EPU project remains solidly cost-effective for customers.

Q. The fourth alleged "changed circumstance" relates to a draft report developed by High Bridge in 2010 to estimate a portion of the Turkey Point uprate costs. Does High Bridge's 2010 draft reflect any recent changes in the project?

A. No. This is not a changed circumstance at all. This report was provided in response to OPC discovery in 2010 (Docket 100009-EI, OPC POD-60). The fact that OPC's witness has decided to refer to it in 2012 does not indicate that anything has changed with respect to the project since the last Nuclear Cost Recovery case in 2011.

Q. Please respond to witness Jacobs's claim that FPL ignored or rejected the draft report created by High Bridge in 2010.

A. In 2009, FPL commissioned High Bridge Associates to develop a cost estimate specific to Turkey Point Unit 3 modifications for which some engineering progress had been made. FPL used the final High Bridge Unit 3 estimate for its intended purpose of challenging Bechtel's estimates for specific Unit 3 EPU scope, which High Bridge had estimated. This effort was successful in that use of the High Bridge estimate data caused Bechtel to re-evaluate and in many circumstances lower its modification estimates.

The High Bridge draft document and $1.4 billion figure referred to by Witness Jacobs included a highly conceptual assessment of the Unit 4 EPU work. This highly conceptual assessment of the Unit 4 EPU work did not have sufficient detail to be used for challenging Bechtel's modification estimates, which was the purpose of the

High Bridge engagement. Accordingly, the final report was revised by High Bridge to include only the Unit 3 EPU scope directly estimated by High Bridge. Witness Jacobs is misusing this draft document. FPL, on the other hand, used the final High Bridge report for its intended purpose of managing Bechtel costs.

Q. Witness Jacobs claims that FPL accepted High Bridge's draft estimate at a later date, pointing to February 2012 as the apparent acceptance date. Please respond.

A. Apparently Witness Jacobs has assumed that FPL somehow accepted the draft 2010 High Bridge estimate in February 2012 and applied it to FPL's April 2012 non-binding cost estimate. This simply is not the case. FPL's April 2012 revision to its non-binding cost estimate did not reflect the draft 2010 High Bridge report that included highly conceptual estimates for Turkey Point Unit 4. As explained in my testimony, FPL's April 2012 non-binding cost estimate is based on current information, actual project progress and detailed "to go" scope, and took into consideration actual expenditures to date, completed LAR analyses, essentially complete design engineering, substantially completed construction planning, partially completed outage construction implementation, performance data, discrete risks, appropriate contingency and estimated to-go costs (approximately 30% of total project remained as to-go) as of the time the estimate was developed. It is appropriate for FPL to rely on this type of to-go construction and cost project information – and not a highly conceptual draft estimate created two years ago – as support for revising its non-binding cost estimate range.

Q. Witness Jacobs cites numerous cost figures throughout his testimony that rely on an internal EPU cost analysis presented to management on March 2, 2012. Do these cost figures reflect the final, fully vetted, non-binding cost estimate range presented in your April 27, 2012 testimony?

A. No. The March 2, 2012 presentation that Witness Jacobs uses as a source for many of the cost figures cited in his testimony is a tool used by the project team to communicate with senior management regarding execution of the EPU project. It does not reflect the final, fully vetted non-binding cost estimate range presented in my April 27, 2012 testimony.

The figures in the presentation are based on estimates of scenarios still being vetted by FPL at the time of the presentation and do not include project management actions implemented by FPL subsequent to the data reflected in the presentation. Thus, the figures in the presentation do not represent FPL's view of the EPU project cost as ultimately presented in my April 27, 2012 testimony. For example, Witness Jacobs indicates the EPU cost has increased by $682 million. However, a simple comparison of the TOR-2 schedules in 2011 and 2012 – which reflect the Company's actual estimate at the time of each of those filings – reveals that the low end of the non-binding cost estimate range increased by $632 million and the high end of the range increased by $671 million.

Q. In Exhibit WRJ(FPL)-5, Witness Jacobs attempts to present cost information regarding EPU work at Turkey Point. Does WRJ(FPL)-5 accurately reflect the Turkey Point EPU costs and timing?

A. No, Exhibit WRJ(FPL)-5 does not accurately reflect the Turkey Point EPU costs and timing. For example, witness Jacobs indicates that $0 was spent on the Turkey Point EPU in 2008 and 2009; however, $42 million was actually spent in 2008 and $121 million was actually spent in 2009. Witness Jacobs also claims that "FPL's current estimate of remaining (to-go) Turkey Point costs is actually greater than FPL's original estimate of total costs" (page 16). However, as of April 30, 2012, the actual amount spent for the Turkey Point EPU was $1031 million and the to-go forecast (based on FPL's April 2012 non-binding cost estimate) was $642 million. Thus, the current estimate of remaining to-go costs does not exceed the Turkey Point original estimate of $750 million as claimed by witness Jacobs.

RESPONSE TO INTERNAL CONTROLS AUDIT TESTIMONY

Q. Are you also responding to Staff's testimony?

A. Yes. I am responding to two aspects of the Internal Controls Audit Report attached to the testimony of Mr. Fisher and Mr. Rich. I disagree with their recommendation to disallow $3.5 million in costs required to repair damage to the St. Lucie Unit 2 generator stator core and their concern surrounding Bechtel's performance.

Q. Please summarize your response to Staff's recommended disallowance.

A. Our company respectfully but firmly disagrees with their recommendation to disallow $3.5 million in costs required to repair damage to the St. Lucie Unit 2 generator stator core.

I am the manager responsible for the EPU project, and have spent my entire career in the nuclear industry performing work in and related to nuclear power plants. Based upon my 34 years of education, training, and experience focused on ensuring safe, reliable, efficient operation of U.S. military and commercial nuclear power plants, I am certain that FPL took every reasonable management action, and then some, to prevent damage like that which occurred to FPL's plant due to a vendor's employee's error. My testimony describes those actions in detail, and FPL's position is supported by several other witnesses as well.

Staff's recommended disallowance should not be accepted. Based on the facts that I and other FPL witnesses provide, FPL has satisfied the prudence standard as explained by FPL witnesses Reed and Ferrer. In this instance, Staff's recommendation is based entirely on impermissible hindsight, relies on an out-of-context quotation of a nuclear safety speech given years ago by FPL witness Diaz and an inapplicable DOE document, and does not refer to or rely upon applicable commercial nuclear generation industry standards. Regulatory policy considerations associated with Staff's recommended disallowance are addressed by Witness Deason.

Q. Please briefly summarize the personnel error that caused the $3.5 million in costs to repair the St. Lucie Unit 2 generator.

A. Siemens is the original equipment manufacturer for FPL's turbine generator equipment and the contractor FPL selected for performing the generator rewind scope of work at St. Lucie Unit 2. During the generator rewind, small tools called alignment pins are used to assist with the stacking of core iron. Inspections are

performed to ensure there is no foreign material in the generator prior to testing. Nonetheless, as described in my March 1, 2012 testimony, one of these small alignment pins was left inside the generator stator core by Siemens personnel. Required inspections failed to detect the tool. When the stator core was tested for performance, the alignment pin caused damage to the stator core iron. As a result, the replacement of some of the stator core iron was required.

Q. Was Siemens the right vendor to hire for this scope of work?

A. Yes. Siemens is highly specialized and has an excellent track record with similar work on other FPL projects. Moreover, Siemens has a robust system of practices and procedures that have resulted in successful projects over the years. FPL contracted with Siemens in 2008, which was subject to the Commission's prudence review of 2008 decisions and costs in 2009.

Q. Please describe generally the type of contract you had in place with Siemens to perform this work.

A. FPL utilized a "turnkey" contract for this scope of work, which means that FPL's role and oversight was limited once work began. This is appropriate when the vendor is highly specialized and ordinarily relied upon for its expertise. As the original equipment manufacturer of the St. Lucie Unit 2 generator, Siemens was uniquely qualified to perform the generator rewind at St. Lucie Unit 2. FPL conducted appropriate inspections and observations during the generator rewind work to verify that Siemens was working safely, following approved processes and procedures, and exhibiting good "housekeeping" practices.

Q. How did FPL assure itself that Siemens had the right processes, procedures, and controls in place before it began its work?

A. FPL took substantial steps to ensure that Siemens had robust policies and procedures in place to govern its work on the St. Lucie Unit 2 generator. For example, FPL reviewed and benchmarked Siemens's performance at other locations to validate those practices and procedures. The procedures that applied to the St. Lucie Unit 2 work were standard procedures that Siemens had used across its entire turbine generator maintenance and service business line for years without incident. No similar instances such as that which occurred at St. Lucie Unit 2 had occurred previously. To the contrary – application of Siemens' procedures had resulted in numerous successful projects without incident. This fact emphasizes that the occurrence that is the subject of Staff's recommended disallowance was absolutely unforeseeable by FPL.

Additionally, FPL reviewed and approved Siemens's procedures and work packages. FPL's review methodology is governed by FPL's Nuclear Fleet procedure NA-AA-201, which governs the review and acceptance of vendor work procedures such as those of Siemens. FPL performed the necessary reviews and approvals of dozens of Siemens's work procedures, including its foreign material exclusion (FME) procedure, all in compliance with NA-AA-201. FPL had reasonable assurance that Siemens's FME procedure was adequate based upon its similarity to FPL's station FME control procedure, which had been carefully developed by FPL, and which complies with Electric Power Research Institute (EPRI) and Institute of Nuclear

Power Operations (INPO) standards that are applicable to nuclear power plants. An excerpt from FPL's FME procedure, referencing the industry-accepted standards it relied upon, is attached as Exhibit TOJ-26. Further, the Siemens FME procedure had supported numerous other successful Siemens projects. And as explained by Witness Ferrer, both FPL's and Siemens's FME procedures also were consistent with DOE-STD-1069-94, a document cited by Staff in its report (even though these guidelines are inapplicable to nuclear power plants).

Q. Were the applicable procedures followed?

A. Yes. The key point is that the FME procedures themselves say when an operating room style of control is required and in contrast where standard craft practices are expected. The key factor in making this decision is whether equipment is open and inspectable. The St. Lucie Unit 2 generator stator was open and inspectable. And where, as here, operating room style controls are not required, procedures typically specify the need for inspections. That is the case here.

Q. Please describe the inspections that were required to be performed.

A. Numerous inspections were required by the Siemens process. First, Siemens procedure FIP-342, Electromagnetic Core Inspection states, "The first prerequisite [to electromagnetic core testing] should be a complete inspection of the stator core."

Q. Did this inspection occur?

A. Yes.

Q. What is the next procedure that required an inspection?

A. Siemens procedure FIP-340, Stator Core Loop Testing, requires a complete inspection of the stator core prior to loop testing.

Q. Did this inspection occur?

A. Yes.

Q. Did additional inspections occur?

A. Yes. Additionally, Siemens workers used compressed air to blow air through the ventilation holes to ensure they were clear.

Q. Did any of the above inspections reveal the alignment pin?

A. No. Unfortunately, despite these inspections and standard practice good housekeeping efforts, a Siemens worker failed to see the less-than three quarters inch diameter alignment pin that had been left behind in one of the more than four hundred 275 inch long ventilation holes.

Q. In your opinion, as a lifetime nuclear professional, were FPL's actions to select and supervise the actions of its contractor, Siemens, reasonable based upon the information available to FPL at the time FPL's decisions were made?

A. Yes. The management actions as I have described were reasonable. Unfortunately, despite all of these efforts, some degree of human error is unavoidable in a project of this scope and magnitude. This is one of those occasions.

Q. Please comment on Staff's reliance on the root cause analysis as a basis for its recommended disallowance?

A. Staff's recommendation does not reflect consideration of the actual management actions and decisions, or the information available to FPL at the time decisions were made. In contrast, Staff's recommended disallowance relies entirely on hindsight, which is prohibited in assessing prudence. This includes reliance upon the root cause evaluation.

Q. Why is Staff's reliance upon the root cause analysis impermissible hindsight?

A. A root cause analysis, one of the tools of the Corrective Action Program, is a backward-looking analysis to determine actions to prevent recurrence. It is not intended at all to assess the reasonableness of the actions of those involved prior to the event being analyzed. In fact, it is the incident itself that reveals the need for a particular process improvement. In this sense, it is the ultimate example of using "hindsight" to make forward-looking improvements.

Root cause analyses also, necessarily, focus on the error and apply a standard of perfection for corrective actions to ensure it will never happen again. The root cause analysis examining the Siemens error, for example, does not discuss the fact that Siemens was highly qualified for this type of work, that the workers on this particular project were very experienced, that applicable FPL and Siemens procedures were adhered to, or that the experience of both FPL and Siemens supported a determination that Siemens's procedures were adequate.

With this hindsight understanding in mind, the three root causes the report identifies are that (1) "an effective inspection was not performed by the vendor to ensure alignment pins were removed," (2) "ineffective tool control by the vendor in the work area resulted in alignment pins being unaccounted for," and (3) "alignment pins were not designed for fail-safe installation." None of the root causes or contributing causes in the report faulted FPL. Moreover, the root cause analysis in no way addressed or applied the prudence standard that my testimony has addressed.

Q. Does Staff's recommended disallowance align with the Root Cause Evaluation?

A. No. Even recognizing that the Root Cause Evaluation is a hindsight document, Staff's recommended disallowance overlooks the fact that nowhere in the root cause evaluation was any management action of FPL determined to be a root cause or a contributing cause. In contrast, the root causes and contributing causes were all attributed to Siemens.

Staff's three primary findings also do not align with the Root Cause Evaluation. Staff found that there was ineffective tool accountability, a lack of oversight, and inadequate training – and attributed each to FPL, However, the root cause evaluation does not attribute any of these issues to FPL. Rather, the Root Cause Evaluation identifies an ineffective inspection performed by Siemens, ineffective tool control by Siemens, and that alignment pins were not designed by Siemens to be fail-safe.

Q. Please respond to the assertion that there was ineffective tool accountability.

A. As described above, FPL and Siemens reasonably believed the applicable processes and controls were appropriate based on years of experience without incident and the many opportunities for effective generator inspection.

Staff states at page 31 of its report that alignment pins were not treated as multi-piece tool sets "although the tool had been in the Siemens inventory for approximately 18 months and used at other nuclear sites." The fact that the tool had been used at other nuclear sites demonstrates that they had been used before, successfully, without loss of parts or damage to equipment and without the specific multi-tool precautions that

Staff, with the benefit of hindsight, has in mind. Staff also cites the root cause for the proposition that "the risk of losing alignment pins was not recognized...even though several alignment pins had to be retrieved" during the inspection process (page 31). Again, I believe that what Staff cites for support undermines their position. It was reasonable for FPL and Siemens to rely on the inspection process to reveal any alignment pins or other tools for removal prior to generator testing. Regardless of whether the alignment pin sets were accounted for as a multi-piece tool or single tool, these inspections should have revealed the alignment pin in the ventilation hole.

Q. Please respond to the assertion that there was a lack of oversight.

A. Staff's assertion appears to indicate that FPL was responsible for examining Siemens's tools. They state that "an evaluation of this tool set by FPL or Siemens would have helped maximize the safety of worksite personnel and equipment" (page 32). FPL hired Siemens, the original equipment manufacturer, to rewind the St. Lucie Unit 2 generator because of its unique expertise and wide industry experience in rewinding generators supplied by Siemens. It is not expected in the nuclear generation industry that an owner such as FPL would examine and evaluate a unique contractor tool that was specifically designed by the contractor, Siemens, for this specialty application. Staff has not pointed to any industry standard practice requiring such detailed oversight of an original equipment manufacturer performing this type of specialty work, and I am unaware of any.

Staff notes at page 32 of its report that "subsequent FPL oversight inspections and quality assurance spot checks did not identify the potential risk" that an alignment pin

may be left in a ventilation hole and cause damage during testing of the generator. I agree with this statement. In other words, FPL had no reason to know that this event would occur. Therefore, it was reasonable for FPL to rely on Siemens's expertise in using the alignment pin tool and Siemens's inspection requirements.

Q. Please respond to the assertion that there was inadequate training.

A. In selecting Siemens to perform the turbine generator work for the EPU project, FPL relied on the expertise of Siemens specialty workers. Such expertise is gained through training and experience. FPL specifically required that Siemens provide workers that were experienced in the type of generator at St. Lucie unit 2. Siemens has indicated that the Siemens workers assigned to the St. Lucie Unit 2 generator rewind had on average more than 15 years of experience and many had completed over 40 Siemens training classes including basic winder training and core repair training. Siemens is required to train its workers to use its specialty tools. Based on these facts, it was certainly reasonable for FPL to rely on Siemens and other vendors of Siemens's caliber to train its workers appropriately.

Q. Staff points to two DOE documents and a speech by former NRC chairman Nils Diaz for the proposition that FPL should be responsible for this event. Do these documents support Staff's position?

A. No. The DOE documents are not applicable in any respect to the conduct of maintenance or operations at a commercial nuclear generating plant. Instead, these documents apply only to DOE facilities, not commercial nuclear power generating stations. Simply put, these documents are not at all authoritative or applicable to management or the conduct of work in the commercial nuclear generating industry.

Attached as Exhibit TOJ-27 are excerpts from those documents, clearly demonstrating that they are inapplicable.

As explained by Dr. Diaz in his rebuttal testimony, the Staff has taken Dr. Diaz's 2004 speech out of context, and it does not apply at all to this situation.

Q. What is your conclusion with respect to Staff's recommendation that the Commission disallow $3.5 million in costs related to this error?

A. FPL's actions in the hiring and oversight of Siemens were reasonable. FPL had no reason to know that the tool used by Siemens successfully on other projects and the procedures used by Siemens successfully on other projects would lead to the personnel error that occurred – particularly in light of the inspection requirements and steps that were required and taken to reveal materials such as alignment pins prior to generator testing. The $3.5 million that FPL incurred were necessary expenses in the repair of the generator. Accordingly, because FPL's actions were reasonable, this project cost should be allowed to be recovered.

Q. The staff audit report also briefly discusses Bechtel's performance. Please respond.

A. Staff briefly discusses a single, 3-page contractor evaluation form. Periodic contractor evaluation forms do not provide an overall picture of a vendor's performance. Rather, they are used as a communication tool to provide a vendor specific feedback. Contractor evaluations are used to ensure vendor workers meet FPL's expectations. This is an example of responsible owner feedback to an important contractor to continuously improve contractor performance.

Q. Does this conclude your rebuttal testimony?

A. Yes.

FPL

NUCLEAR FLEET

PROCEDURE

SAFETY RELATED

INFORMATION USE

Procedure No.
MA-AA-101-1000
Revision No.
5
Effective Date
PSL 10/21/10

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UNIT #	
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STATUS	COMPLETED
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7.2 Developmental References

1. INPO Good Practice MA-320 (97-008), Foreign Material Exclusion (FME) Program, July 1997
2. INPO 07-008, Guideline for Achieving Excellence in Foreign Material Exclusion (FME), December 2007
3. SOER 95-1, Reducing Events Resulting from Foreign Material Intrusion.
4. INPO 07-0074, Guidelines for Achieving Excellence in Nuclear Fuel Performance
5. EPRI, Document TR-106756, Foreign Material Exclusion Guidelines.
6. ANSI / ASME NQA-2 1989, Part 2.1.
7. EPRI Document NP-3220, Cobalt Reduction Resulting from Valve Maintenance
8. EPRI Document TR-100659, Fuel Reliability Improvement Guidelines
9. INPO 97-013, Conduct of Maintenance
10. SOER 90-2, Nuclear Fuels Defects, July 16, 1990
11. OPEX 11402
12. ER-AA-2006, "Lost Parts Evaluations"
13. NF-AB-130-3760, "Lost Parts Evaluations at BWR Nuclear Stations"
14. NF-AP-130-3760, "Lost Parts Evaluations at PWR Nuclear Stations"
15. NRC Bulletin 2003-01, Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors
16. NEI 02-01, Condition Assessment Guidelines: Debris Sources inside PWR Containments, April 2002
17. SER 61-82, Foreign Objects in Steam Generator
18. SER 06-83, Turbine Blade Damage Caused by Foreign Objects Left in Turbine Following Maintenance
19. INPO 92-001, Guidelines for the Conduct of Maintenance at Nuclear Power Stations

TS

NOT MEASUREMENT SENSITIVE

DOE-STD-1069-94
June 1994

DOE STANDARD

GUIDELINE TO GOOD PRACTICES FOR MAINTENANCE TOOLS AND EQUIPMENT CONTROL AT DOE NUCLEAR FACILITIES

U.S. Department of Energy
Washington, D.C. 20585

AREA MNTY

DOE-STD-1069-94

FOREWORD

The purpose of the *Guideline to Good Practices for Maintenance Tools and Equipment Control at DOE Nuclear Facilities* is to provide contractor maintenance organizations with information that may be used for the development and implementation of a rigorously controlled maintenance process directed at establishing maintenance tools and equipment control at DOE nuclear facilities. This document is intended to be an example guideline for the implementation of DOE Order 4330.4A, *Maintenance Management Program,* Chapter II, Element 13, *Maintenance Tools and Equipment Control.* DOE contractors should not feel obligated to adopt all parts of this guide. Rather, they should use the information contained herein as a guide for developing a tool control process applicable to their facility.

Additional information pertinent to the implementation of this guideline may be found in the following DOE Guidelines:

1) DOE-STD-1054-93 *"Guidelines to Good Practices for Control and Calibration of Measuring and Test Equipment (M&TE) at DOE Nuclear Facilities"*

2) DOE-STD-1067-93 *"Guideline to Good Practices for Maintenance Facilities, Equipment, and Tools at DOE Nuclear Facilities"*

3) DOE-STD-1052-93 *"Guidelines to Good Practices for Types of Maintenance at DOE Nuclear Facilities"*

4) DOE-STD-1050-93 *"Guidelines to Good Practices for Planning, Scheduling and Coordination of Maintenance"*

5) DOE-STD-1072-93 *"Guidelines to Good Practices for Facility Condition Inspections at DOE Nuclear Facilities"*

Appendix A is provided for use by facility trainers who provide training regarding this element of DOE Order 4330.4A.

1.2 Background

The information in this guide was developed from commercial and DOE sources. Each facility should select any details applicable, add any additional knowledge or experience that is applicable, and then develop and implement facility-specific processes for establishing maintenance tool and equipment control. Facilities which use existing documented processes should review this guide to identify details which may enhance their existing methods.

1.3 Application

The content of this guide is generally applicable to all DOE nuclear facilities. Portions of the methods outlined may not be applicable to all facilities because maintenance organizations, disciplines, titles, and responsibilities can vary among DOE nuclear facilities. Facility maintenance personnel should (1) verify the adequacy of or (2) improve existing maintenance processes by adapting this guide to their specific facility and individual maintenance disciplines.

The Owner's Role in Project Risk Management

Committee for Oversight and Assessment of
U.S. Department of Energy Project Management

Board on Infrastructure and the Constructed Environment

Division on Engineering and Physical Sciences

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Appendix B

Statement of Task

In response to a congressional directive, the National Research Council has appointed a committee to review and assess the progress made by the U.S. Department of Energy (DOE) in improving its project management practices. This study includes evaluation of the implementation of recommendations in the 1999 NRC report *Improving Project Management in the Department of Energy*. The principal goal of this effort is to assess DOE's efforts to improve project management practices, including: (1) specific changes in organization, management practices, personnel training, and project reviews and reporting; (2) an assessment of the progress made in achieving improvement; and (3) the likelihood that improvements will be permanent. These tasks will also require development of a framework for evaluation and performance measures specifically tied to DOE's project management process.

NOTE: The committee made the following recommendation in its 2003 assessment report:

> DOE should develop detailed procedures and guidance for identifying risks, planning strategies to address risks, and managing risks throughout the life cycle of projects, and should require their implementation for all projects. Projects should not pass CD-1 or CD-2 without an effective risk mitigation plan. (NRC, 2004, p. 38)

The DOE Office of Engineering and Construction Management (OECM) requested the committee to provide assistance for following this recommendation by summarizing practices the committee believes constitute excellence in risk management.