

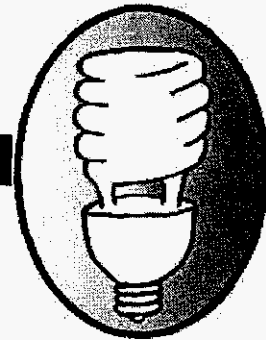
PROGRESS ENERGY FLORIDA
In re: Nuclear Cost Recovery Clause
Docket 100009-EI
REVISED Thirteenth Request for Confidential
Classification

Exhibit B

COM _____
APA 4 CDs
ECR 1
GCL 1 CD
RAD 1 CD
SSC _____
ADM _____
OPC _____
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FPCO-COMMISSION CLEAR

JULY 2010



REVIEW OF

Progress Energy Florida's
Project Management
Internal Controls
FOR
Nuclear Plant Uprate and
Construction Projects

~~CONFIDENTIAL~~
REDACTED

By Authority of
The State of Florida
Public Service Commission
Office of Auditing and Performance Analysis

1.4 Observations

1.4.1 Levy Nuclear Plant

During 2009, the company evaluated the future of the Levy Nuclear Project and made a decision in 2010 to redirect the project focus from construction to regulatory approval. The company has delayed the project by a minimum of 60 months, pushing out the start of construction until at least 2015. The current focus is to obtain the Combined Operating License (COL) approval from the NRC and then re-evaluate the construction timeline. Because the company has an Engineering, Procurement, and Construction (EPC) contract with Westinghouse and Shaw, Stone & Webster (the Consortium) to start construction on the Levy project in 2012, the decision to shift the schedule required renegotiation of the terms of the contract.

During the company's reevaluation of the project schedule, it considered several scenarios ranging from a 24-month delay to full cancellation of the project. In the end, the company decided to shift the end of the partial suspension date to within [REDACTED] days after the issuance of the COL, which is currently anticipated for late 2012 or early 2013. The company believes this will result in a shift in the in-service dates to 2021 and 2022 for the two units.

The company was successful in negotiating an amendment to its EPC contract with the Consortium incorporating this new schedule timeline. In doing so, PEF was able to [REDACTED]. The company will maintain [REDACTED]. In addition, the company was able to maintain the [REDACTED].

As a result of the schedule shift, the company has worked with the Consortium to address the outstanding contract purchase orders for its long-lead items. These purchase orders are for [REDACTED] major components at a total cost of approximately [REDACTED]. The company anticipates it will cost an additional [REDACTED] to finalize the disposition of these purchase orders. This cost is directly related to the shift in schedule.

PEF estimates that there will be an increase in total project costs as a result of the shift in schedule. In 2008, the company estimated the total project cost, excluding AFUDC, at [REDACTED]. The 2010 estimate, using the 2021/2022 in-service dates as its base, projects the total cost at [REDACTED]. This represents an approximate increase of [REDACTED].

Audit staff recognizes that several internal and external factors influenced the company's decision to shift its construction schedule for the Levy project. This was based on several key assumptions by PEF. First, the company's internal assessment that the project is still a viable and feasible option and that there is a standing determination of need issued by the Commission. Second, the delay in Westinghouse receiving NRC approval of its final design certification. Third, the economic downturn and recent lower capacity demand within the State. Last, the uncertainty in the proposed Federal carbon legislation.

Given the uncertainties facing the company, audit staff recognizes that keeping the project progressing, without further substantial investment of cost, is a reasonable approach by PEF at this point in time.

1.4.2 Crystal River 3 Extended Power Uprate Project

Overall, the company anticipates the total EPU project cost to be \$479.4 million (excluding AFUDC and joint owner commitments). This represents a 12 percent increase from the original \$426.6 million estimates. Through its Integrated Project Plan process, the company has documented the additional costs and received senior management approval to increase these expenditures over time. The company believes that this increase is within an acceptable range for a project of this size and complexity.

In 2009, PEF completed Phase II of the Extended Power Uprate project at the Crystal River Unit 3 during its scheduled refueling outage. The company states that all work was completed as scheduled and within the allotted budget. During the outage, the project team monitored the work performed for each major component and tracked variances and delays in the schedule. Audit staff reviewed these management reports and verified that the project remained on schedule with minor variances and no major issues were identified during the work.

During the same refueling outage, the company discovered a delamination within the wall of the unit's containment vessel. This was identified during the work to replace the unit's steam generators—a separate and independent project from the EPU. The delamination repair has extended the original outage through at least fall 2010. This extended outage will impact the EPU's Phase III schedule. Originally, the company planned to finish the EPU work scope during the next refueling outage, scheduled for fall 2011. However, PEF has shifted the outage to at least spring 2012.

Audit staff recommends the Commission monitor the EPU project for potential cost impacts resulting from scheduling delays caused by the delamination issue.

In mid-2009, PEF made the decision to defer the installation of its two low pressure turbines from Phase II to Phase III work scope. This decision required the company to spend [REDACTED] restructuring its Phase II work scope to accommodate this change. Two factors influenced this decision: the turbines failing a required quality assessment test and the ability to adequately insure this turbine model. The company is currently negotiating a resolution with Siemens, the turbine manufacturer, to resolve the outstanding issues. Also, the company is considering the following options for the turbine issue: continue operating CR3 with its current Alstom turbines, install the 18 square meter Siemens turbines during Phase III as originally designed, install the 18 square meter Siemens turbines during Phase III with the L0 blades removed, or install smaller 13.9 square meter Siemens turbines in 2013.

Audit staff recommends that the Commission monitor the results of the Siemens turbine negotiations to ensure that the company recovers all the appropriate costs, and excludes any costs resulting from a possible vendor error.

Additionally, if the company chooses not to move forward with its current Siemens low pressure turbine selection, there will be a decrease in the final MWe output for the project. If this occurs, an evaluation may be necessary to assess the appropriate handling of the reduction in planned versus achieved MWe output. In effect, the uprate would then have cost more per additional MWe added, and cost recovery adjustments maybe warranted. The low pressure turbine issue is discussed further in Chapter 3.1.

Audit staff recommends that the Commission monitor this issue to determine if it may be necessary to assess the appropriate handling of the reduction in planned versus achieved MWe output resulting from any changes to the original turbine design option.

Prior to the company implementing the EPU changes, PEF must receive approval from the NRC to operate at the higher MWe output. This is achieved through an amendment to the company's current operating license. The company initiated its License Amendment Request application in 2007. In June 2009 PEF commissioned an "Expert Panel" to review its *Final Draft-CR3 EPU Licensing Report*. The panel determined that the application would not receive NRC approval as written, requiring the company to expend resources to strengthen the submittal. The company's internal findings clearly identify poor management oversight and lack of the very specific type of expertise to perform the task as the critical reasons for the deficient draft application. In total, the company contracted with AREVA for an [REDACTED] to complete the required work. This is discussed in greater detail in section 3.1.1 and 3.1.2.

Audit staff recommends that the Commission consider whether the [REDACTED] for the LAR rework and additional engineering scope by AREVA resulted from inadequate management oversight.

approach, the Consortium performed the requested cost and schedule impact analysis on two options: a 24 month shift in Unit 1 with an 18 month shift in Unit two and a 36 month shift in Unit 1 with a 36 month shift in Unit 2 option. PEF agreed with this approach, and the Consortium developed a cost range for the two proposed schedule shift options. The Consortium estimated a cost impact of [REDACTED]

[REDACTED] This estimate is based on the original 2007 contract dollars and include only EPC related costs.

The company presented its assessment and the Consortium's analysis results to its Senior Management Committee on October 15, 2009. The committee expressed concern that these shift scenarios may not provide the best long-term option given the current economic conditions within the state. The project team was asked to reevaluate the schedule with additional longer-term suspension options. Specifically, the committee requested that the team evaluate the following options:

Cancel the Levy Project;

Cancel the existing EPC contract with the Consortium while continuing the COL application;

Cancel the current EPC Purchase Orders, and suspend the EPC contract while maintaining all beneficial Terms and Conditions while the company continues to work to obtain the COL;

Continue as planned with the 36/18 schedule shift.¹

All the while, the company recognized that if cancellation were an option, [REDACTED]

[REDACTED] With this in mind, the company negotiated a [REDACTED] with the understanding that the company and Consortium would be in negotiations for a [REDACTED]. The company signed the [REDACTED]

On February 15, 2010, the project team presented the Senior Management Committee its assessment of the three options discussed in October, and recommended that the Levy project move forward under a long-term schedule-shift while preserving the Terms and Conditions of the EPC contract (bullet 3 above). With this shift, the focus of the project would become the COL approval. The Senior Management Committee approved this proposal and the company continued its negotiations with the Consortium to amend the EPC contract.

In March 2010, the company and Consortium agreed to shift the [REDACTED] date to accommodate the company's Board of Directors meeting scheduled for March 17, 2010. At this meeting, the Chairman of Progress Energy presented to the company's Directors a plan to move forward with the long-term schedule shift option and amend the EPC to preserve its

¹ PEF Response to Staff Data Request 3.2.

current terms and conditions. On March 26, 2010 the parties signed Amendment 3 of the EPC contract to resolve the impact of the schedule shift.

Contract Extension

Amendment 3 to the EPC [REDACTED]

[REDACTED] Audit staff believes that the company was able to negotiate a favorable amendment with limited fee impact. The company maintained [REDACTED]

Significantly, the company maintained the [REDACTED]

PEF also renegotiated the [REDACTED]

Specifically, the company can [REDACTED]

The amendment placed the [REDACTED]

Therefore, further negotiations will be required between the company and the Consortium to re-establish the schedule. The company recognizes that this negotiation process will be [REDACTED]

Management states it will initiate the negotiation process once the [REDACTED]

The amendment allowed the company to maintain a [REDACTED] to the Consortium and the overall project through the licensing process. Per the EPC contract, [REDACTED] for canceling the contract was [REDACTED]

The amendment maintains this [REDACTED] through [REDACTED] currently projected to be late 2012 to early 2013. Audit staff notes that while the company states it is committed to moving the project forward, this amendment allows the company additional time to monitor the project's feasibility and the practicality of cancellation without exposing the ratepayer to additional risk.

Long-Lead Material Purchase Orders

In addition to negotiating a viable amendment to the EPC contract, the company is also in negotiations to resolve the outstanding Purchase Orders for the project. After the signing of the Letter of Intent in March 2008 and later incorporated into the EPC contract in December 2008, the Consortium initiated Purchase Orders for necessary the long-lead materials and equipment. With the minimum 60-month shift in schedule, the company requested the Consortium to evaluate and propose disposition options for these purchase orders.

The company has [REDACTED] long-lead Purchase Orders valued at [REDACTED] Exhibit 1 lists the original purchase orders and their full contract amount. Management is considering several options for the disposition of these orders, including full cancellation of a purchase order,

completing the work as contracted and storing the equipment, storing component in its current state for future completion, or selling completed product/individual components.

EXHIBIT 1 Source: PEF Response to Staff Request 5.1

The company authorized [redacted] in its 2010 IPP for the disposition of these orders. While PEF estimates the total cost at [redacted] to complete this process, this may still be the most cost-effective resolution. The company and the Consortium must negotiate each Purchase Order with each vendor. As of April 2010, the company decided to continue with the construction of the [redacted]

[redacted] Also, the company reports that it has been able to defer the [redacted] Project management is currently in negotiations to resolve the remaining purchase orders. The company anticipates that these efforts will continue through 2010.

Combined Operating License Application

During 2009, several events impacted the schedule of the company’s Combined Operating License application (COLA) review timeline. When the NRC docketed PEF’s COLA in 2008, the schedule estimated a COL issuance in late 2011. However, the schedule has shifted to 2012, with the possibility that it may extend into 2013. There are several factors that contributed to this shift, including the company’s response time to the more complex and intricate RAI requests, the complexity of the Levy geotechnical analysis, the NRC’s review timeline, and the granting of a contested hearing. Additionally, independent of any Levy-specific factors, delays in the revised AP1000 design certification by the NRC may impact the overall COL approval timeline.

Schedule

The company's current timeline for a 2021 Unit 1 in-service date and 2022 for Unit 2 represents a minimum 60-month shift from its original 2016 and 2017 timeline. PEF notes that the 2021 timeline is only an estimate, as specific construction milestone dates will not be negotiated with the Consortium until the COLA is further along in the review process. **Exhibit 2** details the 2008 schedule established in the EPC and the company's most recent target timeline.

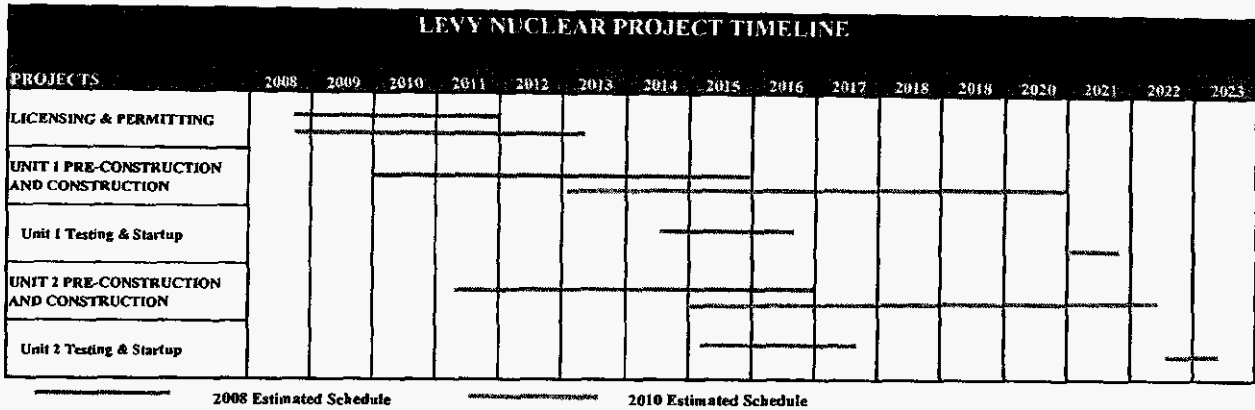


EXHIBIT 2

Source: PEF Response to Staff Data Request 3.1-282

Cost

PEF estimates that there will be an increase in project costs as a result of the shift in schedule. In 2008, the company estimated the total project cost, excluding AFUDC, at [REDACTED]. The 2010 estimate, using the 2021/2022 in-service date as its base, projects the cost at [REDACTED]. This represents an approximate [REDACTED]. **Exhibit 3** tracks the company's estimated total project costs for the years 2008-2010.

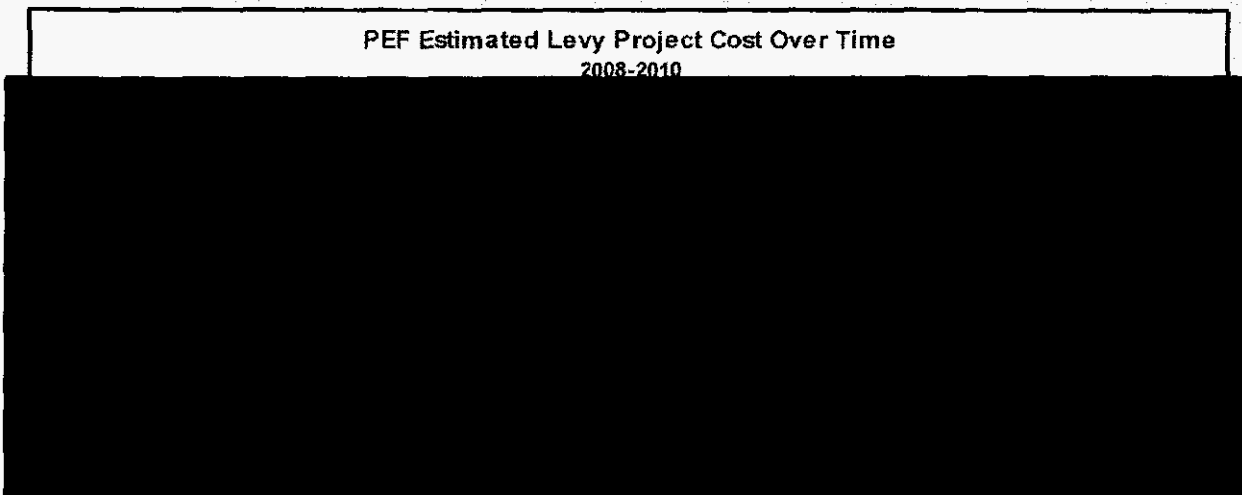


EXHIBIT 3

Source: PEF IPP—2008 & 2010

The company revised its *Integrated Project Plan* (IPP) in April 2010 and identified areas where increases are expected to occur. These include increases for both the transmission and generation projects. **Exhibit 4** details the areas of increase and estimated cost impact. As the

exhibit shows, escalation resulting from the schedule-shift, projected at [REDACTED], comprises the majority of the increase.

PEF Estimated Levy Project Cost Revised April 2010 (in millions)	
Area of Increase	Estimated Increase in Project Cost
EPC Incremental Schedule Shift (Purchase Order disposition and incremental cost changes)	[REDACTED]
Design Change Proposals	[REDACTED]
Escalation Increases (Schedule shift and others)	[REDACTED]
Contingency: Re-assessment of Risk	[REDACTED]
Other Costs: PGN labor, Spare Parts, Insurance, Taxes, Temporary facilities, COLA, Construction Power, Emergency Preparedness, Environmental Protection, Other	[REDACTED]
Total	[REDACTED]

EXHIBIT 4

Source: PEF Response to Staff Data Request 4.3.

In the near-term, PEF notes that the schedule shift will delay the major construction costs, which will defer the cost impact on its rate base during this period of slow economic growth. The April 2010 IPP authorized approximately [REDACTED] in spending over the next three years for the Levy project. Specifically in 2010, the company anticipates expenditures of [REDACTED] for the disposition of the long-lead items outlined in the EPC contract. For 2011 and 2012, the company authorized [REDACTED] respectively. Exhibit 5 details the breakdown of anticipated Levy costs for 2010 through 2012.

PEF Three-Year Estimated Expenditures for the Levy Project 2010 -2012 (in millions)				
Expenditures	2010	2011	2012	Three-Year Total Projections
EPC Payments	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
LLM Payments & Westinghouse Support	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
LLM PO Disposition (one-time cost)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Transmission	5.6	3.7	11.7	20.9
COLA	24.8	9.2	3.	37
Wetland Mitigation	4.4	2.3	2.3	9
Other Cost	8.6	6.8	12.7	28.1
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

EXHIBIT 5

Source: PEF Response to Staff Data Request 4.3

As noted, PEF evaluated the costs of canceling the project versus the long-term schedule shift. The company states that the estimated cost to cancel the project was [REDACTED] while

the anticipated cost to extend the schedule and renegotiate the contract was [REDACTED].³ If the company remains committed to completing the project, the cost differential is necessary.

Project Organization

As a result of the schedule shift and the deferral of the construction schedule, the company is restructuring its nuclear organization in second quarter 2010. The new organization will incorporate the Nuclear Construction group, Non-nuclear Construction, and the Nuclear Operational Readiness group. The new organization will be titled New Generation Programs and Projects. The group will be managed by the current Vice President of Nuclear Construction. The new organization will be responsible for all major construction projects within Progress Energy. It will allocate resources to both nuclear and non-nuclear generation projects through the company.

In 2009, the company implemented an Operational Readiness group to plan and prepare for the operation of the Levy Nuclear facility. PEF management states that this organization was responsible for developing a program to hire and train the specialized work-force necessary to operate the plant. Also, this team is involved in the oversight of the required on-site training facility. PEF believed that given the complexity of its work scope, it was necessary to initiate this organization at the onset of project implementation.

The company states that when the Operational Readiness organization was formed in 2009, PEF believed that the schedule shift would be between 20 and 36 months. Management believed that with this medium-term shift in the overall project schedule, the Operational Readiness team was still necessary and timely. When the company made the decision to enact a long-term schedule shift, the role of the Operational Readiness group was seen as less time critical. As a result, the team will be incorporated into the newly formed New Generation Programs and Projects division, while the Vice President of Operational Readiness plans on retiring in 2010.

Audit staff recognizes the important role the Operational Readiness group will have in the successful implementation of the future Levy Nuclear plant. It will take time for the company to develop the necessary training regiment and recruit a qualified operating staff for the new plant. However, audit staff has concerns about the timing and resources placed on this group during 2009, given the schedule flux and the company's consideration to cancel the project.

Audit staff recognizes that 2009 represented a shift in the company's commitment to the Levy project. In prior years, the company placed significant resources and management support into ensuring a swift development and construction timeline. However, in 2009 the company was wavering in its commitment to the project. Cancellation was considered by senior management, and it appears that had the company not been able to negotiate the favorable outcome with the Consortium, senior management would not have moved forward with the current project. Audit staff also notes that the EPC Amendment 3 places the project in a holding pattern until the COL issuance. During this period, the company maintains an option [REDACTED] the plant with minimal additional impact. Audit staff believes the company will continue to

³ April 30, 2010 Testimony of Mr. John Elnitsky, Docket 100009-EL.

monitor and evaluate the factors that influenced its decision to implement a long-term schedule shift during the next few years, and if necessary, may reconsider the viability of the current project.

2.2 Levy Project Controls and Oversight

2.2.1 Project Controls, Risk and Management Oversight Changes

PEF requires that its management team develop and maintain an *Integrated Project Plan* (IPP) for each major project implemented by the company. This plan establishes the financial requirements necessary to complete the project along with the project scope, deliverables, and risks associated with the project. Senior management uses this document to assess the overall feasibility of the project and to track the overall financial commitment for the project.

Integrated Project Plan

In 2006, PEF's procedures regarding major capital projects (those in excess of \$5 million) required that the new plant be proposed via a *Business Analysis Package* (BAP). This document laid out the basic schedule, cost estimates, risk analyses, economic analyses, and scenario analyses for the COLA process only. The initial March 2006 BAP presented the option of pursuing COLAs for both the Levy project and separate units to serve Progress Energy-Carolina. A revised BAP in August 2007 reflected slightly later planned dates for COLA submission and approval by the NRC. It also reflected an increased project cost estimate due to higher land purchase costs. The revisions also reflected revised capacity need dates for the Carolina and Florida units. The Florida timeframe moved from 2015-2016 to 2016-2017. A second revision to the BAP was approved in April 2008 to approve the Letter of Intent with the Consortium. The Letter of Intent initiated the purchase order activity for the long lead materials.

During 2008, PEF migrated major projects towards its new *Integrated Project Plan* for approval and control. The IPP process still includes the identification and assessment of key risks and risk management approaches, but provides senior management with more frequent and continuing opportunities to endorse or redirect the project. Like the BAP, the IPP documents assumptions, constraints and decisions to be made, defines approval requirements for funding, and provides a baseline for the progress measurement and project control.⁴

The original Levy Nuclear Project IPP was initiated on September 5, 2008, updated on December 18, 2009 (Rev. 1), and further updated on April 28, 2010 (Rev. 2). The changes made in December 2009 (Rev. 1) allow for continued funding during the time that PEF and the Consortium were renegotiating an amendment to the EPC contract. This IPP revision authorized continued spending on the Levy project through March 31, 2010 in the amount of [REDACTED]

The changes made in April, 2010 (Rev. 2) reflect management's continued approval of the project and allowed for 2010 annual spending for the Levy partial suspension and provides

⁴ FPSC's August 2008 *Review of PEF's Project Management Internal Controls for Nuclear Plant Uprate and Construction Projects*, pages 29-30

updates related to the decision to continue partial suspension.⁵ The project team recommended a 3-year spend of approximately [REDACTED], with authorization for execution of funds in 2010 of [REDACTED]. The 3-year total includes [REDACTED] which may arise as part of long-lead material purchase order disposition with Westinghouse. The Project Team will update the Senior Management Committee mid-2010 with LLM PO disposition costs for approval. The Project Team recommended annual updates on work progress and authorization for subsequent year funding during the partial suspension.

Staff recognizes that the company followed its process with regards to IPP revision. The company adequately updated the IPP to reflect changes in the Levy Nuclear Project scope and cost. Staff verified that senior management approved the revisions to the IPP.

Project Management Policies and Procedures

PEF has in place procedures that direct the oversight and control of the Levy Nuclear Project. The company created or updated these procedures as the project progressed and developed over time. Additionally, the company developed (and is continuing to refine) standard procedures for project management, through its *Project Management Center of Excellence*. PEF recently revised forty-seven procedures for the Levy project. A list of the procedures and their revision dates are shown in **APPENDIX A**. These procedures cover areas including the development of procedures, the corrective action for adverse conditions, engineering, procurement and material controls, nuclear oversight, records and document control, organization and administration, industrial safety, nuclear generation group manuals, nuclear contract management, and non-nuclear contract management.⁶

PEF created thirty-one new procedures in 2009 for the Levy project. A list of the new procedures is shown in **APPENDIX B**. These new procedures cover the areas of interface agreements, nuclear plant development, project management, engineering, project assurance, program governance, and real estate governance.

The company is currently developing additional procedures that will provide oversight for the Levy project. These procedures are part of the further implementation of its *Project Management Center of Excellence*. Future planned procedures for the Levy project are shown in **EXHIBIT 6**.

The company does not plan to develop further EPC procedures at this time. It will resume development of procedures once the company moves forward with the project and specific events trigger the need. The company reviews policies, procedures, and controls; and issues new procedures when needed based on changing business conditions, organizational changes, project work schedules, etc.⁷

⁵ PEF Response to Staff Data Request 4.3S1 BATES 000002

⁶ PEF Response to Staff Data Request 1.12, BATES 0000028 - 0000030

⁷ Ibid.

The ASD completed three internal audits for the Levy project in 2009. These internal audits are shown in **EXHIBIT 9**, and are discussed in more detail below.

PEF Levy Nuclear Project Internal Audits Completed During 2009		
Audit Title	Project Number	Report Date
Engineering, Procurement & Construction (EPC) Contract	20013334 A913	August 3, 2009
Florida Nuclear Plant Cost Recovery Rule Compliance	20013334 A916	May 26, 2009
Levy Baseload Transmission Program	20013334 A919	December 9, 2009

EXHIBIT 9

Source: PEF Response to Data Request 1.36

Engineering, Procurement & Construction (EPC) Contract Audit

The scope of the Engineering, Procurement & Construction (EPC) Contract internal audit included the Levy EPC agreement, the Burns and Roe report, and PricewaterhouseCoopers (PWC) report. The objective of the audit was to review the key provisions of the EPC contract and to assess the sufficiency of internal policies and procedures that have been developed to support the administration of the EPC. The Audit Services Department also reviewed the Burns and Roe report and the PWC report as part of this audit.

The key focus areas of this internal audit consisted of:

Evaluation of the adequacy of the procedures developed by Nuclear Plant Development (NPD) to support the EPC contract provisions including identification, assessment, and assignment of trigger points and key contract milestones.

Review of the administration of the invoices.

Evaluation of the status of the NPD actions in response to the Burns and Roe report and the PWC report.

The Audit Services Department concluded that EPC contract was effective. Overall, ASD thought the processes in place to support the administration of the EPC contract appear to be operating as intended. Observations and recommendations were presented to management by ASD with regards to areas needing improvement. These areas included

[REDACTED] The first recommendation was to [REDACTED]
[REDACTED] The second recommendation was to [REDACTED]

Management developed an Action Plan for each improvement area and assigned responsibility to complete by assigned completion dates. ASD made sure that all items were resolved and set the follow-up status for each to "closed".¹⁹

Florida Nuclear Plant Cost Recovery Rule Compliance Audit

The objective and scope of the Florida Nuclear Plant Cost Recovery Rule Compliance internal audit was to review compliance with 25-6.0423, FAC for filings made in 2009 related to the CR3 Uprate Project and Levy Nuclear Plant.

The key focus areas of this internal audit consisted of:

Reviewing planned regulatory filing reports for completeness and accuracy and adequacy of internal reviews.

Testing a sample of actual costs included in the filings to ensure that supporting documentation is sufficient.

Reviewing the process used to estimate projected costs for reasonableness.

The Audit Services Department concluded that overall compliance with the Florida Nuclear Plant Cost Recovery Rule was effective. ASD tested a sample of invoices and supporting documentation which revealed that charges recorded to the project were appropriate and authorized. Overall, they found that the related controls are effective.²⁰

Levy Baseload Transmission Program Audit

The scope of the Levy Baseload Transmission Program audit included the areas of Self-Managed Land Acquisition Program, Central Florida South Substation Project, and Crystal River Energy Complex (CREC) Substation Expansion Phase I. The objective of the audit was to assess the project's risk identification, key internal processes and procedures, and related controls to mitigate the various forms of project risk. The key focus areas of this internal audit consisted of:

Evaluation of project management efforts.

Assessment of controls and processes for key business and regulatory environment risks.

Evaluation of key controls, processes, procedures, organizational structures, and specific plans relevant to the scope areas above.

The Audit Services Department concluded that the Levy Baseload Transmission Program needed improvement. The audit identified four observations in its report. These observations and ASD's recommendations were presented to management.

The first recommendation was to update [REDACTED]

¹⁹ PEF Response to Staff Data Request 1.36, BATES 000007 – 000011.

²⁰ PEF Response to Staff Data Request 1.36, BATES 000013.

[REDACTED]

The second recommendation

[REDACTED]

The third recommendation

[REDACTED]

The final recommendation

[REDACTED]

Action Plans were developed and assignments were made to personnel with responsibility to complete by assigned completion dates. ASD verified that all items were resolved and set the follow-up status for each to "closed".²¹

Planned 2010 Internal Audits

The Audit Services Department (ASD) has scheduled three audits for 2010. The company has not finalized the timeline for performing these audits. **EXHIBIT 10** lists the 2010 planned audits.

PEF Levy Nuclear Project Internal Audits Planned for 2010		
Audit Title	Project Number	Report Date
Florida Plant Cost Recovery	20010800 A1016	TBD
Levy Nuclear Plant (including Harris COLA)	20010800 A1009	TBD
Levy Nuclear Plant Transmission	20010800 A1010	TBD

EXHIBIT 10

Source: PEF Response to Data Request 1.36

Quality Assurance Reviews and Audits

The Levy project's Nuclear Oversight (NOS) Department is charged with inspecting and monitoring the nuclear safety work performed at the Levy Nuclear Plant. NOS staff is assigned to the plant and specialize in nuclear-related issues. The work of the NOS staff is guided by the NOS-NGGC-0100 *Nuclear Oversight Assessment Process* procedure. This document establishes

²¹ PEF Response to Staff Data Request 1.36, BATES 000015 – 000021.

PEF Levy Nuclear Plant Generation Contract Updates in 2009			
Company	Contract – Amend/ Work Auth.	Description	New Contract Activity in 2009 (\$000's)
Duncan Company	293651-2	Wetland Mitigation Planning – The acquisition of land for wetlands mitigation and an easement for the discharge pipeline ***	█
Enercon Services	372311-1/01	LNP Planning and Preconstruction Testing Support	█
Entrix	399960/19	LNP Wetland Mitigation Plan Production	█
GMK Architecture	435529	Levy Training Facility Conceptual & Full Civil Design ***	█
Joint Venture Team (JVT)	255934-6/02	COLA Development Florida Site (includes fieldwork 6 total contract amendments. Amendment 6 executed in 2009.) *	█
Joint Venture Team (JVT)	255934-3-5/03	LNP – Site Certification Application Development support (4 total contract amendments. Amendments 3, 4 & 5 issued in 2009.) *	█
Joint Venture Team (JVT)	255934-1-2/05	LNP COLA Phase II – RAI Support (2 total contract amendments. Both amendments executed in 2009.) *	█
Joint Venture Team (JVT)	255934-1/06	LNP Site Certification Application 2009 Follow On Activities	█
Joint Venture Team (JVT)	255934/07	LNP Offset Boring Program	█
Joint Venture Team (JVT)	357385-1/4	NPD Risk Management Program	█
KLD Associates	420400-1	COLA RAI Responses Related to Evacuation Time Estimate Study/Emergency Plan **	█
Murray & Trettel	4157-4	Environmental & Meteorological Monitoring Support (Levy portion)	█
Tetra Tech NUS	6589-34	Environmental Licensing Support – Staff Aug Extension*	█

* Contract activity cost reflects only the amount executed in 2009.

** Contract 420400 actual dollars to date based on Levy RAI request.

*** Contract 293651 Amendment 2 and Contract 435529 were initiated prior to May 2009, but not included in last years listing of contracts.

EXHIBIT 13

Source: Data Request 1.24

Planned for 2010

PEF states that at this time no new contract activities are planned for 2010, however, the following carryover contract activities are planned to continue work into next year:²⁴

█

²⁴ PEF Response to Staff Data Request 1.24, BATES 000001 – 000002.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Levy Transmission Contracts

PEF provided the completed or planned Transmission contracts or contract addenda for materials and/or services with values in excess of \$100,000 that were executed in 2009 or planned for 2010.²⁵

Contracts Completed in 2009

The following contracts with values in excess of \$100,000 were completed in 2009 for transmission activities:

Route Selection Study (Golder Associates, Inc. contract number 0080678-00129) – To conduct route selection studies to identify constructible and permitable transmission line routes within Owner’s proposed corridors. The final route study was completed on November 10, 2009.

Owner’s Engineer (Patrick Energy Services, Inc. contract number 00409194) – All the following work authorizations were terminated as of December 1, 2009:

- < WA 409194-00001 – (1) To provide engineering services to support the review, analysis and revisions as needed to all associated scopes, cost estimates, and schedules for Levy Program’s individual projects. (2) To provide assistance for Levy Program engineering quantitative and qualitative efforts to support Requests for Information or Requests for Proposals. (3) To attend community open houses, general Levy Program meetings and provide expert staff and testimony.

²⁵ PEF Response to Staff Data Request 1.24, BATES 0000048 – 0000049.

Title & Closing (American Government Services) – To provide title work and closing services to support the proposed upgrade to the existing transmission system due to the proposed future Levy Nuclear Plant.

Survey – To provide survey work to support the proposed upgrade to the existing transmission system due to the proposed future Levy Nuclear Plant.

2.3.2 Audit Staff Review of the Levy EPC contract

Audit staff reviewed the EPC contract and its current amendments to provide a summary of the EPC contract terms and conditions, its pricing structure, payment and schedule milestones, and the relative risk sharing between PEF and the Consortium. The initial contract was signed on December 31, 2008; with three amendments through March 2010. The third amendment addressed the long-term schedule shift for the project.

Pricing Structure

The EPC contract is comprised of a [REDACTED]

The contract value at inception was [REDACTED]

However [REDACTED]

The contract defines the pricing options as:

Fixed: [REDACTED]

Firm: [REDACTED]

Target: [REDACTED]

Time and
Material: [REDACTED]

Due to long-term pricing uncertainty, it may not be optimal for fixed and firm pricing to be used exclusively within an extended contract such as those inherent in building a nuclear unit. Although over time, the price certainty will increase as the project schedule moves closer to implementation and the actual costs become more apparent. A large portion of the total contract

²⁶ PEF Contract Number 414310. Document No. 2379-10, Docket 100009-EL, Bates 000333-000338.

cost is for labor, equipment, and commodities. Vendors may be reluctant to lock-in these costs so many years prior to the need. To obtain totally fixed pricing, one would expect the contractor to charge a premium to guard against the added price risk.

At its inception, the contract pricing structure included [redacted] percent of the cost under [redacted] and [redacted] percent under [redacted] pricing. As the project moves forward, [redacted]

[redacted] EXHIBIT 14 lists the pricing by price structure and the original contract amount.

As the chart shows, aside from the [redacted] components and the actual [redacted] costs, approximately [redacted] of the EPC contract costs are subject to [redacted]. A portion of the [redacted] approximately [redacted] percent, is set at either a [redacted] percent or [redacted] percent [redacted]. The other [redacted] percent—the remaining portions of the [redacted] costs along with all [redacted] pricing—are tied to the [redacted] [redacted] is an industry-recognized [redacted] and is published semi-annually. Of the pricing [redacted] the contract establishes approximately [redacted] percent as [redacted] while the remaining 39 percent is [redacted]. Again, within [redacted] approximately another [redacted] percent of the [redacted] price.

PEF Levy EPC Contract Pricing Structure and Breakdown (in millions)		
Pricing Structure	Amount at Contract Inception	Type
[redacted] Price [redacted]	[redacted]	[redacted]
[redacted] a [redacted] percent [redacted]	[redacted]	[redacted]
[redacted] at [redacted] percent [redacted]	[redacted]	[redacted]
[redacted] a [redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

EXHIBIT 14

Source: PEF Contract Number 414310--Document No. 2379-10, Docket 100009-EI

[redacted]

[REDACTED]

Termination Rights

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Contract Terms

The terms and conditions of the EPC contract were evaluated by PricewaterhouseCoopers prior to the company signing the contract in 2008. The audit determined that the EPC contract was [REDACTED] of this type. The major articles and contract terms and conditions are listed below:

- Scope of Work and Schedule
- Facility licenses, Permits and Approvals
- Quality Assurance and Inspection of Work
- Contract Price and Price Adjustment Provisions
- Payment and Payment Schedule
- Changes in Work
- Force Majeure

²⁷ PEF Response to Staff Data Request 6.2.

²⁸ Amendment Three maintains [REDACTED]

²⁹ PEF Contract Number 414310. Document No. 2379-10, Docket 100009-EI.

Testing and Performance Guarantees
Stages of Completion
Delay Liquidated Damages and Damage Caps
Warranty
Indemnity and Protection for Nuclear Incidents
Insurance and Taxes
Limit of Liability
Liens
Title, Risk of Loss, and Responsibility for Work
Suspension and Termination
Safety
Records and Audit
Dispute Resolution

In addition to these major areas, the contract establishes detailed exhibits and matrices that address specific areas of the project. Major contract exhibits include:

Scope of Work and Division of Responsibility

Permit Requirements

Milestone Performance Schedules

Payment Schedules

Rates and Charges

Performance Incentive Plan

Price Adjustment Provisions

Approved Sub-Contractor and Supplier lists

³⁰ PEF Contract Number 414310. Document No. 2379-10, Docket 100009-EI.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Audit staff notes that Progress Energy currently plans another AP1000 project at its Harris plant, which is part of its Carolina utility. Audit staff recommends the Commission monitor this project to ensure that the Carolina project, and its rate base, does not receive a cost reduction or cost exemption based on Progress Energy Florida's initial expenditure without adequate compensation.

Amendments

The company has amended the contract three times since its inception in December 2008. These amendments were all a result of the company decision to implement the long-term schedule shift. Amendment One and Two [REDACTED]

[REDACTED] The amendments were necessary to allow for continued negotiations between PEF and the Consortium.

Amendment 3, signed in March 2010, formalizes the long-term shift in the project schedule. As previously discussed, the amendment [REDACTED]

[REDACTED] the company will be required to re-negotiate all calendar-driven milestones prior to moving forward with the project. PEF management states that this will be a labor-intensive effort and anticipates that it will take

upwards of 18 months to finalize these negotiations.

[REDACTED]

[REDACTED]

Numerous organizational and management changes, and lack of clarity regarding roles and responsibilities adversely impacted organizational effectiveness and contributed to insufficient alignment between EPU Engineering and LAR activities.”³⁵

The company implemented a corrective action plan to resolve the issues identified by the panel and to strengthen the content of the application. The company hired outside consultants to assist with this restructuring. Specifically, the company determined that its original format template was not adequate in addressing the details necessary for the NRC review. The company developed a new template, which required AREVA and the licensing group to restructure the existing application. The Expert Panel completed two additional reviews through January 2010 to monitor the changes incorporated into the LAR application.

AREVA Change Orders

PEF contracted with AREVA to complete “CR3 EPU LAR Re-write Activities”³⁶ for previously drafted sections of the application. In October 2009, PEF initiated a change order on the AREVA contact for [REDACTED]³⁷ to perform a three-phase work scope that included re-writes of LAR sections to incorporate the revised template and revise specified portions of the application. In January 2010, the company increased this change order to [REDACTED]

Additionally in October 2009, the company initiated a separate contract change order to AREVA for [REDACTED] for additional LAR work. This work was a result of the Expert Panel evaluation and focused on finalizing engineering and design related topics. This contract amount was increased in January 2010 to [REDACTED]³⁹. As with the other change order, the increase was for the additional time it took to complete the engineering scope. In total, these two change orders added [REDACTED]⁴⁰ to the company’s LAR expenditures.

Audit staff recognizes the important role of the Expert Panel and its critical evaluation had in insuring a complete and thorough LAR submittal to the NRC. Given the panel’s findings, there was a potential for significant delays in the LAR approval process had the company not commissioned this detailed evaluation. Additionally, the company devised an initial schedule that included a float, which allowed for the necessary time needed for restructuring and strengthening of the application without impacting the project timing. Appropriately, the company performed a root-cause analysis to assess the reasoning for the deviances in its application and developed an action plan to resolve any outstanding issues.

While audit staff acknowledges the importance and value in the self-assessment process used by company, the findings of its Adverse Conditions Investigation are concerning. This

³⁵ PEF Response to Staff Data Request CR3 1.14, Bates 002080-002081.

³⁶ PEF Response to Staff Data Request CR3 1.22, Bates 000081.

³⁷ Ibid. Bates 000080.

³⁸ PEF Response to Staff Data Request CR3 4.2, Bates 000001.

³⁹ Ibid. Bates 000011.

⁴⁰ Ibid. Bates 000021.

internal PEF investigation notes a lack of understanding, experience, and oversight of the licensing preparation team.

The company points out that the regulatory review process is ever evolving and the NRC's expectations can differ based on the specifics of each application. PEF also believes that the NRC's expectations expanded during the time its licensing group developed its application; based on the NRC's handling of the Monticello and Point Beach EPU applications. The company states that this environment created an uncertainty and lack of expertise within the industry on LAR application. While this may be an accurate description of the evolution of the process, two of the four members of the expert panel were Progress Energy Carolina employees. This indicates that Progress Energy Corporation had the corporate knowledge to assess and evaluate an application. However, these needed resources were not deployed for the CR3 LAR work during the earlier stages of the process.

Audit staff believes the panel's findings were less about shifts in NRC expectations than project team knowledge and supervisory oversight. The company's internal findings clearly identify poor management oversight and lack of the very specific type of needed expertise among its staff as the critical reasons for the deficient draft application. While audit staff agrees that significant resources are necessary to complete the LAR application and the company's extensive efforts post-expert panel to revise its application may have been necessary to develop a sound application from the onset, significant resources were spent prior to develop the final draft. These resources may not have been appropriately supported by the company to allow for a successful outcome. As a result, avoidable-work may have been performed as corrective action work by AREVA and the additional efforts by PEF staff.

Low Pressure Turbine Replacement

As part of the EPU project, PEF contracted with Siemens for two 18m² low pressure turbines. Originally, the company included installation of these turbines as part of its Phase II work scope. However, in mid-2009 the company determined that it would shift the installation of the low pressure turbines from Phase II until Phase III of the project. At the time, the company was still evaluating the impact of a major turbine failure at the D.C. Cook Nuclear Plant, which involved similar Siemens 18m² turbines. This 2008 event and resulting fire caused significant damage to that facility resulting in a costly repair and extended outage.

While PEF was monitoring the results of the D.C. Cook event, the company continued with the order of these turbines. [REDACTED] certain quality tests on this equipment. One quality assessment required the turbines to successfully operate at 120 percent of maximum output. The company refers to this as the "spin test." Siemens performed the spin test in April 2009, and the turbines did not pass this test. The turbines experienced disk slippage between the final blade components and the turbine's main shaft. After a detailed evaluation, [REDACTED] PEF informed Siemens that the turbines [REDACTED]

In addition to concerns from the spin-test failure, PEF states that the D.C. Cook incident created an unwillingness by the Nuclear Electric Insurance Limited (NEIL)—the group that

insures nuclear plants against a variety of risks⁴¹—to insure any newly-installed Siemens 18m² turbine for its first two in-service fuel cycles. It was determined that the cause of the D.C. Cook failure was the 18m² model's L0 blades. According to PEF, [REDACTED]

The turbines are a critical component to maximizing the additional MWe output from the EPU efforts. The contracted Siemens model—18m²—allows for the maximum capture of steam, resulting in the largest MWe output. While the company states it anticipates resolving the current turbine issues and installing the Siemens 18m² model, management is evaluating several replacement options as a precaution. These options are shown in **EXHIBIT 15**.

PEF CR3 Low Pressure Turbine Replacement Options and the Resulting MWe Output		
Option	MWe output Added by EPU	Final Unit Output
Option 1: Continue Operating CR3 with its current Alstom Turbines	16 MWe	916 MWe
Option 2: Install the contracted Siemens 18m ² as originally designed during Phase III*	180 MWe	1080 MWe
Option 3: Install the contracted Siemens 18m ² without the L0** blades during Phase III*	100 MWe	1000MWe
Option 4: Install Siemens' smaller 13.9m ² turbines in 2013 (additional time is needed to manufacturing the equipment)	172 MWe	1072 MWe

* The 18m² must pass the spin test prior to installation.

** The L0 blades were determined to be the cause of the D.C. Cook failure. According to PEF, [REDACTED]

EXHIBIT 15

PEF Response to Staff Data Request CR3 3-8

In addition to the turbine options being considered by the company, PEF states it is in settlement negotiations with Siemens [REDACTED]

[REDACTED] The company states if its moves forward with the current 18m² turbines, it will require [REDACTED]

[REDACTED] PEF states it is optimistic that the negotiations will result in a positive outcome for the company and anticipates finalizing its turbine decision in mid-2010.

⁴¹ www.nmlneil.com

3.1.2 Impact on Schedule and Cost

While there is no direct correlation between the work for the EPU project and the events leading to the delamination of the CR3 containment vessel, the completion of the EPU project will be delayed as a result of the delamination repair work necessary to bring the unit back online. The timeline for completing the necessary repairs is in flux. Originally, the company anticipated the unit to be operational in mid-2010; however, after further evaluating the repair scope, the company shifted its estimate for start-up to third quarter 2010.

This will require a shift in the refueling schedule 17 (R17). The final phase of the EPU project is currently scheduled to occur during the R17 outage. As of May 2010, the company anticipates the R17 to shift from fall 2011 to spring 2012. However, if additional delays arise in the delamination repair schedule, the R17 schedule could shift further out in time.

The company states the cost implications for the shift in R17 will not significantly impact the EPU project. Currently, the company does not anticipate any additional direct costs to the project other than costs associated with any cost escalations over time. However, the company does not have an estimate of the cost impact at this time. The total shift in schedule is anticipated at six to twelve months from the original November 2011 timeline.

While the company anticipates minimal cost-impact resulting from this schedule shift, audit staff recommends the Commission monitor for any additional EPC costs associated with the Phase III work. This schedule shift is a direct result of the delamination issue at CR3, and PEF and the NRC are investigating the root cause of this incident. Depending on the outcome of this investigation, additional EPC project costs related to the shift may need to be excluded from the NCRC docket and addressed separately.

Low Pressure Turbine

The company is currently assessing the overall impact of the Low Pressure Turbine installation on the project. The unresolved issues surrounding Siemens 18m² turbines resulted in a shift in installation from Phase II to Phase III. Because of this shift, there may be additional costs associated with the delivery and installation of the turbines during Phase III of the EPU. Additionally, the shift in installation required the company to adjust certain engineering designs for the Phase II work. This redesign required an additional work authorization with AREVA, totaling [REDACTED]

The company states it is currently negotiating a settlement with Siemens and anticipates that [REDACTED]. However, until the settlement is finalized, it remains to be seen whether the anticipated settlement [REDACTED]. Staff recommends that the Commission monitor the results of this process to ensure that the company only request recovery of the appropriate costs and excludes any resulting from a possible vendor error.

In addition, if the company chooses not to move forward with its current Siemens low pressure turbine selection, there will be a decrease in the final MWe output for the project. If this occurs, an evaluation would be necessary to assess the appropriate handling of the reduction in planned versus achieved MWe output. In effect, the uprate would then have cost more per additional MWe added, and adjustments may be warranted.

License Amendment Request

The company has shifted its LAR submittal timeline from 2009 to mid-to-late 2010. The company originally incorporated a float into its original schedule, and with the impact of the delamination repairs on the R17 outage, the company has gained additional float in its submittal window. Audit staff does not believe the delays resulting from the company's restructuring and revising its LAR application will ultimately impact the EPU schedule. The company states that the Phase III work will continue as schedule, even if there is a delay in the LAR approval. If the company completes the work prior to approval, however, the unit will not be able to operate at the higher capacity prior to the NRC's issuance of an amended license.

The company increased its spending on the LAR preparations in 2009 and 2010. This was a result of the expert panel's assessment that the final draft would not meet the expectations of the NRC. The company estimated its 2009 License Application capital expenditures at [REDACTED]. However, the company spent an additional [REDACTED] on this effort. This was attributed, in part, to the additional work necessary to strengthen its LAR after the Expert Panel review. Of these additional costs, AREVA was paid [REDACTED] to re-write and restructure previously drafted sections within the LAR application.⁴² Additionally, [REDACTED] was paid to finalize the engineering requirements.

The company anticipates that through 2010, it will spend an [REDACTED] to complete its LAR efforts. PEF estimates that at completion, the LAR application process will cost approximately [REDACTED]. This represents a [REDACTED] over its original 2007 estimate of [REDACTED].⁴³ The company states the application is ready to submit to the NRC, but it does not anticipate filing the application until fall 2010.

Overall Project Cost

The overall anticipated final cost of the EPU project has increased during the course of the project. The company originally anticipated the project to cost \$426.6 million, while the most recent estimate is \$479.4 million, a 12 percent increase.⁴⁴ The project team documented and updated these costs within its 2009 IPP, and received senior management's approval for the additional expenditures. The company states the increases in costs include additions and modification to the engineering specifications and increases in labor and support costs.

3.2 EPU Project Controls and Oversight

3.2.1 Project Controls, Risk and Management Oversight Changes

As discussed in the context of the Levy plant, the company requires an *Integrated Project Plan* (IPP) for each major project implemented by the company. For both the Levy and the Crystal River 3 Uprate, the IPP establishes the financial requirements necessary to complete the project along with the project scope, deliverables, and risks associated with the project. Senior management uses this document to assess the overall feasibility of the project and to track the overall financial commitment for the project.

⁴² PEF responses to Staff Data Request CR3 4.2, Bates-000001.

⁴³ PEF Response to Staff Data Request CR3 4.2, Bates-000021.

⁴⁴ PEF Response to Staff Data Request CR3 1.18.

3.3 EPU Contract Oversight and Management

PEF provided all RFPs issued and bid evaluations (both financial and technical) supporting the CR3 Uprate project contracts in excess of a \$100,000 bid.⁶⁴ A listing of the 2009 EPU contracts is provided in **EXHIBIT 22**.

PEF Contracts Greater than \$1 Million for the EPU Project as of December 31, 2009				
Company	Contract Number- Work Authorization	Description	Original Contract Amount (\$000's)	Estimate of Final Value (\$000's)
AREVA-NP	101659 WA 84	EPU NSSS Engineering, Fuel Engineering and LAR Support	██████	██████
Thermal Engineering International (TEI)	342253	Purchase of Four Moisture Separator Reheaters (MSRs)	██████	██████
AREVA-NP	101659 WA 93	EPU Balance of Plant and Turbine Bypass Valves	██████	██████
Siemens	145569 WA 50	CR3 Turbine Retrofit for EPU Including Supply of All Equipment and Installation	██████	██████
Yuba	355217	CR3 Feedwater Heater and SC Cooler Replacement	██████	██████
Barnhart Crane and Rigging Co.	384426	Heavy Hauling	██████	██████
MHF Logistical Solutions	47083-08	Radiation Waste Disposal	██████	██████
Mesa Associates, Inc.	221186-24	Civil Engineering POD Cooling Tower	██████	██████
Atlantic Group	3714 / 72&74	CR3 R16 EPU Implementation Labor and Support	██████	██████
Modspace	418171	Lease of Two-Story Trailer for EPU	██████	██████
Bartlett Nuclear	3707 / 43	EPU Portion of Health Physics / Decontamination for R16	██████	██████
Bettle Plastics	450789	Fiberglass Reinforced Piping for Helper Cooling Tower South	██████	██████
ITT	450795	Four Intake Pumps for HCTS	██████	██████
EvapTech	433059	CR3 Cooling Tower Construction	██████	██████

EXHIBIT 22

Source: Exhibit WG-2, Schedule T-7, March 1, 2010 Testimony 100009-E1

The AREVA contract, change order 23, increased the Work Authorization value by ████████ on a time and materials basis for CR3 LAR re-write activities. ██████████

⁶⁴ PEF Response to Staff Data Request 1.24, BATES 0000035.

Change Order 25 increased the Work Authorization value by [REDACTED] on a time and materials basis for [REDACTED]

AREVA contract, change order 31, increased the Work Authorization value by [REDACTED] on a time and materials basis to support revisions to the design models due to the deferral of the LP turbine. This change order would not have been necessary if the [REDACTED]. PEF is working with Siemens and NEIL to resolve the manufacturing issues, final costs and schedule.

Planned Contracts for 2010

Engineering design specifications of material are scheduled and are progressing for the remaining EPU work scope. After the engineering design specifications are issued, the procurement of material will begin. The company states it has used a competitive-bid RFP process for all its contracts and materials. The procurement of material is scheduled with end dates selected to support the pre-outage milestones established by outage and project management.

Long-lead items that have been identified to date⁶⁵ include:

- Feed Water Booster Pump Motors
- Condensate Pump Motors
- Atmospheric Dump Valves
- Safety Related Motor Operated Valves
- Low Pressure and High Pressure Injection Components

The contracts planned for 2010 (R17)⁶⁶ are in their initial bid process. These contracts and their status are:

- POD/HCTS Supporting Structures – vendor selection expected in early 2010
- Booster Feed Pumps – RFP under development
- Condensate Pumps – RFP under development
- Atmospheric Dump Valves – RFP under development
- Feed Pump / Main Impeller – specification under development
- Main Feed Pump turbine re-rate – specification under development
- Motor Operated Valves – specification under development
- LPI Cross Tie – specification under development

As noted previously, PEF is continuing negotiations with Siemens and NEIL regarding the LP Turbine issue. Based on documentation reviewed by FPSC staff, the company appears to have followed its procurement procedures for initiating and implementing its EPU contracts. Staff recognizes that many remaining contracts for the EPU project will be initiated in 2010.

⁶⁵ PEF Response to Staff Data Request 1.19, BATES 0000028.

⁶⁶ PEF Response to Staff Data Request 1.21, BATES 0000030.

4.0 Conclusions

This section provides audit staff's summary of observations regarding the two nuclear projects underway in Florida during the review period of 2009 through May 2010.

4.1 Levy Nuclear Project

4.1.1 Project Events and Developments

During 2009, PEF redirected its focus of the Levy Nuclear Project from construction to regulatory approval. The company has delayed the project by a minimum of 60 months, pushing out preconstruction to 2013 and the start of major construction activities until at least 2015. The current focus is to obtain the COL approval from the NRC and then re-evaluate the construction timeline. Because the company has an Engineering, Procurement, and Construction contract with the Consortium to start construction on the Levy project in 2012, the decision to shift the schedule required renegotiation of the terms of the contract.

During the company's reevaluation of the project schedule, it considered several scenarios ranging from a 24-month delay to full cancellation of the project. In the end, the company decided to shift the construction start date to within [REDACTED] days after the issuance of the COL, which is currently anticipated for late 2012 or early 2013. The company believes this will result in a shift in the in-service dates to 2021 and 2022 for the two units.

The company was successful in negotiating an amendment to its EPC contract with the Consortium incorporating this new schedule timeline. In doing so, PEF was [REDACTED]

As a result of the shift a schedule, the company has worked with the Consortium to address the outstanding purchase orders under the contract for its long-lead items. These purchase orders are for [REDACTED] major components for a total cost of approximately [REDACTED]. The company anticipates it will cost upwards of an additional [REDACTED] to finalize the disposition of these purchase orders. This cost is directly related to the shift in schedule.

PEF estimates that there will be an increase in total project costs as a result of the shift in schedule. In 2008, the company estimated the total project cost, excluding AFUDC, at [REDACTED]. The 2010 estimate, using the 2021/2022 in-service date as its base, projects the total cost at [REDACTED]. This represents an approximate increase of [REDACTED].

4.1.2 FPSC Audit Staff Conclusion

Audit staff recognizes that several internal and external factors influenced the company's decision to shift its construction schedule for the Levy project. This was based on several key assumptions by PEF. First, the company's internal assessment that the project is still a viable

and feasible option and that there is a standing determination of need issued by the Commission. Second, the delay in Westinghouse receiving NRC approval of its final design certification. Third, the economic downturn and recent lower demand within the State. Last, the uncertainty in the proposed Federal carbon legislation. Given the uncertainties facing the company, audit staff recognizes that keeping the project progressing, without further substantial investment of cost, is a reasonable approach by PEF at this point in time.

4.2 Crystal River 3 Extended Power Uprate Project

In 2009, PEF completed Phase II of the Extended Power Uprate project at the Crystal River Unit 3. The company states that all work was completed as scheduled and within the allotted budget. During the outage, the PEF project management team monitored the work performed for each major component and tracked variances and delays in the schedule.

4.1.1 Project Events and Developments

Overall, the company anticipates the total EPU project cost to be \$479.4 million (excluding AFUDC and joint owner commitments). This represents a 12 percent increase from the original \$426.6 million estimates. Through its Integrated Project Plan process, the company has documented the additional costs and received senior management approval to increase these expenditures over time. The company believes that this increase is within an acceptable range for a project of this size and complexity.

During the fall 2009 outage, the company discovered a delamination within the wall of the unit's containment vessel. This was identified during the work to replace the unit's steam generators—a separate and independent project from the EPU. The delamination repair has extended the original outage through at least fall 2010. This extended outage will impact the EPU's phase III schedule. Originally, the company planned to finish the EPU work scope during the next refueling outage, scheduled for fall 2011. However, PEF has shifted the outage to at least spring 2012.

In mid-2009, PEF made the decision to defer the installation of its two low pressure turbines from Phase II to Phase III work scope. This decision required the company to spend [REDACTED] restructuring its Phase II work scope to accommodate this change. Two factors influenced this decision: the turbines failing a [REDACTED] quality assessment test and the ability to adequately insure this turbine model. The company is currently negotiating a resolution with Siemens, the turbine manufacturer, to resolve the outstanding issues. Also, the company is considering the following turbine options: continue operating CR3 with its current Alstom turbines, install the 18 square meter Siemens turbines during Phase III as originally designed, install the 18 square meter Siemens turbines during Phase III with the L0 blades removed, or install smaller 13.9 square meter Siemens turbines in 2013.

Additionally, if the company chooses not to move forward with its current Siemens low pressure turbine selection, there will be a decrease in the final MWe output for the project. If this occurs, an evaluation may be necessary to assess the appropriate handling of the reduction in

planned versus achieved MWe output. In effect, the uprate would then have cost more per additional MWe.

Prior to the company implementing the EPU changes, PEF must receive approval from the NRC to operate at the higher MWe output. This is achieved through an amendment to the company current operating license. The company initiated its License Amendment Request application in 2007. In June 2009 PEF commissioned an "Expert Panel" to review its *Final Draft-CR3 EPU Licensing Report*. The panel determined that the application would not receive NRC approval as written, requiring the company to expend resources to strengthen the submittal. The company's internal findings clearly identify poor management oversight and lack of the very specific type of expertise as the critical reasons for the deficient draft application. In total, the company contracted with AREVA for an [REDACTED] to complete the required restructuring/rewrite of the LAR and [REDACTED] for additional engineering scope-related work.

4.2.2 FPSC Audit Staff Conclusions

As a result of the events described in Section 4.2.1, FPSC audit staff draws the following conclusions:

Audit staff recommends the Commission monitor the EPU project for potential cost impacts resulting from scheduling delays caused by the delamination issue.

Audit staff recommends that the Commission monitor the results of the Siemens turbine negotiations to ensure that PEF recovers all the appropriate costs, and excludes any costs resulting from a possible vendor error.

Audit staff recommends that the Commission monitor the Siemens negotiations to assess the appropriate handling of any reduction in planned versus achieved MWe output resulting from any change to the original turbine design option.

Audit staff recommends that the Commission consider whether the additional [REDACTED] for the LAR restructuring/rewrite and the additional engineering scope by AREVA resulted from inadequate management oversight.