

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

**In re: Nuclear Cost Recovery  
Clause**

**DOCKET NO. 090009-EI  
Submitted for filing:  
August 10, 2009**

**REBUTTAL TESTIMONY OF JON FRANKE**

**ON BEHALF OF  
PROGRESS ENERGY FLORIDA**

**IN RE: NUCLEAR COST RECOVERY CLAUSE**

**BY PROGRESS ENERGY FLORIDA**

**FPSC DOCKET NO. 090009-EI**

**REBUTTAL TESTIMONY OF JON FRANKE**

**I. INTRODUCTION AND SUMMARY.**

**Q. Please state your name and business address.**

**A.** My name is Jon Franke. My business address is 15760 W. Powerline St.,  
Crystal River, FL 34442.

**Q. By whom are you employed and in what capacity?**

**A.** I am employed by Progress Energy Florida, Inc. ("PEF" or the  
"Company") in the Nuclear Generation Group and serve as Vice President  
of Crystal River Unit 3 ("CR3"), PEF's nuclear plant.

**Q. Have you previously filed testimony in this docket?**

**A.** Yes, I filed direct testimony on May 1, 2009.

**Q. Have you reviewed the Intervener testimony filed in this docket?**

**A.** Yes, I have reviewed and will provide rebuttal testimony to the testimony  
of William R. Jacobs, Jr. ("Jacobs") filed on behalf of the Office of Public

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Counsel (“OPC”). I also reviewed that portion of Dr. Jacobs’ deposition testimony with respect to the CR3 Uprate Project.

**Q. What is the purpose of your rebuttal testimony?**

**A.** The purpose of my rebuttal testimony is to respond to the testimony and recommendation presented by Jacobs on behalf of OPC regarding the CR3 Uprate Project.

**Q. Do you have any exhibits to your rebuttal testimony?**

**A.** Yes, I have the following exhibit:

- Exhibit No. \_\_\_\_ (JF-1), Excerpts of the Jacobs Deposition in this proceeding.

This exhibit is true and correct.

**Q. What does Jacobs have to say about the CR3 Uprate Project?**

**A.** Jacobs has two primary criticisms. First, he claims that the fact that the CR3 unit is a Babcock & Wilcox (“B&W”) nuclear reactor presents unique challenges to obtaining Nuclear Regulatory Commission (“NRC”) approval of the extended power uprate (“EPU”) at the unit after the 2011 refueling outage Uprate project work is complete. (Jacobs Test., p. 23, L. 8-19). He concedes he is not questioning the Company’s engineering approach to the Uprate project, (Jacobs Test., p. 23, L. 21-24); he is only “concerned” that certain “issues” he identifies in PEF meetings with NRC

1 staff may not be addressed to the satisfaction of the NRC such that the  
2 NRC approves the full 140 megawatts ("MWs") uprate from the EPU after  
3 the 2011 refueling outage work is completed. (Jacobs Test., pp. 24-25).  
4 He admits the NRC might approve the full uprate despite his concerns, but  
5 because the NRC might not, according to him, he claims PEF should not  
6 have incurred the bulk of the costs spent for the Balance of Plant ("BOP")  
7 work for the 2009 refueling outage and the EPU work for the 2011  
8 refueling outage until the Company had "reasonable assurance" from the  
9 NRC that the full uprate would be approved. (Jacobs Test., p. 26, L. 20-  
10 22).

11 Second, Jacobs' sole criticism of the Company's feasibility  
12 analysis for the CR3 Uprate Project is that the Company did not "file" a  
13 feasibility analysis. (Jacobs Test., p. 25, L. 25-27).

14 As I explain below, both of Jacobs' criticisms are without merit.

15  
16 **Q. Please summarize your testimony.**

17 **A.** Jacobs' criticisms are unfounded. Jacobs' wholly unsupported concerns  
18 that the NRC might not approve the full uprate demonstrate only that  
19 Jacobs would manage the Uprate project differently and in a way that is  
20 not consistent with the efficient management of the project in accordance  
21 with industry practice.

22 The Company was and is prudent in its approach to the planning  
23 and execution of the CR3 Uprate Project. PEF appropriately evaluated the

1 licensing risks associated with the approval of the full uprate by the NRC  
2 and PEF continues to monitor and manage those risks as the project  
3 progresses. Indeed, PEF has reasonable assurance that the NRC will  
4 approve the full uprate because PEF, working with our vendor Areva,  
5 continues to find confidence from the engineering analyses which  
6 addresses Uprate project licensing issues. Through this process, PEF has  
7 in fact addressed all the issues that Jacobs raises so his concerns are  
8 unfounded. All our engineering and licensing reviews continue to indicate  
9 that the plant can and will achieve an uprated license.

10 PEF's approach to the CR3 Uprate project is reasonable, consistent  
11 with industry practice, and provides benefits to PEF's customers. Any  
12 prudent utility would work with the NRC staff prior to the submittal of its  
13 license application to ensure the successful approval of the application  
14 after it is submitted. That is what PEF has done and continues to do.  
15 Further, PEF has prudently incurred costs for the Uprate project consistent  
16 with the industry approach to Uprate projects. Jacobs ignores the complex  
17 interrelationship between the Uprate modifications and the engineering  
18 analyses to support the license submittal such that a substantial portion of  
19 the Uprate costs must be spent to support the license submittal. Further,  
20 PEF is procuring equipment for the Uprate as PEF develops the  
21 engineering analyses for the uprate license submittal to ensure the Uprate  
22 work can be timely completed during the refueling outages just as other  
23 utilities have done on their uprate projects. Jacobs' approach would delay

1 the Uprate work, is not consistent with utility practice, and would delay  
2 the Uprate fuel savings benefits to customers.

3 Jacobs' criticism that PEF did not "file" a feasibility analysis is  
4 hardly worth addressing. In my May 1, 2009 direct testimony, I explained  
5 that the Company's feasibility analysis is contained in the Company's  
6 updated Integrated Project Plan ("IPP") for the project, which I discussed  
7 in detail in my direct testimony. I further testified that the IPP itself is a  
8 confidential document, but it was provided in discovery to Commission  
9 Staff and parties to this proceeding, and I provided the Bates number for  
10 that document. The rule says the Company is supposed to submit its  
11 feasibility analysis to the Commission and PEF has submitted it to the  
12 Commission staff and all parties to this proceeding. Jacobs cannot claim  
13 he does not have it, in fact, he attaches it as part of his Exhibit WRJ(PEF)-  
14 3 at pages 171-197 of 233. Jacobs has no substantive criticism of the  
15 Company's CR3 Uprate feasibility analysis.

16  
17 **II. CR3 UPRATE PROJECT RISK MANAGEMENT.**

18 **Q. Does Jacobs claim PEF's risk management with respect to the CR3**  
19 **Uprate Project is inadequate?**

20 **A.** Yes, he does, but he fails to support this assertion with any substantive  
21 analysis whatsoever. In fact, his testimony reveals that he actually agrees  
22 that PEF has appropriately identified these risks, developed appropriate  
23 risk mitigation engineering solutions for them, and is implementing those

1 solutions. What he really means by his “concerns” is that he would  
2 manage the uprate project differently.

3  
4 **Q. Can you please explain what you mean?**

5 A. Yes. Jacobs claims that there are five NRC licensing related items that  
6 PEF has identified that must be resolved by solutions approved by the  
7 NRC before the uprate can be implemented but he is apparently concerned  
8 only with the four that were discussed with the NRC at a May 19, 2008  
9 meeting. (Compare Jacobs Test., p. 24, L. 2-7 and p. 24, L. 16-25.)  
10 Essentially, he is concerned about these items because, in his view, they  
11 have not been resolved for an uprate at a B&W reactor like CR3. He  
12 believes the Company should not spend unspecified amounts for the BOP  
13 and EPU work until the NRC has provided PEF reasonable assurance that  
14 the items can be resolved by the solutions PEF proposes for them. (Jacobs  
15 Test., p. 23, L. 8-19, p. 24, L. 7-8.).

16 Jacobs cannot and does not say that (1) PEF has not identified  
17 these items as potential issues, (2) PEF does not have engineering  
18 solutions to mitigate the risks associated with them, or (3) that PEF is not  
19 working on the engineering solutions for them. In fact, Jacobs says that he  
20 is not questioning PEF’s engineering approach to these items. (Jacobs  
21 Test., p. 23, L. 21-24). Jacobs also reviewed PEF’s project management,  
22 contract, and oversight controls, which include PEF’s risk management  
23 processes and practices, and found nothing unreasonable or imprudent in

1 them. See Exhibit No. \_\_\_ (JF-1) (Jacobs Dep. Excerpt pp. 36-37). His  
2 “concerns,” then, are not evidence of inadequate risk management.

3 Rather, Jacobs “concerns” focus on the expected outcome when  
4 the Company’s engineering solutions to the items he is concerned about  
5 are submitted with the License Amendment Request (“LAR”) to the NRC  
6 for approval of the 140 MW uprate. The LAR is what the NRC reviews  
7 and approves for uprates at existing nuclear power plants. Jacobs claims  
8 that because LAR approval for the full uprate is “somewhat uncertain”  
9 because of his “concerns,” PEF should not spend unspecified dollars on  
10 the BOP and EPU work until PEF has reasonable assurances from the  
11 NRC that the NRC will approve the LAR. See Exhibit No. \_\_\_ (JF-1)  
12 (Jacobs Dep. Excerpt, p. 177).

13 Jacobs, however, has done no analysis whatsoever of the items he  
14 is concerned about to express any opinion regarding the likelihood of  
15 NRC approval. Additionally, Jacobs admits he has not reviewed the  
16 Company’s technical analysis with respect to the LAR. He did review  
17 some documents prepared by AREVA which analyzed some of the issues  
18 and alternatives and found nothing that was inaccurate in that analysis.  
19 See Exhibit No. \_\_\_ (JF-1) (Jacobs Dep. Excerpt, p. 171-172). He cannot  
20 and therefore does not claim the technical engineering analysis and  
21 solutions for the CR3 Uprate Project, including the analysis and solutions  
22 for the four issues he is apparently concerned about, cannot be performed.  
23 In fact, he has never done a technical analysis to support a LAR for an

1 uprated facility. (Id. at 172). He must admit, then, that the full 140MW  
2 uprate could be approved. (Jacobs Test., p. 24, L. 13-14). He also  
3 concedes that it is possible that the NRC could approve some percentage  
4 of the 140 MW requested increase, rather than outright denying the  
5 request altogether. See Exhibit No. \_\_\_\_ (JF-1) (Jacobs Dep. Excerpt, p.  
6 171). Jacobs is just speculating that the full uprate might not be approved  
7 and, therefore, his argument that PEF should not incur certain uprate costs  
8 until it has reasonable assurance that the LAR will be approved is nothing  
9 more than his unsupported personal opinion that he would manage the  
10 project differently.

11  
12 **Q. Does Jacobs in fact recommend that the Company stop work on the**  
13 **BOP or EPU portions of the CR3 Uprate Project until the NRC**  
14 **approves the LAR?**

15 **A.** No, he does not. He recommends only that the Commission conduct a  
16 prudence review of EPU costs incurred during phase 2 if the NRC does  
17 not grant the LAR, an event which of course has not yet happened. And,  
18 as I explained above, his recommendation is unsupported by any technical  
19 analysis whatsoever. Essentially Jacobs wants to be able to use  
20 information he might have in the future, even though he hasn't reviewed  
21 the relevant information available now, to second guess a prudence  
22 decision made today.

23

1       **Q.       Does Dr. Jacobs express an opinion that any cost incurred by PEF for**  
2       **the CR3 Uprate Project for 2008 is imprudent?**

3       **A.**       No, he does not.

4  
5       **Q.       Given his recommendation, does Jacobs identify any specific cost that**  
6       **the Company should not have incurred for the CR3 Uprate Project?**

7       **A.**       No, he does not identify a specific amount of cost that the Company  
8       should not have incurred.

9  
10      **Q.       Is the Company appropriately managing the Uprate project?**

11      **A.**       Yes. PEF's approach is consistent with the industry approach to EPU  
12      projects. The NRC has reviewed and approved several other EPU license  
13      amendment requests at other nuclear plants. The NRC therefore has a  
14      very developed set of rules and procedures for the submittal, review, and  
15      approval of power uprates like the CR3 Uprate Project. PEF has benefited  
16      from lessons learned by these other EPU requests as well as from our  
17      internal lessons learned from the EPU at the Brunswick Nuclear Plant.  
18      PEF also fully understands the framework in which the NRC reviews  
19      these EPU requests and therefore has been able to craft the CR3 Uprate  
20      LAR to meet the expectations of the NRC.

21                   The engineering studies to support the EPU and the LAR are  
22      extensive and take over two years to finalize. Because much of the details  
23      for each of the modifications to the plant and equipment have to be

1 finalized in order to complete the engineering analyses for the LAR, these  
2 costs are incurred as part of the LAR preparation. A significant portion of  
3 the total uprate project costs would therefore have to be spent in order to  
4 support the LAR submittal anyway. This is typical of our experience with  
5 the CR3 Uprate Project, the Brunswick EPU, and the industry's  
6 experience with uprate projects.

7  
8 **Q. When will the Company submit the LAR for the CR3 EPU to the**  
9 **NRC for approval?**

10 **A.** PEF is currently finalizing its LAR submittal and plans to submit it to the  
11 NRC in early 2010. NRC approval is expected in mid-2011, before the  
12 start of the 2011 outage.

13  
14 **Q. Does PEF have reasonable assurances that its LAR will be approved**  
15 **by the NRC?**

16 **A.** Yes, it does. Jacobs asserts that reasonable assurance of NRC approval  
17 exists when the Company files its LAR, looks at the type of Requests for  
18 Additional Information ("RAIs") it is getting, and has discussions with the  
19 NRC to get a feel for if it is being accepted by the NRC. See Exhibit No.  
20 \_\_\_\_ (JF-1) (Jacobs Dep. Excerpt, p. 166). To the extent possible, we are  
21 doing exactly that.

22 PEF regularly interacts with the NRC regarding the preparation of  
23 its LAR for the CR3 Uprate Project. Rather than choose a course of action

1 in a vacuum, without input from the NRC, PEF is more proactive in  
2 raising and discussing issues and solutions with the NRC. Even when  
3 PEF is fairly certain about how an issue should be resolved, we discuss it  
4 with the NRC in an abundance of caution. As PEF works through these  
5 issues, and learns the NRC's preferences with respect to the solution, we  
6 gain more confidence that our ultimate LAR submittal will be complete  
7 and acceptable to the NRC.

8 PEF, therefore, is communicating with the NRC at each stage of  
9 developing its LAR, before it files its LAR. PEF regularly contacts and  
10 meets with the NRC to discuss its engineering analyses and solutions for  
11 the Uprate Project that will be supplied in its LAR when filed with the  
12 NRC. As a result, PEF has received the "reasonable assurance" that Mr.  
13 Jacobs describes that its LAR submission will be acceptable and will be on  
14 track to be timely approved.

15  
16 **Q. Is there any other reason for PEF to be confident that the NRC will**  
17 **approve its LAR?**

18 **A.** Yes. In addition to the industry uprate precedent and our company uprate  
19 experience, we feel our internal review process and completed engineering  
20 analysis position us well to have our EPU approved. We recognize that as  
21 the first B&W plant to apply for an EPU we must produce a high quality  
22 submittal. We have added additional levels of review to ensure the quality  
23 of the submittal and to reduce the risk of delays in the NRC's review.

1 Specifically, PEF has implemented an Independent Review for the LAR.  
2 The purpose of this review is to ensure that experienced individuals  
3 review the draft LAR for completeness, correctness, clarity, and  
4 conformance with industry best practices. The review will also ensure that  
5 the LAR contains sufficient detail to allow the NRC to independently  
6 conclude the acceptability of the CR3 EPU. PEF has brought in Progress  
7 Energy employees from the Company's Brunswick plant and corporate  
8 offices, as well as outside contractors, to conduct this Independent  
9 Review.

10 Further, we have completed the primary safety and transient  
11 analysis and the results have been satisfactory. We can demonstrate  
12 compliance with all regulatory requirements, we have generally reduced  
13 operator burdens, and we have carefully monitored the experience of other  
14 plants that have applied for EPUs. As I explained above, we have also  
15 been communicating with the NRC frequently. We have purposely visited  
16 with their technical staff face to face regarding our application. Indeed,  
17 PEF has conducted three pre-application meetings with the NRC to be as  
18 transparent as possible.

19  
20 **Q. Is there any reason for concern simply because the CR3 Uprate is the**  
21 **largest uprate of a Babcock & Wilcox plant?**

22 **A.** No. While Dr. Jacobs is correct that the CR3 Uprate project will be the  
23 largest uprate at a B&W plant, there is nothing particular about the B&W

1 plant design that presents insurmountable challenges to obtaining the  
2 requested uprate. Dr. Jacobs, in fact, does not present any analysis to  
3 support his sweeping statement about the nature of a B&W design. He  
4 indicated that the fact that B&W units have a small steam generator feed  
5 inventory would be a concern. This issue, as with other technical issues,  
6 has been fully evaluated as having no impact. Had he reviewed the  
7 technical information available he would have known that. During the last  
8 year and a half, PEF has been working on a detailed engineering analysis  
9 of the uprate and its effect on CR3.

10 All Mr. Jacobs has claimed is that certain modifications, namely a  
11 Low Pressure Cross tie system and the use of safety related Atmospheric  
12 Dump Valves, are unusual and, apparently to him, therefore at risk of not  
13 being approved by the NRC. See Exhibit No. \_\_\_ (JF-1) (Jacobs Dep.  
14 Excerpt, pp. 154-155). But these items are not unusual at all. In fact, of  
15 the seven B&W nuclear units in operation, four already have the Low  
16 Pressure Cross tie system and CR3 will be the fifth to have it when the  
17 Uprate Project is completed. The use of Atmospheric Dump Valves is  
18 already an approved design feature required by the technical specifications  
19 for three of the B&W units. Also, the safety related Atmospheric Dump  
20 valves are a design feature on many Westinghouse PWR designs and  
21 similar to a design feature that is part of almost all Boiling Water  
22 Reactors. In fact, similar systems to depressurize the reactor to mitigate a

1 plant transient are one of the most common designs of U.S. commercial  
2 nuclear plants in one form or another.

3 In addition, the requested uprate represents only a modest increase  
4 from the current licensed power level at other B&W plants. For example,  
5 in 2008 the NRC approved an uprate at the Davis-Besse unit to 2817  
6 MWt, meaning that our proposed power level will only be an approximate  
7 7% increase from the currently approved power level at Davis-Besse.

8  
9 **Q. What about Jacobs' "concerns" about the four issues addressed in the**  
10 **May 2008 PEF meeting with the NRC, is there any reason for concern**  
11 **with respect to the LAR approval as a result of these issues?**

12 **A.** No. To begin with, as I described above, this meeting is just one of many  
13 instances in which PEF has interacted with the NRC on various technical  
14 issues as they arise regarding the CR3 Uprate Project. The discussion  
15 involved four potential early submittals with the NRC which were: (1)  
16 core flood line break; (2) boron precipitation mitigation; (3) small break  
17 loss of coolant accident (LOCA); and (4) control rod ejection analysis. As  
18 I explain below, all of these issues have been resolved.

19  
20 **Q. Can you please describe the first submittal issue, the core flood line**  
21 **break, and explain how the Company has addressed it.**

22 **A.** Yes. A large part of analyzing any proposed change in a nuclear plant is  
23 the consideration of various potential scenarios occurring within the plant

1 and devising ways to safeguard and mitigate the consequences of those  
2 potential scenarios. One such scenario involves losing coolant through a  
3 break in a safety system (Core Flood), in conjunction with a specific  
4 electrical system loss of power. There are two options to address this  
5 potential scenario. We could seek an exemption from the original design  
6 criteria upon which the plant was originally licensed. Or we could include  
7 a modification in the scope of the uprate project to mitigate the  
8 hypothetical scenario.

9 We discussed with the NRC whether they were confident that we  
10 could obtain an exemption for this scenario under the regulations. An  
11 exemption is allowed if the utility can show that the probability that the  
12 particular event is extremely low, thus eliminating the need to study the  
13 impact of the hypothetical event. The NRC indicated that an exemption  
14 would be challenging to review. As a result of our review and the  
15 feedback from the NRC, we decided to implement a modification. The  
16 NRC has been strongly supportive of our decision to address this issue  
17 through a modification which creates a cross tie in the Low Pressure  
18 Injections systems, thereby eliminating the need for the exemption.

19 In the May 2008 meeting, the NRC indicated that if we still choose  
20 to request an exemption for the core flood line break, we should submit  
21 the exemption request by August 2008. Because we decided to implement  
22 a modification to address this issue, there was no need to submit anything  
23 further in August.

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**Q. Please describe the second submittal issue, boron precipitation mitigation methods, and explain how the Company has addressed it.**

**A.** Boron precipitation is a phenomenon that can occur following a Loss of Coolant Accident. Boron precipitation can cause blockages in the reactor coolant system. Under the current rating of the plant, PEF has an exemption with respect to the method by which a boron precipitation event is handled. During the May meeting, the NRC indicated that, if the Company intended to seek the same exemption with respect to boron precipitation at uprated conditions, it would need to be separately reviewed by the NRC. In other words, PEF would have to submit a separate filing from the LAR to support the effectiveness of the current exemption.

After the May NRC meeting, PEF determined that the same modification used to address the core flood line break issue above could be expanded to fully address the boron precipitation issue. This determination eliminated the need for PEF to seek a further exemption. Thus we do not need to get separate approval for the continued exemption, and we did not need to make any submittal by October 2008. By addressing the boron precipitation issue through modifications, which eliminates the need for any exemption, we make the EPU much more acceptable to the NRC.

1       **Q.       Please describe the third submittal issue, the Small Break Loss of**  
2       **Coolant Accident (LOCA), and explain how the Company has**  
3       **addressed it.**

4       **A.**       The NRC is concerned about the temperature of the fuel if a Small Break  
5       LOCA occurs. As indicated in the May 2008 meeting we intend to  
6       mitigate this issue by using larger Atmospheric Dump Valves. At the time  
7       of the May 2008 meeting, the proposed mitigation was believed to be a  
8       first of a kind design answer to an issue. In this case, the NRC expressed a  
9       preference for the Company to make a separate submittal from the LAR to  
10      allow additional review time. Since the May 2008 meeting, however, we  
11      have identified a directly applicable precedent at another B&W plant, in  
12      which the same proposed Atmospheric Dump Valves mitigation was  
13      approved by the NRC. PEF therefore determined that it was not necessary  
14      for PEF to validate the feasibility of the mitigation strategy or obtain  
15      conceptual concurrence from the NRC by making a separate submittal  
16      with the NRC. We have communicated this approach with the NRC, and  
17      they have agreed with our assessment. Therefore, although the May 2008  
18      NRC meeting minutes indicated that we needed to make this separate  
19      submittal by August 2008, this separate submittal is now unnecessary.

20  
21      **Q.       Finally, please describe the fourth submittal issue, the control rod**  
22      **ejection analysis, and explain how the Company has addressed it.**

1 A. We have submitted a separate LAR to adopt a more robust and modern  
2 methodology for the control rod ejection analysis. This scenario involves  
3 the instantaneous ejection of a control rod, resulting in increased  
4 reactivity. Consistent with the information in the May 2008 meeting  
5 minutes, we submitted the LAR in February 2009. We have received  
6 minor Requests for Additional Information with respect to this LAR and  
7 have timely submitted our responses. The NRC has indicated they are  
8 close to approving the new methodology, which will allow us to close this  
9 issue. With this approval, we will be able to make the base submittal for  
10 the LAR.

11  
12 **Q. If these submittal issues have been resolved with the NRC, why are**  
13 **there still high-rated risks related to these submittal issues in the risk**  
14 **documents for the CR3 Uprate Project?**

15 A. None of the risks on the risk matrix are risks related to achieving the LAR.  
16 They are related to cost and schedule. For example, the core flood line  
17 break remains red, because the Company is still drafting the details of the  
18 planned modification. We want to gain confidence that when the  
19 modification is finalized, we have budgeted enough money to install the  
20 modification. It is not a risk of obtaining the license from the NRC.  
21 Jacobs chooses to ignore the fact that these risks in the risk matrix have  
22 nothing to do with the LAR approval or he simply does not understand the  
23 risk matrix.

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**Q. If PEF waited to incur the BOP and EPU equipment procurement costs until LAR approval, as suggested by Jacobs, what effect would that have on the project?**

**A.** The uprate work on the project would be delayed with a corresponding delay in the fuel savings benefits to PEF and its customers and potentially higher uprate project costs. Many of the items necessary for the work in both the 2009 and 2011 outages require lead time. The Company must either issue a Request for Proposal and analyze the resulting bids, or perform an analysis to support a sole or single source contract. Once a vendor is chosen, additional time is required for the vendor to manufacture the equipment. Even Jacobs agreed that his approach would result in a project delay of at least one refueling outage. See Exhibit No. \_\_\_\_ (JF-1) (Jacobs Dep. Excerpt, p. 170). Additionally, by delaying the implementation of the BOP modifications until after the 2009 outage, the customer would experience an additional 30 to 40 day nuclear outage duration during the implementation year. During 2009 the station has the benefit of installing the modifications within the timeframe required to replace the steam generators which are being replaced for reasons other than the EPU.

1       **III. FEASIBILITY.**

2       **Q.       What is Jacobs' opinion with respect to the feasibility of completing**  
3       **the CR3 Uprate Project?**

4       A.       Jacobs claims PEF did not file the required feasibility analysis. He does  
5       not say what that required analysis is in his view and he does not explain  
6       why he believes PEF has not submitted the "required" feasibility analysis.

7  
8       **Q.       Does Jacobs make any recommendation regarding the feasibility**  
9       **analysis for the CR3 Uprate project?**

10      A.       No.

11  
12      **Q.       Do you believe that the Company submitted a detailed feasibility**  
13      **analysis for the CR3 Uprate project, in compliance with Rule 25-**  
14      **6.0423?**

15      A.       Yes. For all the reasons stated in my May 1, 2009 testimony, PEF has  
16      demonstrated the detailed analysis necessary to show the long-term  
17      feasibility of completing the CR3 Uprate Project. Part of my feasibility  
18      testimony relies upon the updated IPP, dated March 2, 2009. I note that  
19      the Company supported the feasibility of the CR3 Uprate Project in the  
20      2008 cost recovery docket by relying on the original IPP. Based on that  
21      feasibility analysis, this Commission approved the Company's 2006 and  
22      2007 actual costs as prudent.

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**Q. Does Dr. Jacobs reference the updated IPP for the CR3 Uprate Project?**

A. Yes, he does, he even attaches it as an exhibit to his testimony beginning at page 171 of Exhibit WRJ(PEF)-3, but nowhere does he address the economic evaluation contained in that updated IPP in his testimony. He simply ignores it.

**Q. Does this conclude your testimony?**

A. Yes, it does.

IN THE MATTER OF

**In Re: Nuclear Power Plant Cost Recovery Clause**

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Transcript of Deposition of

**William R. Jacobs, Jr., Ph. D.**

Volume I

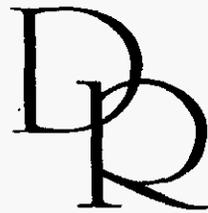
On July 27, 2009

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*Reported by Elizabeth R. Hollingworth  
Certified Court Reporter*

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In. Re: Nuclear Power Plant      Docket No. 090009-E1  
          Cost Recovery Clause

- - -

Deposition of WILLIAM R. JACOBS, JR., Ph.D.,  
          Taken by J. MICHAEL WALLS,

          Before Elizabeth R. Hollingsworth,  
          Certified Court Reporter,

          At the Offices of GDS Associates, Inc.,  
          Marietta, Georgia,

          On Monday, July 27, 2009,  
          Beginning at 9:04 a.m. and ending at 2:28 p.m.

- - -

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1 July 27, 2009

2 9:04 a.m.

3 (Whereupon the reporter provided a  
4 written disclosure to all counsel  
5 pursuant to OCGA 9-11-28.)

6 MR. WALLS: I think Al Taylor is the  
7 only one on the phone that is bound by a  
8 confidentiality agreement. If you could confirm  
9 that, Al, so we could start.

10 MR. TAYLOR: That is correct.

11 WILLIAM R. JACOBS, JR., Ph.D.,

12 being first duly sworn, was examined and  
13 testified as follows:

14 CROSS-EXAMINATION

15 BY MR. WALLS:

16 Q Dr. Jacobs, I'm going to begin your  
17 deposition testimony, and I want to make sure  
18 first that you had a chance to review the notice  
19 and the requested documents attached to it.

20 A Yes, I did.

21 Q And did you bring documents with you  
22 in response to that request?

23 A Yes. I brought the -- well, I brought  
24 several documents, one of the documents that we  
25 downloaded off the NRC Web site related to these

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1           A       That is correct. But I do have a  
2 question about the potential for some of those  
3 costs to be not effectively -- not incurred --  
4 let me choose my words here.

5                    There is a potential for those costs  
6 to not result in the desired end additional  
7 megawatts to the project. We'll probably get  
8 into that later.

9           Q       Yes, we will. But as we sit here  
10 today, you have no opinion that any cost incurred  
11 by Project Energy Florida on the CR-3 uprate for  
12 2006 and 2007 and 2008 is imprudent?

13           A       That's correct.

14           Q       If you could, turn to page five, lines  
15 12 through 17 of your direct testimony.

16           A       Okay.

17           Q       In here you answer a question asking  
18 you to describe the review of the project  
19 management procedures and practices used by PEF;  
20 is that correct?

21           A       That's correct.

22           Q       And you did do that; right?

23           A       Yes.

24           Q       And would you agree with me that your  
25 opinion after reviewing PEF's project management

1 contract and oversight controls is that you found  
2 nothing unreasonable or imprudent in those  
3 controls?

4 A That's correct.

5 Q Now, did your team also review PEF's  
6 accounting and cost oversight controls?

7 A Yes.

8 Q And would you agree with me that  
9 nowhere in your testimony do you express an  
10 opinion that Progress Energy Florida's accounting  
11 and cost oversight controls were unreasonable or  
12 imprudent?

13 A That's correct, I agree with you.

14 MR. WALLS: Now, by the way, any time  
15 you want to take a break, let me know.

16 THE WITNESS: All right. Is this a  
17 good time?

18 MR. WALLS: Yes.

19 (Deposition in recess, 10:02 a.m.  
20 to 10:07 a.m.)

21 THE WITNESS: A couple of things that  
22 I checked on during the break, in reviewing the  
23 SCANA EPC contract, that was in the June, July,  
24 August time frame of 2008 because I filed  
25 testimony in October 2008 in that case.

1           Q       By the way, did you review the  
2 company's analysis regarding the effect of low  
3 steam generator water level on the CR-3 uprate  
4 that you mentioned in your testimony?

5           A       I don't recall an analysis of that.

6           Q       Did you ask the company for that  
7 analysis in discovery?

8           A       No. I believe that TMI is the only  
9 B&W plant shown there of the 102.

10          Q       The NRC has certainly approved  
11 numerous other large uprate projects, though,  
12 haven't they?

13          A       Yes, they have. I mean, there's no  
14 doubt they have.

15          Q       The Clinton project was a 20 percent  
16 uprate, 579 megawatt thermals?

17          A       Yes, GE plant, I believe.

18          Q       Would that have involved a significant  
19 technical analysis to support that uprate?

20          A       Yes.

21          Q       So it's not your testimony that the  
22 analysis here can't be done or the effort can't  
23 be done; right?

24          A       No. It's being done. It can be done,  
25 just the outcome is somewhat uncertain.

1 But somehow you would have to consider that.

2 Q And that's not part of this analysis,  
3 and you haven't done that analysis?

4 A That's correct.

5 Q When you talk about the 20 megawatt,  
6 that's related to the BOP work itself?

7 A Right.

8 Q And you said that you can't say  
9 whether they're going to get all or more of the  
10 LAR approval for the primary site uprate; right?

11 A Right.

12 Q And 140 megawatts; right?

13 A That's correct.

14 Q And that 140 megawatts, what you're  
15 saying is they could grant approval for a part of  
16 that, not all of it; right?

17 A They could.

18 Q Or they could grant all of it; right?

19 A They may grant all of it.

20 Q Did you do some probability analysis  
21 based on the amount they could get out of that as  
22 well?

23 A No.

24 Q Have you reviewed the company's  
25 technical analysis underlining its LAR?

1           A       I've reviewed a number of -- I don't  
2 think the LAR is -- that's still under  
3 development is my understanding on the LAR.

4                   I reviewed a number of documents from  
5 AREVA where they went through the various  
6 alternatives. They identified that the peak clad  
7 temperature resulting from a small break  
8 loss-of-coolant accident required larger high  
9 head safety injection pumps in order to deal with  
10 it, which would have necessitated bigger  
11 emergency diesel generators, which was getting  
12 very prohibitive, and they came up with an  
13 alternative solution.

14                   So I've reviewed quite a few AREVA  
15 documents that have gone through that scenario.

16           Q       And did you find anything inaccurate  
17 in their analysis?

18           A       No. I just found it to be somewhat --  
19 extraordinary might not be the word, but going to  
20 significant lengths in order to make the EPU  
21 feasible, technically feasible.

22           Q       But have you done a technical analysis  
23 yourself to support an LAR for an uprated NE  
24 facility?

25           A       I have not.

1 100 percent of what they ask for and everything  
2 is hunky-dory.

3 But it seems like a nonconservative  
4 approach to spend the bulk of the money or the  
5 BOP uprate before you have a reasonably good  
6 assurance that you're going to be able to get the  
7 majority of the primary size uprate that you're  
8 asking for.

9 Q How do you get reasonable assurance?  
10 What do you mean by that? Is that something the  
11 NRC does? Is there something called a reasonable  
12 assurance from the NRC?

13 A No. But you can file your LAR  
14 request, and then you look at the type of RAIs  
15 that you're getting and have discussions with the  
16 NRC and get a feel for if it's being accepted by  
17 the NRC.

18 Q And how is that different from what  
19 the company is doing?

20 A The company spent all the money on the  
21 BOP side before they have even submitted their  
22 LARs for the safety-related steam atmospheric  
23 dump valves and the LPI thrust block.

24 Q Let's back up. I mean, there's a  
25 certain amount of work that will have to be done

1           The concern is that this is the first  
2 time that a Babcock & Wilcox-designed reactor is  
3 being upgraded to this extent. There are a  
4 number of technical issues that have to be  
5 resolved and particular issues related to the  
6 small break loss-of-coolant accident and peak  
7 clad temperature and the requirement to maintain  
8 the peak clad temperature below a certain  
9 criteria.

10           There have been a number of uprates  
11 throughout the nuclear industry and other units,  
12 but this is the first B&W unit being uprated to  
13 this level.

14           The company is going through some, in  
15 my mind, rather extraordinary events to be able  
16 to meet this peak clad temperature criteria, one  
17 being the installation of safety-related  
18 atmospheric dump valves. I'm not aware of any  
19 other project that has had to do that. And the  
20 installation of a low pressure injection cross  
21 tie. So these are pretty unusual modifications  
22 that are being required to meet the safety  
23 analysis criteria.

24           And so I don't know if I can put a  
25 number on it, but there's a possibility that the

1 request won't be granted at the level that the  
2 company is requesting. And so that kind of leads  
3 to the general concern that a lot of money will  
4 have been spent upgrading the secondary plant  
5 turbines, feedwater pumps, condenser, feedwater  
6 heaters that won't be beneficial if they don't  
7 get the required uprate on the primary side.

8 So it's kind of like they put the cart  
9 before the horse to some degree. It's not a  
10 conservative approach to spending money.

11 Ideally you would like to know or at  
12 least have a good indication that you're going to  
13 be able to get the requested uprate on the  
14 nuclear plant before spending a lot of money on  
15 the secondary plant upgrades. That's the concern  
16 in a nutshell.

17 Q I apologize, but this may be difficult  
18 to walk through given that I am not a nuclear  
19 engineer, but --

20 A I'm sorry. I'm not a lawyer.

21 Q -- you understand that the project is  
22 divided up into three phases because of the  
23 refueling outages; correct?

24 A Yes. Well, yes, it is divided into  
25 three phases, and they are being done at certain

1           A       That was a bit of an exaggeration, but  
2 they could have done it -- there was no line in  
3 the sand that said when they had to start on the  
4 LAR. I'm just saying they got the cart before  
5 the horse in my view.

6           Q       Well, isn't it reasonable to start on  
7 the LAR work when they decide they're going to do  
8 an uprate project?

9           A       That would be the starting point.

10          Q       And if they do that and they don't do  
11 any BOP work, which means --

12          A       Well, they do some small level of BOP  
13 work.

14          Q       Does that mean doing RFPs for both the  
15 technical work and the equipment that has to be  
16 provided? Do they do that?

17          A       They could do that. I would say  
18 everything up until -- again, we weren't able to  
19 get the exact information, but up until you begin  
20 procuring major pieces of equipment.

21          Q       So you shouldn't procure the major  
22 pieces of equipment until you have the LAR  
23 according to you?

24          A       That would be according to me, yes.  
25 That would be a conservative approach, not just

1 for the engineering for the LAR anyway; correct?

2 A There is an amount of work, yes.

3 Q Because you can't just submit some  
4 blank application to the NRC that says, we want  
5 to do an uprate; right?

6 A No. There's a mass amount of work. I  
7 mean, I've seen many, many documents from AREVA  
8 where they went all through the Chapter 14 FSAR  
9 safety analyses and which ones would be affected  
10 by the EPU and which ones wouldn't be affected.  
11 I mean, it's a tremendous amount of work.

12 Q And that work would have to be done to  
13 get the LAR; correct?

14 A Yes.

15 Q And you're saying some balance of  
16 plant work would have to be done; right? That's  
17 what you said?

18 A Could be done.

19 Q Could be done. Well, would it have to  
20 be done or should it be done before it, quote,  
21 "LAR approval"?

22 A Maybe a small amount, but typically it  
23 wouldn't have to be done. You could do all the  
24 work on the LAR before you get into the detail  
25 design of the BOP.

1 effective if they don't receive the approval to  
2 uprate the nuclear reactor power level.

3 In other words, we asked the company  
4 how much they were spending, and they couldn't  
5 say because it was kind of merged together. But  
6 the \$470 million, I would estimate at least 300  
7 to \$350 million are spent on the secondary side,  
8 putting in new low-pressure turbines, new  
9 feedwater heaters. You know, that's a major  
10 undertaking.

11 And that work will not be cost  
12 effective unless they receive at least a  
13 significant portion of the uprate that they're  
14 requesting on the primary side.

15 Q And how did you determine that? Did  
16 you do some analysis in your testimony?

17 A Well, I looked at the timing -- how  
18 did I determine which?

19 Q You say it will not be cost effective  
20 unless they get some part of the uprate. And I'm  
21 wondering, where is the economic analysis that  
22 shows, yes, here's the amount of uprate they have  
23 to get in order to make this investment in BOP  
24 cost effective.

25 A Well, that was a sort of

1 according to me.

2 Q And how long does it take to procure  
3 this equipment?

4 A I don't have a definitive answer for  
5 that. In a year or so I would guess.

6 Q And does that include the amount of  
7 time it takes to actually construct the  
8 equipment?

9 A Again, it would take whatever it would  
10 take. It would be a year, year and a half, in  
11 that time frame. So they might miss one of their  
12 refueling outages.

13 Q Right. They might miss one of their  
14 refueling outages and be pushed back into 2011 or  
15 2013; right?

16 A Yes.

17 Q And so in your calculation, wouldn't  
18 you have to take into account the two years --

19 A Excuse me. That's not my calculation.

20 Q Well, in any calculation of the cost  
21 versus the benefit, you would have to take into  
22 account those two years that you wouldn't get any  
23 of these megawatts, right, the 28 plus?

24 A Well, I mean, if it were two years. I  
25 mean, you could have started two years earlier.