



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

April 19, 2010

EA-09-321

Mr. Mano Nazar  
Executive Vice President and  
Chief Nuclear Officer  
Florida Power & Light Company  
P.O. Box 14000  
Juno Beach, FL 33408-0420

**SUBJECT: FINAL SIGNIFICANCE DETERMINATION OF A YELLOW FINDING AND  
NOTICE OF VIOLATION (NRC COMPONENT DESIGN BASES INSPECTION  
REPORT 05000335/2010007 AND 05000389/2010007), ST. LUCIE NUCLEAR  
PLANT**

Dear Mr. Nazar:

The purpose of this letter is to provide you with the disposition and final significance determination of the two preliminary Greater than Green findings discussed in NRC Inspection Report No. 05000335/2009006 and 05000389/2009006, dated January 19, 2010, (ML100210081). The two preliminary findings were related to air intrusion into the Component Cooling Water (CCW) system that occurred in October 2008, and involved (1) the failure of a non-safety system that could result in a common cause failure of both trains of the CCW system, contrary to 10 CFR 50 Appendix B, Criterion III, "Design Control", and (2) the failure to identify and correct a condition adverse to quality involving the source of the air in-leakage into the CCW system, contrary to 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action". The NRC's Inspection Report identified two apparent violations corresponding to the two preliminary findings.

At your request, a Regulatory Conference was held on February 19, 2010, to discuss your views on these issues. During the conference, your staff described the circumstances surrounding the October 2008 event, Florida Power and Light Company's (FPL's) assessment of the significance of the two preliminary findings, its root cause evaluation, and the corrective actions taken. FPL highlighted several differences between its risk assessment and the NRC's preliminary risk assessment as documented in our inspection report of January 19, 2010. At the conference, FPL contested the preliminary finding and apparent violation involving 10 CFR 50, Appendix B, Criterion III. In summary, FPL concluded that when St. Lucie Unit 1 was licensed, the facility was not required to incorporate a single failure design capability for a non-safety system. As such, FPL concluded that a violation of 10 CFR 50, Appendix B, Criterion III, did not occur. Regarding the second preliminary finding involving the failure to identify and correct the source of air in-leakage into the CCW system, FPL concluded that the significance of the finding should be characterized as Green. FPL did not contest the validity of the corresponding 10 CFR 50 Appendix B, Criterion XVI violation.

Regarding the preliminary finding involving 10 CFR 50, Appendix B, Criterion III, the NRC considered the information provided by FPL at the conference, and reviewed available information to determine the applicability of design control regulations to St. Lucie Unit 1. This included a review of the requirements at the time St. Lucie Unit 1 was originally licensed, the Safety Evaluation Report issued by the NRC following the review of St. Lucie Unit 1 design, the Final Safety Analysis Report, and the single failure analysis associated with the CCW system. Based on the review, the NRC determined that the Unit 1 CCW system met the design requirements at the time of licensing and at the time of the October 2008 air intrusion event. Therefore, this issue does not represent a performance deficiency, and accordingly, a violation of 10 CFR 50, Appendix B, Criterion III did not occur. Accordingly, Apparent Violation 05000335, 389/2009006-05, "Failure to Translate Design Basis Specifications to Prevent Single Failure of CCW" is considered closed.

After considering the information developed during the inspection and information provided by FPL during and after the conference, the NRC has concluded that the finding involving the failure to identify and correct the source of the air in-leakage into the CCW system is characterized as Yellow, i.e., a finding of substantial significance with regard to safety, which will require additional NRC inspections. The bases for the NRC's significance determination of this finding, and the differences in the licensee's characterization of the findings, are discussed in Enclosure 2.

You have 30 calendar days from the date of this letter to appeal the staff's significance determination for the Yellow finding. Such appeals will be considered to have merit only if they meet the criteria given in NRC Inspection Manual Chapter 0609, Attachment 2.

The NRC also has determined that the failure to identify and correct the source of the air in-leakage into the CCW system is a violation of 10 CFR 50 Appendix B, Criterion XVI, as cited in the enclosed Notice of Violation (Notice). The circumstances surrounding the violation were described in detail in NRC Inspection Report No. 05000335/2009006 and 05000389/2009006, dated January 19, 2010 (ML100210081). In accordance with the NRC Enforcement Policy, the Notice is considered escalated enforcement action because it is associated with a Yellow finding.

For administrative purposes, this letter is issued as a separate NRC Inspection Report, No. 05000335/2010007 and 05000389/2010007. Apparent Violation 05000335, 389/2009006-06, related to the CCW air intrusion event, is now Violation 05000335/2009006-06, "Failure to Identify and Correct a Condition Adverse to Quality." This violation was determined to have a cross-cutting aspect in the area of Human Performance, Decision Making, specifically H.1(a).

Because plant performance for this issue has been determined to be beyond the licensee response band of the NRC Action Matrix, we will use the Action Matrix to determine the most appropriate NRC response for this event. We will notify you, by separate correspondence, of that determination.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance will be achieved is already adequately addressed on the docket in the "St. Lucie

Meeting Summary," dated February 26, 2010 (ML100601170). Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, please follow the instructions specified in the Notice of Violation, Enclosure 1.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, Enclosures 1 and 2, and your response, if any, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, if any, should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such information, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). The NRC also includes significant enforcement actions on its Web site at <http://www.nrc.gov/reading-rm/doc-collections/enforcement/actions/>.

Sincerely,

*/RA/*

Luis A. Reyes  
Regional Administrator

Docket Nos.: 50-335, 50-389  
License Nos.: DPR-67 and NPF-16

Enclosures: 1. Notice of Violation  
2. NRC Bases for Final Significance Determination

cc w/encls: (See page 4)

to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, please follow the instructions specified in the Notice of Violation, Enclosure 1.

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Sincerely,

*/RA/*

Luis A. Reyes  
Regional Administrator

Docket Nos.: 50-335, 50-389  
License Nos.: DPR-67 and NPF-16

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cc w/encls: (See page 4)

X PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE      X NON-SENSITIVE  
ADAMS:  Yes      ACCESSION NUMBER: \_\_\_\_\_       SUNSI REVIEW COMPLETE

OFFICE	RII:ORA	RII:DRS	RII:DRS	RII:DRS	RII:DRP	RII:DRS	RII:ORA
SIGNATURE	RA	RA	RA	VIA EMAIL	RA	RA	RA
NAME	CEvans	WRogers	BDesai	KKennedy	LWert	JLubinski	VMcCree
DATE	4/7/2010	4/5/2010	3/31/2010	4/14/2010	4/14/2010 <sup>4/14/2010</sup>	4/13/2010 <sup>4/13/2010</sup>	4/15/2010
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
OFFICE	OE	NRR					
SIGNATURE	email	Email					
NAME	RZimmerman	MCUNNINGHAM					
DATE	4/14/2010	4/8/2010	4/ /2010	4/ /2010	4/ /2010	4/ /2010	4/ /2010
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

cc w/encl:

Richard L. Anderson  
Site Vice President  
St. Lucie Nuclear Plant  
Electronic Mail Distribution

Robert J. Hughes  
Plant General Manager  
St. Lucie Nuclear Plant  
Electronic Mail Distribution

Gene St. Pierre  
Vice President, Fleet Support  
Florida Power & Light Company  
Electronic Mail Distribution

Ronnie Lingle  
Operations Manager  
St. Lucie Nuclear Plant  
Electronic Mail Distribution

Eric Katzman  
Licensing Manager  
St. Lucie Nuclear Plant  
Electronic Mail Distribution

Abdy Khanpour  
Vice President  
Engineering Support  
Florida Power and Light Company  
P.O. Box 14000  
Juno Beach, FL 33408-0420

Larry Nicholson  
Director  
Licensing  
Florida Power & Light Company  
Electronic Mail Distribution

Alison Brown  
Nuclear Licensing  
Florida Power & Light Company  
Electronic Mail Distribution

Mitch S. Ross  
Vice President and Associate General  
Counsel  
Florida Power & Light Company  
Electronic Mail Distribution

Marjan Mashhadi  
Senior Attorney  
Florida Power & Light Company  
Electronic Mail Distribution

William A. Passetti  
Chief  
Florida Bureau of Radiation Control  
Department of Health  
Electronic Mail Distribution

Ruben D. Almaguer  
Director  
Division of Emergency Preparedness  
Department of Community Affairs  
Electronic Mail Distribution

J. Kammel  
Radiological Emergency Planning  
Administrator  
Department of Public Safety  
Electronic Mail Distribution

Mano Nazar  
Executive Vice President and Chief Nuclear  
Officer  
Florida Power & Light Company  
P. O. Box 14000  
Juno Beach, FL 33408

(Vacant)  
Vice President  
Nuclear Plant Support  
Florida Power & Light Company  
Electronic Mail Distribution

Seth B. Dunston  
Training Manager  
St. Lucie Nuclear Plant  
Electronic Mail Distribution

Faye Outlaw  
County Administrator  
St. Lucie County  
Electronic Mail Distribution

Jack Southard  
Director  
Public Safety Department  
St. Lucie County  
Electronic Mail Distribution

Letter to Mano Nazar from Luis A. Reyes dated April xx, 2010

SUBJECT: FINAL SIGNIFICANCE DETERMINATION FOR A YELLOW FINDING AND NOTICE OF VIOLATION (NRC COMPONENT DESIGN BASES INSPECTION REPORT 05000335/2010007 AND 05000389/2010007), ST. LUCIE NUCLEAR PLANT

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## NOTICE OF VIOLATION

Florida Power and Light  
St. Lucie Nuclear Plant  
Unit 1

Docket No. 50-335  
DPR-67  
EA-09-321

During an inspection completed by the NRC on December 10, 2009, a violation of NRC requirements was identified. The circumstances surrounding the violation were described in detail in NRC Inspection Report No. 05000335/2009006 and 05000389/2009006, dated January 19, 2010 (ML100210081). In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," states that measures shall be established to assure that conditions adverse to quality, such as deficiencies, deviations, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, the licensee failed to identify and correct a significant condition adverse to quality affecting the Component Cooling Water (CCW) system. Specifically, in October 2008, air intrusion from the containment instrument air (IA) system into the CCW system occurred which affected both redundant trains of the CCW system. The troubleshooting and subsequent corrective actions that were implemented by the licensee failed to identify the source of the air in-leakage and ensure that the CCW system remained capable of delivering adequate cooling to essential equipment used to mitigate design bases accidents. In addition, the corrective actions failed to preclude a similar air intrusion event into the CCW system in November 2009.

This violation is associated with a Yellow Significance Determination Process finding for Unit 1 in the Initiating Events cornerstone.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance will be achieved is already adequately addressed on the docket in the "St. Lucie Meeting Summary," dated February 26, 2010 (ML100601170). Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation," include the EA number, and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region II, and a copy to the NRC Resident Inspector at the facility that is the subject of this Notice, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

Enclosure 1

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 19<sup>th</sup> day of April 2010.

## **NRC Bases for Final Significance Determination**

On February 19, 2010, the NRC held a regulatory conference with representatives of FPL, St. Lucie Nuclear Plant, to discuss two preliminary Greater than Green inspection findings documented in NRC Inspection Report 05000335, 389/2009006 (ML100210081). These findings concerned issues associated with an October 8, 2008, air intrusion event from the Unit 1 containment instrument air system into the CCW system.

At the regulatory conference, FPL highlighted their assumptions in determining the risk associated with the air intrusion event as Green. These assumptions differed in some instances with those used by the NRC in the preliminary significance determination. In determining the final significance, NRC considered FPL assumptions and factored them into the significance determination process when appropriate. A number of FPL's assumptions were fully accepted and integrated into the NRC final significance determination. These assumptions included: the most probable outcome of air intrusion into the CCW system would be operators terminating the event by isolating the air intrusion source; the dominant accident sequence was operators failing to stop the air intrusion prior to CCW failure followed by operators failing to trip the reactor coolant pumps (RCPs) upon a loss of CCW; and, operators would follow established procedures to the best of their abilities. Also, based upon FPL's input, the final NRC significance determination assumed that operators had time to stop the air intrusion before CCW system failure.

There were several differences between NRC and FPL in NRC's final significance determination. The paragraphs below provide a summary of the differences and the bases for the NRC's final significance determination.

FPL assumed that due to the preponderance of alarms available to the operators, it was highly likely that the operators would trip the reactor and stop the RCPs before CCW system failure would occur. The NRC did not consider these actions in the preliminary significance determination. However, based upon FPL's input, it was included in the final significance determination. The NRC recognized that available alarms would indicate irregular flow in the CCW system and that some of these alarms would direct operators to stop the RCPs and trip the reactor. However, the NRC assumed that the collective set of alarms and indications would provide for competing actions to trip the CCW pumps and/or trip the RCPs. Further, some of the alarms would occur either after CCW failure or at imminent failure. Therefore, assigning a probability to the actions to trip the reactor and stopping the RCPs prior to CCW failure as highly likely was not used. Instead, as an assumption for the final significance determination, a less likely probability than assumed by FPL was assigned by the NRC. Specifically, the NRC assigned a 50/50 probability that operators would trip the reactor and stop the RCPs prior to CCW failure in the final significance determination as compared to FPL, which did not present specific numbers at the conference but, indicated a significantly high probability for operators succeeding in this action.

According to FPL's calculations, the conditional core damage probability associated with the air intrusion event, based upon the latest plant specific PRA and the NRC's SPAR model, varied between  $1E-4$  &  $6E-4$ . The NRC used the latest available information regarding the RCP seals, the procedures associated with the RCPs, and operator training in updating the NRC's SPAR model of St. Lucie. Further, the NRC, in contrast to FPL, used an 8 hour versus 24 hour exposure time for RCP seal failure in the final conditional core damage probability calculation to account for a standard reactor shutdown.

As a result, the NRC determined that the conditional core damage probability associated with this event was  $5.6E-4$ . Although the NRC applied a different methodology, this numerical result was consistent with the licensee's input and had no effect on the final significance determination.

FPL did not present specific numbers but assumed that the probability of operators failing to recognize and mitigate the air intrusion before CCW pump failure was two to three orders of magnitude less than  $1E-1$ , the number assigned by the NRC, in the preliminary significance determination.

The failure probability used by the NRC for the final significance determination, like FPL, included a dependency, since different crews would be involved in the recognition and mitigation of the air intrusion event. The NRC used a standard Human Reliability Assessment (HRA) protocol in determining the assumption for this operator failure probability in the final significance determination. Like FPL, the performance shaping factors used in the final HRA included 24 hours for operators to recognize and mitigate air intrusion before CCW failure. However, NRC differed from FPL in the performance shaping factor contributions due to the fact that no specific procedure existed to direct operators in diagnosing air intrusion into the CCW system, the high level of complexity associated with diagnosing the source of air intrusion, and limited operator training/experience associated with CCW events of this nature. In its final significance determination, the NRC, after factoring in all the performance shaping factors, used  $6.58 E-2$  as the probability that operators would not stop the air intrusion into the CCW system prior to pump failure. While FPL did not present specific numbers, their assumptions differed by approximately two to three magnitudes from the NRC. This difference in performance shaping factor assumptions was effectively the most significant difference between the NRC and FPL in determining the final significance associated with the event.

In conclusion, FPL determined, based on best-estimate assumptions, that the delta core damage frequency (CDF) increase was less than  $1E-6$ . The NRC did not agree with FPL's determination of delta CDF being less than  $1E-6$ . Even after factoring in numerous FPL assumptions, NRC determined the delta CDF for the CCW air intrusion performance deficiency to be approximately  $2E-5$ . With this delta CDF being greater than  $1E-5$ , the performance deficiency was classified as Yellow.