



November 23, 2011

L-2011-494  
10 CFR 50.90

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Re: St. Lucie Plant Unit 2  
Docket No. 50-389  
Renewed Facility Operating License No. NPF-16

Response to NRC Reactor Systems Branch Request for Additional Information  
Regarding Extended Power Uprate License Amendment Request

References:

- (1) R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2011-021), "License Amendment Request for Extended Power Uprate," February 25, 2011, Accession No. ML110730116.
- (2) Email from T. Orf (NRC) to C. Wasik (FPL), "St. Lucie 2 EPU - draft RAIs Reactor Systems Branch (SRXB)," October 21, 2011.

By letter L-2011-021 dated February 25, 2011 [Reference 1], Florida Power & Light Company (FPL) requested to amend Renewed Facility Operating License No. NPF-16 and revise the St. Lucie Unit 2 Technical Specifications (TS). The proposed amendment will increase the unit's licensed core thermal power level from 2700 megawatts thermal (MWt) to 3020 MWt and revise the Renewed Facility Operating License and TS to support operation at this increased core thermal power level. This represents an approximate increase of 11.85% and is therefore considered an Extended Power Uprate (EPU).

By email from the NRC Project Manager dated October 21, 2011 [Reference 2], additional information was requested by the NRC staff in the Reactor Systems Branch (SRXB) to support their review of the EPU License Amendment Request (LAR). The request for additional information (RAI) identified three questions. The response to these RAIs is provided in the attachment to this letter.

ADD  
NRR

This submittal does not alter the significant hazards consideration or environmental assessment previously submitted by FPL letter L-2011-021 [Reference 1].

This submittal contains no new commitments and no revisions to existing commitments.

In accordance with 10 CFR 50.91(b)(1), a copy of this letter is being forwarded to the designated State of Florida official.

Should you have any questions regarding this submittal, please contact Mr. Christopher Wasik, St. Lucie Extended Power Uprate LAR Project Manager, at 772-467-7138.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on *23-November-2011*

Very truly yours,



Richard L. Anderson  
Site Vice President  
St. Lucie Plant

Attachment

cc: Mr. William Passetti, Florida Department of Health

**Response to NRC Reactor Systems Branch  
Request for Additional Information**

The following information is provided by Florida Power & Light (FPL) in response to the U. S. Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI). This information was requested to support the Extended Power Uprate (EPU) License Amendment Request (LAR) for St. Lucie Unit 2 that was submitted to the NRC by FPL via letter L-2011-021 dated February 25, 2011 (Accession Number ML110730116).

In an email dated October 21, 2011 from T. Orf (NRC) to C. Wasik (FPL), Subject: "St. Lucie 2 EPU - draft RAIs Reactor Systems Branch (SRXB)," the NRC staff requested additional information regarding FPL's request to implement the EPU. This response addresses the three questions from the Reactor Systems Branch, SRXB-104, SRXB-105 and SRXB-106. These three RAI questions and the FPL responses are documented below.

**SRXB-104**

**RAI 2.4.4-1 (SRXB-99) stated "ER-736 figures show the test configurations but do not provide the distance between the spool pieces and the next downstream component, such as an elbow, that may perturb the flow profile. Please provide the approximate distances or provide a statement that the distances are at least five pipe diameters downstream of the chordal paths." The Florida Power & Light October 12, 2011 response provided distance information for the plant that had already been submitted in addition to providing isometric plant drawings. The question was with respect to distances in the Alden Laboratory tests as shown in the ER-736 figures, not with respect to distances that had already been provided to the staff. We also note that the photographs do not show the downstream configurations so that we are unable to estimate distances from the photographs. Please provide the information with respect to the tests.**

**Response**

The Alden Laboratory piping model included a four-foot length of pipe immediately downstream of the LEFM spool. Beyond this, the piping gradually expanded into a 24-inch diameter section. There were no downstream components within five diameters that would perturb the flow profile at the LEFM spool.

The extension of the piping model beyond the spool outlet was consistent with Cameron standard practice and was adequate to preclude any significant effect on the determination of the meter factor or the meter factor uncertainty.

### **SRXB-105**

ER-736 shows that the Alden Laboratory Loop B test configuration has a separation distance of  $162.5 + \sim 12 = 174$  inches ( $14 \frac{1}{2}$  ft) between the CheckPlus spool piece and the centerline of the 8-inch Tee with a 90-degree elbow immediately upstream of the Tee, Drawing BF-M-4 shows the elbow 3 ft 6 in upstream of the Tee. You previously stated (and repeated in the above response) that the B spool piece is to be installed a minimum of 9 diameters ( $9 \times 17 = 153$  inches =  $12 \frac{3}{4}$  ft) downstream of the nearest 90-degree bend. This could place the CheckPlus spool piece as close as  $12.75 - 3.5 = 9.25$  ft of the Tee in contrast to the test distance of 14.5 ft. Discuss the implications of this difference on the CheckPlus correction factor and uncertainty determination.

### **Response**

The LEFM licensing effort, including flow testing at Alden Lab, preceded the detailed installation design effort. Walkdowns of the main feedwater headers were conducted to establish preliminary installation locations of the LEFM spools in support of the Cameron effort to develop piping models for the Alden Lab flow tests. The design input provided to Cameron consisted of a mark-up of isometric drawing BF-M-4, with the spool shown as being installed within a range of 20 to 26 feet between the LEFM outlet and the venturi inlet. The previously provided location description of "a minimum of 9 diameters" reflects the limit of the allowed installation range. The modification package for installation of the LEFM reflects a planned spool location of 20 feet 8 inches between the LEFM outlet and the FE-9021 venturi inlet. The resulting separation distance of 166.5 inches between the spool inlet and the centerline of the 8-inch tee closely matches the Alden Lab configuration. Based on the modification package, similar agreement will also occur for the "A" header. It is also noted that the parametric test results documented in ER-736 would support a conclusion that piping configuration differences within the defined spool installation range would not change the Meter Factor. In addition, the extent of configuration differences that are considered in the determination of the Modeling Sensitivity Uncertainty term would bound this relatively minor difference in tested vs. allowed piping geometry.

### **SRXB-106**

**If operation occurs with flow entering the Loop B line from the 8 inch line at the Tee identified in the above RAI, discuss the implications on the CheckPlus correction factor and uncertainty determination since this has not been addressed during testing.**

### **Response**

As shown on the BF-M-4 isometric drawing previously provided, the 8-inch tee is associated with control valve LCV-9006, which is the 15% bypass valve around the main feedwater regulating valve. At low power levels, the 15% bypass valve is used for steam generator level control; however, the 15% bypass valve is normally closed above 25% power. Calorimetric uncertainty is not critical at such low power conditions.

Plant procedures include provisions for utilizing the 15% bypass valve at full power to facilitate corrective maintenance of the main feedwater regulating valve. For this condition, administrative controls are planned to declare the B loop LEFM out-of-service and enter the 48-hour Limiting Condition for Operation as described in LAR Attachment 5, Section 2.4.4.2.2.1.5.