



January 21, 2012

L-2012-012  
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 and Nuclear Performance 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 and Nuclear Performance Branch (SRXB and SNPB)," September 6, 2011.
- (3) Email from L. Abbott (FPL) to T. Orf (NRC), "Re: St. Lucie 2 EPU – draft RAIs Reactor Systems Branch and Nuclear Performance Branch (SRXB and SNPB) – Question Numbering," September 28, 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).

In an email dated September 6, 2011 from NRC (T. Orf) to FPL (C. Wasik) [Reference 2], the NRC staff requested additional information regarding FPL's license amendment request (LAR) to implement the EPU. FPL email dated September 28, 2011 from FPL (L. Abbott) to NRC (T. Orf) [Reference 3], provided specific numbers (SRXB-01 through SRXB-102) for the questions included in the September 6, 2011 email. The attachment to this letter provides the FPL response to RAI question SRXB-71, related to non-loss of coolant accident (non-LOCA) analyses, CVCS malfunction. The remaining RAI responses are being provided in separate transmittals.

ADD  
NRC

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

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

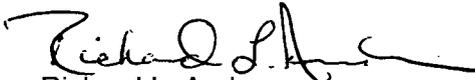
This submittal contains no new commitments and no revisions to existing commitments.

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 *21 - January - 2012*

Very truly yours,



Richard L. Anderson  
Site Vice President  
St. Lucie Plant

Attachment

cc: Mr. William Passetti, Florida Department of Health

**Response to Reactor Systems Branch and Nuclear Performance 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 review of Extended Power Uprate (EPU) License Amendment Request (LAR) for St. Lucie Nuclear Plant Unit 2 that was submitted to the NRC by FPL via letter L-2011-021 dated February 25, 2011 (Accession No. ML110730116).

In an email dated September 6, 2011 from NRC (T. Orf) to FPL (C. Wasik), "St. Lucie 2 EPU - draft RAIs Reactor Systems Branch and Nuclear Performance Branch (SRXB and SNPB)," the NRC staff requested additional information regarding FPL's request to implement the EPU. FPL email dated September 28, 2011 from FPL (L. Abbott) to NRC (T. Orf), "Re: St. Lucie 2 EPU - draft RAIs Reactor Systems Branch and Nuclear Performance Branch (SRXB and SNPB) - Question Numbering," provided specific numbers (SRXB-01 through SRXB-102) for the questions included in the September 6, 2011 email. The response to RAI question SRXB-71 is provided below. The remaining responses are being provided in separate transmittals.

**SRXB-71 (RAI 2.8.5.5-2)**

**Assumption 12 on page 2.8.5.5-4 states that operator action to mitigate the CVCS malfunction event by reducing charging flow and/or restoring letdown flow is assumed 20 minutes after either a high pressurizer pressure trip, or the high level alarm (PLHA) occurs.**

**Discuss the basis for use of the operator action time of 20 minutes, and describe a plant specific program that is used to assure that operators can complete the action credited in the analysis within the required action times.**

**Response**

In the CVCS malfunction event the operator would be alerted by the pressurizer high level alarm. EPU LAR Attachment 5, Table 2.8.5.5.1-1, Sequence of Events for the CVCS Malfunction Event, indicates that the pressurizer high level alarm occurs at 374.4 seconds after initiation of the event. At time 1574.4 seconds (20 minutes after the high pressurizer level alarm), operator action to mitigate the event is assumed. The operator action time of 20 minutes is consistent with the current analysis as documented in the UFSAR. As noted on Table 2.8.5.5.1-1, maximum pressurizer volume reached is 1512.3 ft<sup>3</sup>, which is less than the pressurizer volume of 1519.0 ft<sup>3</sup>. Thus, operator actions to mitigate the event within twenty minutes will prevent pressurizer overfill. This is conservative with respect to the acceptance criteria technical rationale stated in SRP 15.5.1 – 15.5.2, Section II, Acceptance Criteria, which states:

*"The analysis objective is to show that the pressurizer does not become water-solid before the operator can terminate the transient, usually at about ten minutes (or longer) after the event begins."*

Preventing pressurizer overfill (due to a CVCS malfunction) is included in Licensed Operator Continuing Training (LOCT) and is identified on St. Lucie's INPO-accredited Licensed Operator Continuing Training program Task List at a frequency of every two years, under three (3) generic task statements related to identifying and responding to abnormal events, evaluating safety functions and implementing EOPs. These tasks are contained in St. Lucie Training Department's Simulator Evaluation and Practice Exercise Guides. Training Department Guidelines require satisfactory completion of these tasks during the course of the LOCT program at the frequency specified in the LOCT Task List.

The Annunciator Response Procedure for a pressurizer high level alarm provides initial investigation and response data for this condition, including direction to implement the Abnormal Operating Procedure for "Pressurizer Pressure and Level."

The Abnormal Operating Procedures provide steps to stop charging if letdown is lost for any reason. Additionally, they provide guidance to deal with pressurizer level anomalies, high or low.

The Standard Post Trip Actions Emergency Operating Procedure provides actions for maintaining pressurizer level and pressure and includes:

- steps to maintain pressurizer level using the charging and letdown systems in either the automatic or manual mode; and
- steps to maintain pressurizer pressure using the power operated relief valves (PORVs), PORV block valves, and pressurizer heaters and spray as appropriate, based on pressure and its current trend. In addition, reactor coolant system subcooling is verified in order to evaluate proper operation of the reactor coolant pumps.

The assumption of a 20-minute action time is considered acceptable because it exceeds the SRP acceptance criteria of 10 minutes and is supported by plant procedures and training.

For event scenarios where a plant trip is involved, operators are required to enter 2-EOP-01, Standard Post Trip Actions. One of the first few steps performed by operators in this procedure is the determination that RCS inventory control acceptance criteria are met, which includes restoring and maintaining pressurizer level between 30 and 35%. A review of the last set of Licensed Operator simulator evaluations revealed that, on average, completion of 2-EOP-01 took 13.8 minutes. This timeframe includes completion of all steps, contingency actions, diagnosis, and transition briefing to direct the crew to an optimal EOP for event mitigation. Thus, control of pressurizer level by the operators occurs well before the pressurizer has filled to a water solid condition.

For event scenarios where a plant trip is not involved, operators would be responding to a high pressurizer level alarm. The St. Lucie "Conduct of Operations" procedure requires operators to announce the alarm to the control room supervisor using 3-way communication and to take "prompt action" to identify the cause of the unexpected alarm. For a high pressurizer level alarm, the annunciator response procedure notes that the alarm may be caused by a rapid load change, malfunction of the pressurizer level control system or a charging/letdown flow mismatch due to a letdown valve failure and it directs operators to the Abnormal Operating Procedure for pressurizer pressure and level. It is reasonable to conclude that a prompt operator response would occur well within the 20-minutes assumed in the event analysis.