Florida Power & Light Company, 6501 S. Ocean Drive, Jensen Beach, FL 34957

January 2, 2012

L-2011-568
10 CFR 50.90

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

Re: St. Lucie Plant Unit 1
Docket No. 50-335
Renewed Facility Operating License No. DPR-67

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-2010-259), "License Amendment Request (LAR) for Extended Power Uprate," November 22, 2010, Accession No. ML103560419.

(2) T. Orf (NRC) email to C. Wasik (FPL), "St. Lucie 1 EPU draft RAI -- Reactor Systems (SRXB)," December 9, 2011.

By letter L-2010-259 dated November 22, 2010 [Reference 1], Florida Power & Light Company (FPL) requested to amend Renewed Facility Operating License No. DPR-67 and revise the St. Lucie Unit 1 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 from the NRC Project Manager dated December 9, 2011 [Reference 2], additional information related to reactor systems was requested by the NRC staff in the Reactor Systems Branch (SRXB) to support their review of the St. Lucie Unit 1 EPU License Amendment Request (LAR). Reference 2 contains one RAI numbered SRXB-61. FPL's response to this RAI is presented in the attachment to this letter.

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-2010-259 [Reference 1].

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NRR

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 License Amendment Request (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 02 - 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 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 1 submitted to the NRC by FPL via letter L-2010-259 dated November 22, 2010, Accession Number ML103560419.

In an email dated December 9, 2011 from T. Orf (NRC) to C. Wasik (FPL), "St. Lucie 1 EPU draft RAI – Reactor Systems (SRXB)," the NRC staff requested additional information regarding FPL's request to implement the EPU. The RAI consisted of one question from the NRC Reactor Systems Branch. This RAI has been numbered SRXB-61. The response is provided below.

SRXB-61

Table 7 of Reference 1 showed the results of the integrated break flow for the period of first 45-minutes into the SGTR event.

As indicated on Page 8 of Reference 1, the break flow at 45 minutes was not terminated and was about 42 lbm/sec. From 45 minutes to the time when the RCS was cooled down to shutdown cooling (SDC) conditions, the steam releases for various cooldown rates were calculated. The results were shown in the table of Reference 2. For this period of the analyses, break flow was not calculated.

What is the integrated break flow during the period from 45 minutes to the SDC conditions? Justify the adequacy of the dose analyses without consideration of the integrated break flow for the period beyond 45 minutes.

References

1. **ADAMS ML11231A946 dated August 18, 2011 related to SL1 RAI response for the SGTR analysis (L-2011-311).**

2. **ADAMS ML11335A170 dated November 29, 2011 containing SL1 RAI response for the SGTR analysis (L-2011-473).**

Response

The break flow at 45 minutes quoted in the Request for Additional Information (RAI) is from the Steam Generator Tube Rupture (SGTR) Margin to Overfill (MTO) analysis. The MTO analysis is biased for steam generator (SG) overfill, where Auxiliary Feedwater (AFW) to the affected SG is maximized. This results in increased level and reduced pressure in the affected SG. Consequently, break flow flashing fractions and the steam releases from the affected SG for this case are less than the limiting dose case provided as the Reference Case in Table 7 of Reference 1 and in EPU LAR Attachment 5, Section 2.8.5.6.2.

The break flow for this limiting dose case is provided in the EPU LAR Attachment 5, Figure 2.8.5.6.2-10, which shows a break flow of about 26 lbm/sec at 45 minutes. There is no explicit break flow calculation done beyond 45 minutes when the affected SG is isolated. This is because when the affected SG is isolated per Emergency Operating Procedures (EOPs), the Reactor Coolant System (RCS) and SGs are sufficiently depressurized so that there will not be any significant releases from the affected SG and the break flow is terminated by cooling the RCS using steaming from the intact SG. The steam releases for various cooldown rates shown in the Reference 2 response to RAI SRXB-54 are from the intact SG, which is used for cooling the RCS to shutdown cooling (SDC) conditions.

Although subsequent to 45 minutes there would be no significant steam releases from the isolated SG, the dose analysis conservatively includes a small steam release pathway for dose consequence. In addition, the small flashed portion of an assumed break flow was directly released from the isolated SG to the environment from 1 hour to 12.4 hours in the dose consequence evaluation.

The dose analysis has adequately considered limiting releases from the affected SG prior to 45 minutes, without crediting any EOP actions. The dose analysis has considered a conservative addition of portions of the break flow and tube leakage flow as components of the total dose from affected SG after 45 minutes.

References (SRXB-61 Response)

1. **R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2011-311), "Information Regarding Steam Generator Tube Rupture Steam Release and Margin to Overfill Provided in Support of the Extended Power Uprate License Amendment Request," August 18, 2011, Accession No. ML11231A946.**

2. **R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2011-473), "Response to NRC Reactor Systems Branch Request for Additional Information Regarding Extended Power Uprate License Amendment Request," November 29, 2011, Accession No. ML11335A170.**