



April 19, 2012

L-2012-175
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

Supplemental Information for Extended Power Uprate License Amendment
Request (LAR) Section 2.6.1 Primary Containment Functional Design

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.

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).

This submittal provides supplemental information to update St. Lucie Unit 2 EPU LAR Attachment 5, Section 2.6.1 "Primary Containment Functional Design." FPL has determined that the results and conclusions reached in EPU LAR Attachment 5, Section 2.6.1 are unchanged.

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.

A001
NRK

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 19-April-2012

Very truly yours,

A handwritten signature in black ink, appearing to read "Richard L. Anderson", with a stylized, flowing script.

Richard L. Anderson
Site Vice President
St. Lucie Plant

Attachment (1)

cc: Mr. William Passetti, Florida Department of Health

Supplemental Information to EPU LAR Attachment 5, Section 2.6.1
Primary Containment Functional Design

Recently, FPL identified the need to revise four input parameters used in the St. Lucie Unit 2 EPU loss of coolant accident (LOCA) containment pressure and temperature analysis. The LOCA containment pressure and temperature analysis is described in EPU LAR Attachment 5, Section 2.6.1, Primary Containment Functional Design (FPL letter L-2011-021 dated February 25, 2011, ML110730268).

The first input revision involves the containment spray (CS) delivery delay time, which is conservatively increased due to the addition of a flow restricting orifice in each of the CS pump discharge lines. This modification reduces the maximum delivered CS flow rate to address a current plant condition. However, the minimum delivered CS flow rate assumed in the EPU LOCA containment pressure and temperature analysis of 2700 gpm in the injection mode and 2850 gpm in the recirculation mode (see EPU LAR Attachment 5, Table 2.6.1-1) are maintained.

The three remaining input revisions involve the following:

- The component cooling water (CCW) heat exchanger heat transfer coefficient U is reduced in the conservative direction from that assumed in the EPU LOCA containment pressure and temperature analysis.
- The intake cooling water (ICW) minimum flow to the CCW heat exchanger is reduced in the conservative direction from that assumed in the EPU LOCA containment pressure and temperature analysis.
- The CCW minimum flow to the shutdown cooling heat exchanger (SDCHX) is reduced in the conservative direction from that assumed in the EPU LOCA containment pressure and temperature analysis.

Together, these four input changes ensure additional conservatism is included when calculating the amount of heat remaining in containment for the purpose of this analysis.

In addition to the input changes described above, an offsetting change to the long-term decay heat input was also included. The current, pre-EPU, licensing basis LOCA containment pressure and temperature analysis uses the long-term decay heat based on ANS 1971, increased by 20% as identified in UFSAR Section 6.2.1.3.3. The fission product decay heat model used for the EPU long-term LOCA containment response is being revised to ANS 5.1, Decay Heat Power for Light Water Reactors, dated October 1979, plus 2 sigma and long term actinides. Use of this long-term decay heat input is consistent with the guidance described in the Standard Review Plan (SRP), NUREG-0800, Section 6.2.1. The change to the ANS 1979 plus 2 sigma decay heat is less conservative than that used in the original EPU LOCA containment pressure and temperature analysis. However, the long-term decay heat value used in the revised LOCA containment analysis is slightly more conservative than the standard ANS 1979 + 2 sigma decay heat curve since heat from the actinides is added.

Accordingly, Section 2.6.1.2.1.1 of Attachment 5 to the St. Lucie Unit 2 EPU LAR is revised to include the following additional input and assumption difference between the current licensing basis analysis and the EPU LOCA containment response analysis:

- The long-term decay heat input is based on ANS 5.1, Decay Heat Power for Light Water Reactors, dated October 1979, plus 2 sigma and long term actinides.

As a result of the changes described herein, the results of the updated LOCA containment pressure and temperature analysis are bounded by the results presented in EPU LAR Attachment 5, Section 2.6.1. The current EPU LOCA containment peak pressure and temperature values of 43.48 psig and 266.73°F presented in EPU LAR Attachment 5, Table 2.6.1-2, are unaffected. Also, the resulting containment pressure at 24 hours of 6.42 psig, remains applicable and bounding for EPU. The acceptance criteria for containment design integrity, including Equipment Qualification, in both the short and long-term post-LOCA transient response are met for St. Lucie Unit 2 under EPU conditions.

It is noted that the decay heat input used in the current, pre-EPU, licensing basis analysis described in UFSAR Section 6.2.1.3, and the EPU analysis for the short-term (blowdown, reflood and post-reflood phases) LOCA mass and energy (M&E) releases to containment continue to use the decay heat input based on ANS 1971, increased by 20%.

The St. Lucie Unit 2 EPU NPSH analysis results are contained in FPL letter L-2011-383, September 22, 2011 (ML11269A222). The revised St. Lucie Unit 2 EPU LOCA containment pressure and temperature analysis described above does not impact the NPSH results presented in FPL letter L-2011-383 as there are no adverse changes to pump NPSH analysis parameters.