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

October 10, 2011

L-2011-422
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 and Supplemental 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.

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 September 6, 2011 [Reference 2], additional information related to reactor systems and nuclear performance was requested by the NRC staff in the Reactor Systems Branch (SRXB) and the Nuclear Performance Branch (SNPB) to support their review of the EPU license amendment request (LAR).

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The request for additional information (RAI) included two questions (TS-5 and TS-6) related to relocating the minimum reactor coolant flow parameter associated with the departure from nucleate boiling (DNB) to the Core Operating Limits Report (COLR). The attachments to this letter provide the FPL responses to the RAI questions TS-5 and TS-6 by revising the proposed EPU LAR TS changes. Attachment 1 to this submittal provides the description and basis for the revision to the proposed TS changes. Attachment 2 provides the marked-up and clean pages for the proposed TS changes.

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 772-429-7138.

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

Executed on 10-Oct-2011

Very truly yours,

Richard L. Anderson
Site Vice President
St. Lucie Plant

Attachments (2)

cc: Mr. William Passetti, Florida Department of Health

Attachment 1

Technical Specifications Table 2.2-1 and Specification 3/4.2.5 Revision To Proposed Change Submitted By FPL Letter L-2011-021 Regarding Extended Power Uprate License Amendment Request For St. Lucie Unit 2

By letter L-2011-021 dated February 25, 2011, 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). Included in the EPU LAR were changes to TS Table 2.2-1 Reactor Protective Instrumentation Trip Setpoint Limits and TS 3.2.5, Power Distribution Limits – DNB Parameters. FPL is modifying these proposed TS changes as described below:

Description of the Change

EPU LAR Attachment 1, Section 3.1, Renewed Facility Operating License and Technical Specification Changes proposed the following changes to Item 7 - TS 2.2, LIMITING SAFETY SYSTEM SETTINGS - TABLE 2.2-1 – REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS and Item 12 - TS 3.2.5, POWER DISTRIBUTION LIMITS – DNB PARAMETERS:

- Item 7. TS 2.2, LIMITING SAFETY SYSTEM SETTINGS - TABLE 2.2-1 – REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS - The footnote was proposed to be changed from "* Design reactor coolant flow with four pumps operating is the minimum RCS flow specified in the COLR Table 3.2-2" to "For minimum reactor coolant flow with four pumps operating, refer to COLR Table 3.2-2."
- Item 12. TS 3/4.2.5, POWER DISTRIBUTION LIMITS – DNB PARAMETERS – The Limiting Condition for Operation (LCO) was proposed to be changed from "The following DNB-related parameters shall be maintained within the limits shown on Table 3.2-2" to "The following DNB-related parameters shall be maintained within the limits shown on Table 3.2-2 of the COLR."

By email from the NRC Project Manager dated September 6, 2011, additional information was requested by the NRC staff in the Reactor Systems Branch (SRXB) and Nuclear Performance Branch (SNPB) to support their review of the St. Lucie Unit 2 EPU LAR. The request for additional information (RAI) included two questions related to the relocation to the core operating limits report (COLR) of the departure from nucleate boiling (DNB) parameters. The questions stated that based on NRC staff position delineated in T. H. Essig (NRC) letter to A. Drake (Westinghouse Owners Group), Acceptance for Referencing of Licensing Topical Report WCAP-14483, "Generic Methodology for Expanded Core Operating Limits Report" TAC NO. M94338, January 19, 1999 (ML020430092), the minimum reactor coolant flow parameter could not be relocated from the TS.

As such, FPL is modifying the proposed TS as follows:

- TS 2.2, LIMITING SAFETY SYSTEM SETTINGS - TABLE 2.2-1 – REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS – The footnote is revised to state:

  * For minimum reactor coolant flow with four pumps operating, refer to Technical Specification LCO 3.2.5.

- TS 3/4.2.5, POWER DISTRIBUTION LIMITS – DNB PARAMETERS – The LCO is revised to state:

  3.2.5 The following DNB related parameters shall be maintained within the limits:

  a. Cold Leg Temperature as shown on Table 3.2-2 of the COLR,

  b. Pressurizer Pressure* as shown on Table 3.2-2 of the COLR,

  c. Reactor Coolant System Total Flow Rate – greater than or equal to 375,000 gpm, and

  d. AXIAL SHAPE INDEX as shown on Figure 3.2-4 of the COLR.

Note that the marked up TS pages in Attachment 2 are markups of the pages submitted in the EPU LAR.

The EPU LAR contained marked up and clean pages for the TS Bases and the COLR for information only. The revised TS Bases and COLR pages are not included in this submittal.

Basis for the change:

The limits on the DNB related parameters ensure that each of the parameters is maintained within the normal steady-state envelope of operation assumed in the transient and accident analyses. The limits are consistent with the safety analyses assumptions and have been analytically demonstrated adequate to maintain a minimum departure from nucleate boiling ratio (DNBR) of greater than or equal to the DNBR limit for each DNB limited transient analyzed.

The nuclear steam supply system (NSSS) design parameters provide the reactor coolant system and secondary side system conditions (thermal power, temperatures, and pressures) that are used as the basis for the design transients, systems, structures, components, accidents, and fuel analyses and evaluation. These variables are validated every refueling cycle and are contained in the COLR to provide operating and analysis flexibility. The minimum reactor coolant flow parameter is maintained in the TS, but is relocated to the LCO from TS Table 3.2-2, DNB MARGIN LIMITS, which is being deleted.

The DNB margin limit for cold leg temperature in the COLR is changed from $\leq 549^{\circ}F$ to $\leq 551^{\circ}F$ and reactor coolant flow rate in the TS is changed from $\geq$ 335,000 gpm to $\geq$ 375,000 gpm. The reactor coolant flow limit is deleted from the COLR Table 3.2-2.

The DNB parameters are determined for each refueling cycle core in the reload safety analysis. This change ensures that the DNB parameters are consistent with the values determined in the reload safety analysis.

Maintaining the reactor coolant flow limit in the TS is consistent with the NRC staff position stated in NRC letter from T. H. Essig, dated January 19, 1999.

The revision to the footnote on TS Table 2.2-1, Reactor Protective Instrumentation Trip Setpoint Limits, is a conforming change to ensure that the value for the reactor coolant flow limit is identified correctly.

No Significant Hazards Consideration

This change eliminates the relocation of the reactor coolant flow limit from the TS to the COLR. The reactor coolant flow limit is unchanged from the value in the EPU LAR. The limit will be maintained in TS LCO 3.5.2. In addition, the footnote on TS Table 2.2-1 is being revised to reference the TS and not the COLR for the reactor coolant flow requirement. As such, the conclusions of EPU LAR Attachment 1 Section 5.2, No Significant Hazards Consideration, Item B. Reactor Coolant Flow Rate and Departure From Nucleate Boiling (DNB) Parameters remain valid. Accordingly, the proposed change 1) does not involve a significant increase in the probability or consequences of an accident previously evaluated, 2) does not create the possibility of a new or different kind of accident from any previously evaluated, and 3) does not result in a significant reduction in a margin of safety.

Environmental Evaluation

This change does not change any of the technical requirements for the DNB parameters. The change only maintains the reactor coolant flow limit in the TS, as opposed to relocating the limit to the COLR. The environmental considerations evaluation contained in the EPU LAR remain valid. Accordingly, the proposed license amendment is eligible for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 50.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed license amendment.

ATTACHMENT 2

Supplemental Response to NRC Reactor Systems Branch Request for Additional Information Regarding Extended Power Uprate License Amendment Request St. Lucie Unit 2

Marked-Up and Clean Technical Specification Pages

This coversheet plus four pages

TABLE 2.2-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
9. Local Power Density – High[5] Operating	Trip setpoint adjusted to not exceed the limit lines of Figures 2.2-1 and 2.2-2	Trip setpoint adjusted to not exceed the limit lines of Figures 2.2-1 and 2.2-2.
10. Loss of Component Cooling Water to Reactor Coolant Pumps – Low	≥ 636 gpm**	≥ 636 gpm
11. Reactor Protection System Logic	Not Applicable	Not Applicable
12. Reactor Trip Breakers	Not Applicable	Not Applicable
13. Rate of Change of Power – High[4]	≤ 2.49 decades per minute	≤ 2.49 decades per minute
14. Reactor Coolant Flow – Low[1]	≥ 95.4% of ~~design~~ Reactor Coolant flow with four pumps operating*	≥ 94.9% of ~~design~~ Reactor Coolant flow with four pumps operating*
15. Loss of Load (Turbine) Hydraulic Fluid Pressure – Low[5]	≥ 800 psig	≥ 800 psig

minimum

For minimum , refer to Technical Specification LCO 3.2.5.

* ~~Design~~ reactor coolant flow with four pumps operating ~~is the minimum RCS flow specified in the COLR Table 3.2-2.~~

** 10-minute time delay after relay actuation.

POWER DISTRIBUTION LIMITS

DNB PARAMETERS

LIMITING CONDITION FOR OPERATION

3.2.5 The following DNB-related parameters shall be maintained within the limits ~~shown on Table 3.2-2:~~ of the COLR:

a. Cold Leg Temperature as shown on Table 3.2-2 of the COLR,

b. Pressurizer Pressure *

c. Reactor Coolant System Total Flow Rate - greater than or equal to 375,000 gpm, and

d. AXIAL SHAPE INDEX as shown on Figure 3.2-4 of the COLR.

APPLICABILITY: MODE 1.

ACTION:

With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to ≤ 5% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.5.1 Each of the DNB-related parameters ~~of Table 3.2-2~~ shall be verified to be within their limits by instrument readout at least once per 12 hours.

4.2.5.2 The Reactor Coolant System total flow rate shall be determined to be within its limit by ~~measurement~~** at least once per 18 months.

** * Limit not applicable during either a THERMAL POWER ramp increase in excess of 5% per minute of RATED THERMAL POWER or a THERMAL POWER step increase of greater than 10% of RATED THERMAL POWER.

* Not required to be performed until THERMAL POWER is ≥ ~~80%~~ 90% of RATED THERMAL POWER.

TABLE 2.2-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
9. Local Power Density – High[5] Operating	Trip setpoint adjusted to not exceed the limit lines of Figures 2.2-1 and 2.2-2	Trip setpoint adjusted to not exceed the limit lines of Figures 2.2-1 and 2.2-2.
10. Loss of Component Cooling Water to Reactor Coolant Pumps – Low	≥ 636 gpm**	≥ 636 gpm
11. Reactor Protection System Logic	Not Applicable	Not Applicable
12. Reactor Trip Breakers	Not Applicable	Not Applicable
13. Rate of Change of Power – High[4]	≤ 2.49 decades per minute	≤ 2.49 decades per minute
14. Reactor Coolant Flow – Low[1]	≥ 95.4% of minimum Reactor Coolant flow with four pumps operating*	≥ 94.9% of minimum Reactor Coolant flow with four pumps operating*
15. Loss of Load (Turbine) Hydraulic Fluid Pressure – Low[5]	≥ 800 psig	≥ 800 psig

* For minimum reactor coolant flow with four pumps operating, refer to Technical Specification LCO 3.2.5.

** 10-minute time delay after relay actuation.

POWER DISTRIBUTION LIMITS

DNB PARAMETERS

LIMITING CONDITION FOR OPERATION

3.2.5 The following DNB-related parameters shall be maintained within the limits:

a. Cold Leg Temperature as shown on Table 3.2-2 of the COLR,

b. Pressurizer Pressure* as shown on Table 3.2-2 of the COLR,

c. Reactor Coolant System Total Flow Rate - greater than or equal to 375,000 gpm, and

d. AXIAL SHAPE INDEX as shown on Figure 3.2-4 of the COLR.

APPLICABILITY: MODE 1.

ACTION:

With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to $\leq$ 5% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.5.1 Each of the DNB-related parameters shall be verified to be within their limits by instrument readout at least once per 12 hours.

4.2.5.2 The Reactor Coolant System total flow rate shall be determined to be within its limit by measurement** at least once per 18 months.

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* Limit not applicable during either a THERMAL POWER ramp increase in excess of 5% per minute of RATED THERMAL POWER or a THERMAL POWER step increase of greater than 10% of RATED THERMAL POWER.

** Not required to be performed until THERMAL POWER is $\geq$ 90% of RATED THERMAL POWER.