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

May 19, 2011

L-2011-179
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 PRA Licensing 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 for Extended Power Uprate, November 22, 2010, Accession No. ML103560419.
(2) Email T. Orf (NRC) to C. Wasik (FPL), Subject: St. Lucie Unit 1 EPU – request for additional information (PRA Licensing), April 22, 2011, Accession No. ML111120260.

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).

By email from the NRC Project Manager dated April 22, 2011 [Reference 2], additional information related to the proposed EPU was requested by the NRC staff in the PRA Licensing Branch (APLA) to support their review of the EPU LAR. The request for additional information (RAI) identified two questions. The response to these RAIs is provided in Attachment 1 to this letter.

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NRR

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].

This submittal contains no new commitments and no revision 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 772-429-7138.

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

Executed on 19-May-2011

Very truly yours,

Richard L. Anderson
Site Vice President
St. Lucie Plant

Attachment

cc: Mr. William Passetti, Florida Department of Health

Response to Request for Additional Information

The following information is provided by Florida Power & Light in response to the U. S. Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI). This information was requested to support Extended Power Uprate (EPU) License Amendment Request (LAR) for St. Lucie Nuclear Plant Unit 1 that was submitted to the NRC by FPL via letter (L-2010-259) dated November 22, 2010 (Accession Number ML103560419).

In an email dated April 22, 2011 from NRC (Tracy Orf) to FPL (Chris Wasik), Accession Number ML111120260, Subject: St. Lucie Unit 1 EPU – request for additional information (PRA Licensing), the NRC requested additional information regarding FPL's request to implement the EPU. The RAI consisted of two (2) questions from the NRC's PRA Licensing Branch (APLA). These two RAI questions and the FPL responses are documented below.

APLA-1

Section 2.13.2.5 of Attachment 5 states the following on shutdown operations risk:

"With the exception of EPU's impact on time available for operator actions, no further impact of EPU is expected...Reductions in available times for operators to take compensatory or mitigating actions could vary from several to ten or more minutes, dependent on shutdown conditions. The safety evaluation demonstrates that the shorter available time window under EPU would not adversely impact safety consequences."

Provide additional information for how the safety evaluation demonstrates that shorter available time windows under the EPU would not impact safety consequences. Specifically, address how the EPU impacts the ability of the operator to close containment and provide additional information regarding the reliability and availability of equipment used for shutdown conditions. In addition, explain the impact of the EPU on alternate decay heat removal systems.

Response

The safety evaluation referred to in Section 2.13.2.5 is a risk assessment of St. Lucie Unit 1 shutdown cooling (SDC) system operation functions. The most significant impact identified in the post-EPU risk assessment is that during mid-loop (or during reduced inventory) operation actions in response to loss of shutdown cooling could be subject to a shorter available time window.

As a practice at St. Lucie, shutdown operations with open containment are restricted to plant conditions with normal and high inventory shutdown states. During normal and high inventory shutdown states it is expected that adequate time will be available for operators to respond to events and implement containment closure and that the risk impact will be non-significant.

For mid-loop (or during reduced inventory) operation, in accordance with plant procedures, prior to establishing a plant evolution that would require containment closure, the containment closure teams are required to be trained and tested to ensure that containment

can be closed within the specified time to boil. For EPU the time to boil will be shorter; however, the procedures and the associated personnel training that will be maintained for the EPU ensure that the EPU impact on containment closure is not significant.

The technical evaluation in Section 2.8.4.4 of Attachment 5 demonstrates continued compliance with the SDC system cooldown performance requirements at EPU conditions. No plant changes to the SDC system have been made for EPU operating conditions and there are no adverse affects on the design and operating characteristics of the SDC system with respect to its shutdown and long-term cooling function. Therefore, the reliability and availability of the equipment used to shutdown cooling is not expected to change.

To manage shutdown risk, St. Lucie uses a tiered risk assessment procedure that involves a qualitative assessment of the configuration of the plant and the availability of various key safety functions. For the EPU, the design aspect has been analyzed to satisfy design basis requirements with necessary procedure and configuration changes, and these changes introduced no significant risk to the shutdown risk management process and implementation.

Alternate decay heat removal systems are discussed in Section 2.5.4 of Attachment 5.

APLA-2

Section 2.13.2.6.1.4 of Attachment 5 states the following on pressurizer level control program:

"The pressurizer level control program will change for EPU. Currently, the pressurizer level varies from 33.09% at 15% power to 65.6% at 100% power. After EPU, the pressurizer level will be 33.09% at 15% power, reach 65.6% at approximately 90% power and maintain that level through 100% power."

With a ten percent power uprate, one hundred percent power at pre-EPU conditions corresponds to approximately ninety percent power at EPU conditions; the pressurizer level remains constant at 65.6% at both of these conditions. Fifteen percent power at pre-EPU conditions approximately corresponds to 13.5% power at EPU conditions. Please explain why a ten percent power increase keeps the lower limit constant at 33.09% pressurizer level at 15% power for both pre-EPU and EPU conditions.

Response

For the pressurizer level control program, the program was revised because of changes in the reactor coolant system (RCS) normal operating temperatures and not because of a change in core thermal power (see Section 2.4.2 of Attachment 5). The primary design objective of the pressurizer water level program is to accommodate RCS shrink and swell during normal operational transients while minimizing changes to RCS mass inventory. The pressurizer water level program is defined by upper and lower breakpoints, where the x-axis value of each breakpoint is RCS average temperature (Tavg) and the y-axis value is % level. The lower % level breakpoint is defined such that there is margin to keeping the pressurizer heaters covered at low power. The upper % level breakpoint is usually defined by margin to maximum level

technical specification which limits inventory for LOCA and allows for an in-surge without filling the pressurizer. The % level values for the two breakpoints do not change for EPU. The Tavg values for the two breakpoints are changed to reflect the EPU change in Tavg as a function of reactor power. The lower Tavg breakpoint value is changed slightly such that it continues to correspond to 15% reactor power. Keeping the pressurizer level setpoint flat from 0% to 15% is in the range that the turbine is off-line. The upper Tavg breakpoint value is changed for EPU to correspond to 90% reactor power. Keeping the setpoint flat at both ends of the power range allows for temperature fluctuations without having the level setpoint change. This provides for more stable charging and letdown control. The level setpoint increases from the minimum to the maximum as RCS temperatures increase. This minimizes the demands on the charging and letdown systems to maintain RCS inventory.