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

July 22, 2011

L-2011-272
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

Information Regarding Anticipated Transients Without Scram (ATWS) Provided in Support of the 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," dated November 22, 2010 (Accession No. ML103560419).

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).

During the course of their review and as discussed in the July 12, 2011 public meeting, NRC staff in the Reactor Systems Branch informally requested information related to Anticipated Transients Without Scram (ATWS) to support their review of the EPU LAR. The requested information is documented in Attachment 1 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].

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

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NRR

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 July 22, 2011.

Very truly yours,

FOR RLA

Richard L. Anderson
Site Vice President
St. Lucie Plant

Attachment

cc: Mr. William Passetti, Florida Department of Health

Response to Request for Information

The following information is provided by Florida Power & Light in response to the U. S. Nuclear Regulatory Commission's (NRC) informal request regarding anticipated transients without scram (ATWS). This information was requested to support the extended power uprate (EPU) license amendment request (LAR) for St. Lucie Unit 1 that was submitted to the NRC by FPL via letter (L-2010-259) dated November 22, 2010, Accession Number ML103560419.

SRXB Request Regarding ATWS (Paraphrased by FPL)

LAR Attachment 5, Section 2.8.5.7 states that ATWS DSS, DTT and AFAS and setpoints are not impacted by EPU. Provide justification for this determination, including the basis for ensuring that peak RCS pressure remains below 3200 psig.

Response

As addressed in the LAR, 10 CFR 50.62 specifies the design requirements with which St. Lucie Unit 1 complies. These requirements were imposed to reduce the probability of a severe ATWS event, which is defined by the NRC as the occurrence of an anticipated transient in conjunction with a failure of the reactor protection system (RPS) to trip the plant resulting in a reactor coolant system (RCS) overpressurization exceeding 3200 psig. No additional analyses are required by 10 CFR 50.62.

The limiting ATWS events are the loss of load (LOL) and the loss of main feedwater (LOFW). For the St. Lucie Unit 1 (PSL1) class of plants, Reference 1 demonstrated that a diverse scram system (DSS) with a 2450 psia trip setpoint and a 2-second response time would maintain the peak RCS pressure to <3200 psig for the limiting anticipated operational occurrences (AOOs). The pressure turn-around is dominated by the reactor trip initiated by DSS with minimal contribution from the moderator temperature coefficient. The DSS setpoint of 2450 psia is set such that it is above the RPS high pressurizer pressure trip (HPPT) setpoint and below the pressurizer safety valves (PSV) as-left setpoint, as described in Reference 1.

PSL1 also complies with the requirements for a diverse turbine trip (DTT) and a diverse auxiliary feedwater actuation system (DAFAS). However, as stated in Reference 1, the addition of a DTT and a DAFAS provides an insignificant reduction of ATWS risk if a DSS is installed, and the installation of the DSS alone meets the reliability goals of the ATWS rule.

No explicit ATWS analyses have been performed for PSL1 at EPU conditions; however, an ATWS evaluation was performed for St. Lucie Unit 2 (PSL2), provided to the NRC via Reference 2, and its results are applicable to PSL1. PSL1 and PSL2 are both the Combustion Engineering (CE) fleet class of plants referred to as the 2560 MWt class of plants in Reference 1. Both Units have replaced the original steam generators (SGs) with new SGs having similar performance characteristics. Table 1 presents a comparison of PSL1 and PSL2 operating parameters at EPU conditions. As can be seen in the table, both units are equivalent in design

and have comparable operating conditions. The slightly smaller pressurizer safety valve (PSV) capacity and reactor coolant system (RCS) volume for PSL1 as compared to PSL2 would cause a small increase in the peak pressure estimated in Reference 2 for PSL2 (2776 and 2747 psia for LOL and LOFW, respectively), but the increase would be insignificant relative to the large margin available to meet the <3200 psig criterion. Hence, it can be concluded that the PSL1 ATWS would not challenge the pressure limit of 3200 psig in the presence of the DSS with the setpoint of 2450 psia.

Table 1 – St. Lucie Unit 1 and Unit 2 EPU Parameters

Parameter	EPU Nominal Conditions		
	St. Lucie Unit 1	St. Lucie Unit 2	Units
NSSS Power	3040	3040	MWt
Full Power Cold Leg Temperature	535 - 551	535 - 551	°F
RCS Volume	11061	11453	ft^3
Reactor Vessel Flow	375000	375000	gpm
Pressurizer Pressure	2250	2250	psia
Pressurizer Safety Valve Setpoint	2575 with 3% tolerance	2575 with 3% tolerance	psia
Total Pressurizer Safety Valve Rated Capacity	618000 (includes 3% accumulation)	636546 (includes 3% accumulation)	lbm/hr

Conclusion

Since the ATWS evaluation for PSL2 is applicable for PSL1 and the results of the PSL2 ATWS evaluation show significant margin to the pressure limit, it can be concluded that the St. Lucie Unit 1 ATWS events for EPU would meet the acceptance criterion of < 3200 psig.

References

1. CE-NPSD-354 Task-494, Rev. 0, "Functional Design Specification for the Diverse Scram System for Compliance with the ATWS Rule 10CFR50.62."
2. R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2011-273), "Information Regarding Anticipated Transients Without Scram (ATWS) Provided in Support of the Extended Power Uprate License Amendment Request," July 22, 2011.