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

FPL

August 18, 2011

L-2011-325
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 Request for Additional Information (RAI) 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 Draft RAIs – Performance and Testing (CPTB)", July 26, 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 July 26, 2011 [Reference 2], additional information related to component performance was requested by the NRC staff in the Component Performance and Testing Branch (CPTB) to support their review of the EPU LAR. The request for additional information (RAI) identified four questions. The response to these RAIs is provided 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-2011-021 [Reference 1].

A001
NRC

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 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 Aug - 18 - 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 (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 2 that was submitted to the NRC by FPL via letter (L-2011-021) dated February 25, 2011 (Accession Number ML110730116).

In an email dated July 26, 2011 from NRC (T. Orf) to FPL (C. Wasik), "St. Lucie 2 EPU Draft RAIs – Performance and Testing (CPTB)", the NRC staff requested additional information regarding FPL's request to implement the EPU. The RAI consisted of four (4) questions from the NRC's Component Performance and Testing Branch (CPTB). These four RAI questions and the FPL responses are documented below.

CPTB-1:

The St. Lucie, Unit 2 (SL2) main feedwater isolation valves (MFIVs) have a maximum closed stroke time of 4.0 seconds. The St. Lucie, Unit 1 (SL1) MFIVs have a maximum closed stroke time of 20 seconds. Please identify the reason for the large time difference.

Response

The St. Lucie Unit 1 (SL1) and St. Lucie Unit 2 (SL2) MFIVs have different actuators and different closure time requirements. The SL1 MFIVs utilize pneumatic actuators. SL1 UFSAR Table 6.2-16 specifies 20 second maximum closure time for HCV-09-7/8 (penetrations 3 and 4). SL1 MFIV closing time supports the Main Steam Line Break analysis.

SL2 MFIVs utilize hydraulic actuators. SL2 UFSAR Table 6.2-16 (penetrations 3 and 4), SL2 UFSAR Section 10.4.7.3, and Technical Specification Bases 3/4.7.1.6 provide information pertaining to the maximum four second stroke time. SL2 MFIV closing time supports the Feedline Break and Main Steam Line Break analyses.

CPTB-2:

In section 2.2.4.2.4 under Containment Spray System, the maximum expected differential pressure for the containment sump outlet isolation valve safety-related open and closed strokes for the EPU are beyond the values used in the current analysis. The section states:

"However, due to the margin in the valve required torque (open/closed), the EPU does not affect the minimum torque required to operate these valves"

Please provide valve torque margin at current and EPU conditions and explain why the minimum torque required to operate the containment sump outlet isolation valve at EPU conditions remains adequate.

Response

FPL procedures provide instructions to determine the "age related degradation (ARD) margin" for MOVs within the scope of NRC Generic Letter (GL) 96-05. This margin is a more practical assessment of the valve's overall health/margin. The open ARD margin is the margin between corrected available open running torque and maximum required open torque. The close ARD margin is the margin between measured close torque switch trip torque and corrected maximum close torque.

The margins between corrected available open running torque and maximum required open torque at current / EPU conditions are determined to be as follows:

- 2-MV-07-2A: 207% / 178%
- 2-MV-07-2B: 115% / 100%

The margins between measured close torque switch trip torque and corrected maximum close torque at current / EPU conditions are determined to be as follows:

- 2-MV-07-2A: 137% / 112%
- 2-MV-07-2B: 67% / 55%

The above listed margins for 2-MV-07-2A/2B at both current and EPU conditions are well in excess of the station's 10% margin goal.

CPTB-3:

In section 2.2.4.2.4 under Steam Generator Blowdown System (SGBS), it is stated:

"As discussed under Topic 10 below, for the SGBS [Steam Generator Blowdown System] containment isolation valve safety-related close stroke, the maximum expected differential pressure is increasing for EPU beyond the value used in the current valve/actuator capability analysis. However, the closing margin for the SGBS containment isolation valves remains adequate for the safety-related close stroke at EPU conditions."

Please provide the value for the maximum expected differential pressure at EPU conditions since Table 2.2.4-2 does not provide this value.

Additionally, please provide the closing margin at the current and EPU conditions for the SGBS containment isolation valves and explain why the closing margin at EPU conditions remains adequate.

Response

The maximum expected differential pressure for the SGBS containment isolation valve safety-related close stroke at EPU conditions is 1071.6 psid.

The SGBS containment isolation valve closing margin at current conditions is 7.2%. The closing margin at EPU conditions has been determined to be 6.3%. Although the closing margin is less than the optimal 10% margin described in FPL engineering guidelines for sizing and evaluation of air operated valve operators, both SGBS containment isolation valves have 10% margin or greater based on the most recent static tests. The determination of the margin considers valve seating load, which is conservative (there are no seat leakage requirements for these valves). If the seating load is eliminated, the closing margin at EPU conditions would be approximately 15%. Accordingly, it is concluded that the valve closing margin remains adequate for the safety-related close stroke.

CPTB-4:

In section 2.2.4.2.4 under BOP *[Balance of Plant]* Scope AOVs *[Air - Operated Valves]*, it is stated:

"As discussed in the table, for the MSIV [Main Steam Isolation Valve] safety-related close stroke, the MEDP [maximum expected differential pressure] is increasing for EPU beyond the value used in the current valve/actuator capability analysis. However, the closing margin (percentage of actuator output greater than that required to stroke the valve) for the MSIVs remains adequate for the safety-related close stroke at EPU conditions."

Please provide the value for the maximum expected differential pressure at EPU conditions since Table 2.2.4-2 does not provide this value.

Additionally, please provide the closing margins for the MSIVs at the current and EPU conditions and explain why the closing margin at EPU conditions remains adequate.

Response

The MSIV valve type is a balanced disc globe with pilot disc. Closing margins are determined for the safety-related scenario in which the valve closes following a postulated main steam line break upstream of the MSIV. This is a reverse flow scenario (flow under the valve seat). Flow under the valve seat tends to assist the valve in closing.

The maximum expected differential pressure for the MSIV safety-related close stroke at EPU conditions is 1015.3 psid.

The closing margins for the valve main and pilot discs for the safety-related close stroke are as follows:

- The MSIV closing margin for the valve main disc at current conditions is 960.5%. In the determination of the minimum required thrust for closing, the differential pressure load for the valve main disc at current conditions is determined to be negative (assists valve closing motion); therefore, the differential pressure load is set to zero. The differential pressure load for the valve main disc at EPU conditions is also negative; accordingly, the closing margin for the valve main disc at EPU conditions is also 960.5%.

- The MSIV closing margin for the valve pilot disc at current conditions is 309.9%. The closing margin for the valve pilot disc at EPU conditions has been determined to be 305.6%.

The MSIV valve / actuator capability analysis states that non-negative margins are considered acceptable. Therefore, it is concluded that the MSIV valve main and pilot disc closing margins remain acceptable at EPU conditions.