



April 19, 2012

L-2012-158
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 Response to NRC Mechanical and Civil Engineering Branch
(EMCB) 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 – Mechanical & Civil Engineering Branch (EMCB)," January 13, 2012.
- (3) R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2012-059), "Response to NRC Mechanical and Civil Engineering Branch (EMCB) Request for Additional Information Regarding Extended Power Uprate License Amendment Request," February 29, 2012, Accession No. ML12065A148.

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 January 13, 2012 [Reference 2], additional information was requested by the NRC staff in the Mechanical and Civil Engineering Branch (EMCB) to support their review of the EPU License Amendment Request (LAR). The request for additional information (RAI) identified 47 questions. By letter L-2012-059 dated February 29, 2012 [Reference 3], FPL provided the requested information. In that letter, FPL also committed to provide a supplemental response to RAI EMCB-23 in a separate submittal. The attachment to this letter provides FPL's supplemental response to RAI EMCB-23.

4001
NRC

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.

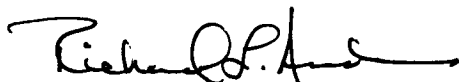
In accordance with 10 CFR 50.91(b)(1), a copy of this letter is being forwarded to the designated State of Florida official.

Should you have any questions regarding this submittal, please contact Mr. Christopher Wasik, St. Lucie Extended Power Uprate LAR Project Manager, at 772-467-7138.

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 long horizontal flourish extending to the right.

Richard L. Anderson
Site Vice President
St. Lucie Plant

Attachment (1)

cc: Mr. William Passetti, Florida Department of Health

**Supplemental Response to NRC Mechanical and Civil Engineering
Branch (EMCB) 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 Extended Power Uprate (EPU) License Amendment Request (LAR) for St. Lucie Nuclear Plant 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 January 13, 2012 from NRC (Tracy Orf) to FPL (Chris Wasik), Subject: St. Lucie 2 EPU draft RAIs - Mechanical & Civil Engineering Branch (EMCB), the NRC requested additional information regarding FPL's request to implement the EPU. The RAI consisted of forty-seven (47) questions from the NRC's Mechanical and Civil Engineering Branch (EMCB). By letter L-2012-059 dated February 29, 2012, Accession No. ML12065A148, FPL provided the requested information. In that letter, FPL also committed to provide a supplemental response to RAI EMCB-23 in a separate submittal. This attachment provides FPL's supplemental response to RAI EMCB-23.

EMCB-23

To prove acceptability of the shown calculated loads for the steam generator nozzles shown on Tables 2.2.2.2-3 and 2.2.2.2-4, please provide the allowable loads and allowable load derivation.

Original Response:

Allowable nozzle loads were not provided by the supplier of the St. Lucie Unit 2 replacement steam generators (RSGs) during their original design. Instead, the RSG nozzles were analyzed based on loading conditions provided by FPL as part of their original design and procurement.

For the St. Lucie Unit 2 EPU, the RSG nozzle stresses and fatigue usage factors have been calculated for EPU based on EPU loads that bound those provided in EPU LAR Attachment 5, Tables 2.2.2.2-1 and 2.2.2.2-2. The results of the RSG nozzle stress and fatigue analyses using bounding EPU loads are provided in EPU LAR Attachment 5, Table 2.2.2.5-9.

As part of the EPU modification process, reanalysis of the main steam and feedwater piping has been performed. These revised EPU piping analyses establish new loads for the RSG main steam and feedwater nozzles. The RSG main steam and feedwater nozzles are being reanalyzed for these new EPU loads. Accordingly, an update to EPU LAR Attachment 5, Tables 2.2.2.2-1, 2.2.2.2-2, and 2.2.2.5-9 will be provided in a supplemental response.

Supplemental Response:

Reanalysis of the main steam and feedwater piping has been completed as part of the EPU modification process. These updated EPU piping analyses establish revised piping loads for the RSG main steam and feedwater nozzles. The revised piping loads for the RSG main steam and feedwater nozzles are presented in revised EPU LAR Attachment 5, Tables 2.2.2.2-1 and 2.2.2.2-2, below.

These revised RSG main steam and feedwater nozzle piping loads have been compared to the piping loads used to determine RSG nozzle stresses and fatigue usage factors presented in

EPU LAR Attachment 5, Table 2.2.2.5-9. The results of this comparison conclude that the RSG main steam and feedwater nozzle stresses and fatigue usage factors presented in Table 2.2.2.5-9 remain valid.

Table 2.2.2.2-1
Steam Generator Nozzle Loads - Main Steam Nozzles

Description	Forces (Kips)		Moments (in-Kips)	
	Axial (F_a)	Shear (F_v)	Bending (M_b)	Torsion (M_t)
Steam Generator 2A				
Total Loads = (DW + DBE + THIST(TSV1) + THER) (Note 1)	19.1	46.9	3629	4620
Total Loads = (DW + DBE + THIST(MSIV) + THER) (Note 1)	19.3	48.2	3673	4620
Total Loads = (DW + DBE + THIST(TSV2) + THER) (Note 1)	19.0	46.5	3606	4619
Steam Generator 2B				
Total Loads = (DW + DBE + THIST(TSV1) + THER) (Note 1)	12.6	35.8	3052	4236
Total Loads = (DW + DBE + THIST(MSIV) + THER) (Note 1)	12.8	37.6	3123	4236
Total Loads = (DW + DBE + THIST(TSV2) + THER) (Note 1)	12.4	34.9	2976	4235
Note 1: DW = Dead Weight DBE = Design Basis Earthquake THER = Thermal THIST(TSV1) = Time History Loads due to Turbine Stop Valve Closure event with Steam Bypass Valves Closed THIST(MSIV) = Time History Loads due to Main Steam Isolation Valve Closure event THIST(TSV2) = Time History Loads due to Turbine Stop Valve Closure event with Steam Bypass Valves Open				

Table 2.2.2.2-2
Steam Generator Nozzle Loads - Feedwater Nozzles

Description	Forces (Kips)		Moments (in-Kips)	
	Axial (F_a)	Shear (F_v)	Bending (M_b)	Torsion (M_t)
Steam Generator 2A				
Total Loads = (DW + DBE + THIST(FRV) + THER) (Note 1)	8.6	15.3	927	1771
Total Loads = (DW + DBE + THIST(FIV) + THER) (Note 1)	8.6	15.4	929	1772
Steam Generator 2B				
Total Loads = (DW + DBE + THIST(FRV) + THER) (Note 1)	9.9	17.7	1665	757
Total Loads = (DW + DBE + THIST(FIV) + THER) (Note 1)	9.9	18.2	1671	751
Note 1: DW = Dead Weight DBE = Design Basis Earthquake THER = Thermal THIST(FRV) = Time History Loads due to Feedwater Regulating Valve Closure event THIST(FIV) = Time History Loads due to Feedwater Isolation Valve Closure event				