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

FPL

April 19, 2012

L-2012-177
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-1 in a separate submittal. The attachment to this letter provides FPL's first supplemental response to RAI EMCB-1.

A001
NRR

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,

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-1 in a separate submittal. This attachment provides FPL's first supplemental response to RAI EMCB-1.

EMCB-1

The staff requests that the licensee provide assurance that all structural modifications and/or additions have been identified and designed and that all structural evaluations and required design calculations to demonstrate that all systems, structures and components (SSCs) credited to and/or affected by the proposed extended power uprate (EPU) have been completed and controlled documentation exists which finds said SSCs structurally adequate to perform their intended design functions under EPU conditions.

Supplemental Response:

As described in letter L-2012-059, FPL advised the NRC that with the exception of the EPU modifications listed below, applicable safety related and/or seismic piping and associated structural evaluations and design calculations for affected systems, structures and components (SSCs) credited to and/or affected by the proposed EPU have been completed. The following EPU modifications were identified as not being complete at that time:

- Main Steam, Feedwater, and Condensate Pipe Support Modification,
- Chemical and Volume Control System (CVCS) Vent Modification,
- Control Room Air Conditioning Margin Improvement.

This supplemental response provides the completed design details for the first two EPU modifications.

Piping stress summary data for the safety-related and/or seismic main steam and feedwater piping systems impacted by EPU is provided in Table 1. A list of the safety-related and/or seismic main steam and feedwater pipe support modifications that are required for the EPU is provided in Table 2. Note that the attachment steel calculations for the main steam and feedwater piping support modifications located in the Turbine Building are not complete at this time. A supplemental response will be submitted to NRC providing confirmation that these structural steel calculations are complete.

There are no safety-related and/or seismic piping or pipe support modifications for the St. Lucie Unit 2 condensate piping system.

Piping stress summary data for the chemical and volume control system (CVCS) vent modification is provided in Table 3 and a list of the associated pipe support modifications is provided in Table 4.

Design information regarding the control room air conditioning margin improvement modification is not complete. Design details regarding this EPU modification will be provided to NRC in a supplemental response.

Table 1

Main Steam and Feedwater Piping Stress Summary at EPU Conditions					
Piping Analysis Description (Note 3)	**Loading Condition (Note 2)**	**Existing Stress (psi)**	**EPU Stress (psi)**	**Allowable Stress (psi)**	**Design Margin (Note 1)**
Main Steam Piping from SG-2A to Containment Penetration P-1	Equation 8	6,624	9,062	15,000	0.60
	Equation 9U	4,169	10,975	18,000	0.61
	Equation 9F	4,582	10,600	36,000	0.29
	Equation 10	8,208	7,986	22,500	0.35
Main Steam Piping from SG-2B to Containment Penetration P-2	Equation 8	6,613	8,711	15,000	0.58
	Equation 9U	4,755	11,025	18,000	0.61
	Equation 9F	5,033	11,037	36,000	0.31
	Equation 10	8,427	7,943	22,500	0.35
Main Steam Piping from Containment Penetrations P-1 and P-2 to HP Turbine	Equation 8	7,828	7,926	15,000	0.53
	Equation 9U	9,567	13,170	18,000	0.73
	Equation 9F	5,693	13,186	36,000	0.37
	Equation 10	19,149	20,535	22,500	0.91
Feedwater Piping from Containment Penetration P-3 to SG-2A	Equation 8	5,222	6,061	15,000	0.40
	Equation 9U	8,840	10,013	18,000	0.56
	Equation 9F	8,276	9,477	36,000	0.26
	Equation 10	14,089	12,096	22,500	0.54
Feedwater Piping from Containment Penetration P-4 to SG-2B	Equation 8	5,664	6,325	15,000	0.42
	Equation 9U	7,567	9,010	18,000	0.50
	Equation 9F	9,144	9,339	36,000	0.26
	Equation 10	9,330	11,304	22,500	0.50
Feedwater Piping from Feedwater Pumps to Containment Penetrations P-3 and P-4	Equation 8	8,321	8,730	15,000	0.58
	Equation 9U	7,371	13,911	18,000	0.77
	Equation 9F	7,371	13,924	36,000	0.39
	Equation 10	16,119	17,950	22,500	0.80

Notes:

1. Stress Interaction Ratio (also called "Design Margin") is based on the ratio of EPU stress divided by the Allowable stress.
2. The pipe stress analysis equation numbers listed in this table correspond to ASME Section III, NB-3650, NC-3650, and ND-3650 equation numbers.
3. Description is based on pipe stress analysis segment of a given system included in the analysis.

Table 2

Main Steam and Feedwater Pipe Support Modifications for EPU Conditions					
Item	**Support Mark Number**	**System**	**Pipe Size (in.)**	**Building Location**	**Modification Description**
1	MS-4100-6080	MS	34	Reactor Containment	New support
2	MS-4101-315A	MS	34	Reactor Containment	New support
3	MS-4102-274	MS	38	Turbine Bldg	Add weld
4	MS-4102-32B	MS	38	Turbine Bldg	Add cover plate
5	MS-4102-48	MS	38	Turbine Bldg	Add tube steel brace
6	MS-4102-3910	MS	38	Turbine Bldg	Add weld
7	BF-4004-258	FW	20	Turbine Bldg	Add weld
8	BF-4004-38	FW	20	Turbine Bldg	Replace snubbers
Notes: FW = Feedwater MS = Main Steam					

Table 3

Maximum Piping Stress for Chemical and Volume Control (CVCS) Vent Modification				
Code Equation	**Existing Maximum Stress (psi)**	**EPU Maximum Stress (psi)**	**Allowable Stress[1] (psi)**	**Stress Ratio**
Equation 8	4835	4979	17200	0.289
Equation 9B	6386	12037	20640	0.583
Equation 9D	6974	17186	41280	0.416
Equation 10	13222	9950	27800	0.358

Note:
1. The allowable stress values are based on a design temperature of 250°F.

Table 4

Pipe Supports Affected by Chemical and Volume Control (CVCS) Vent Modification			
Piping System	**Pipe Support Mark Number**	**Support Attribute Of Concern**	**Resolution**
Chemical and Volume Control System (CVCS) Vent Modification	CH-136-R1	Added pipe line CH-1011	New Support
	CH-136-R2	Added pipe line CH-1011	New Support
	CH-136-R3	Added pipe line CH-1011	New Support
	CH-136-R4	Added pipe line CH-1012	New Support
	CH-136-R5	Added pipe line CH-1004	New Support
	CH-136-R6	Added pipe line CH-1004	New Support
	CH-136-R7	Added pipe line CH-1019	New Support
	CH-136-R8	Added pipe line CH-1017	New Support
	CH-136-R9	Added pipe line CH-1019	New Support
	CH-136-R10	Added pipe line CH-1007	New Support
	CH-136-R11	Added pipe line CH-1013	New Support
	CH-136-R12	Added pipe line CH-1013	New Support
	CH-136-R13	Added pipe line CH-1013	New Support
	CH-136-R14	Added pipe line CH-1013	New Support
	CH-136-R15	Added pipe line CH-1014	New Support
	CH-136-R16	Added pipe line CH-1005	New Support
	CH-136-R17	Added pipe line CH-1020	New Support
	CH-136-R18	Added pipe line CH-1015	New Support
	CH-136-R19	Added pipe line CH-1015	New Support
	CH-136-R20	Added pipe line CH-1015	New Support
	CH-136-R21	Added pipe line CH-1015	New Support
	CH-136-R22	Added pipe line CH-1016	New Support
	CH-136-R23	Added pipe line CH-1006	New Support
	CH-136-R24	Added pipe line CH-1006	New Support
	CH-136-R25	Added pipe line CH-1006	New Support
	CH-136-R26	Added pipe line CH-1021	New Support
	CH-136-R27	Added pipe line CH-1018	New Support
	CH-136-R28	Added pipe line CH-1008	New Support
	CH-136-R29	Added pipe line CH-1008	New Support
	CH-2082-39	Existing Support	Acceptable
	CH-2082-101	Existing Support	Acceptable
	CH-2082-106	Existing Support	Acceptable
	CH-2082-115	Existing Support	Acceptable
	CH-2082-126	Existing Support	Acceptable