



February 21, 2012

L-2012-057
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 Mechanical and Civil Branch Request for Additional
Information Regarding Extended Power Uprate License Amendment Request
RAI EMCB-1

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 from T. Orf (NRC) to C. Wasik (FPL), "St. Lucie 1 EPU draft Mechanical and Civil RAIs (EMCB)," July 27, 2011.
- (3) R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2011-361), "Response to NRC Mechanical and Civil Branch Request for Additional Information Regarding Extended Power Uprate License Amendment Request," September 23, 2011, Accession No. ML11271A030.
- (4) R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2011-512), "Response to NRC Mechanical and Civil Branch Request for Additional Information RAI EMCB-1; Regarding Extended Power Uprate License Amendment Request," November 23, 2011, Accession No. ML11333A373.

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

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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 27, 2011 [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). By letter L-2011-361 dated September 23, 2011 [Reference 3], FPL provided a response to all of the questions with the exception of RAI EMCB-23 and the hot leg injection modification portion of the response to RAI EMCB-1. By letter L-2011-512 dated November 23, 2011 [Reference 4], FPL committed to provide pipe and pipe support analysis information for the St. Lucie Unit 1 EPU modification of the hot leg injection auxiliary spray flow path by March 16, 2012. The design associated with this EPU modification is complete and the associated pipe and pipe support analysis information is included as 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.

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 *21 - February - 2012*

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 1 that was submitted to the NRC by FPL via letter (L-2010-259) dated November 22, 2010 (Accession Number ML103560419).

In an email from the NRC Project Manager dated July 27, 2011, Subject: "St. Lucie 1 EPU draft Mechanical and Civil RAIs (EMCB)," additional information was requested by the NRC staff in the Mechanical and Civil Engineering Branch (EMCB) to support their review of the EPU LAR. By letter L-2011-361 dated September 23, 2011, Subject: "Response to NRC Mechanical and Civil Branch Request for Additional Information Regarding Extended Power Uprate License Amendment Request," (Accession No. ML11271A030), FPL provided a response to all of the questions with the exception of RAI EMCB-23 and the hot leg injection modification portion of the response to RAI EMCB-1. By letter L-2011-512 dated November 23, 2011, Subject: "Response to NRC Mechanical and Civil Branch Request for Additional Information RAI EMCB-1; Regarding Extended Power Uprate License Amendment Request," (Accession No. ML11333A373), FPL committed to provide pipe and pipe support analysis information for the St. Lucie Unit 1 EPU modification of the hot leg injection auxiliary spray flow path by March 16, 2012. This information is provided below in the 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-2011-512, FPL advised the NRC that a modification to the hot leg injection auxiliary spray flow path was required for the St. Lucie Unit 1 EPU. This modification adds a parallel flow path around the chemical and volume control system (CVCS) regenerative heat exchanger to support the increased hot leg injection flow requirements established for EPU conditions. The design of this modification is complete.

Results of the EPU piping analyses for this modification are provided in Table 1.

Results of the EPU piping support analyses for this modification are provided in Table 2.

Table 1

Pipe Stress Summary for Hot Leg Injection to Auxiliary Spray Flow Path					
Piping Analysis Description	Loading Condition	Existing Stress (psi)	EPU Stress (psi)	Allowable Stress (psi)	Design Margin
Chemical & Volume Control System Piping from Containment Penetration P27 to Support CH-72-H5 (Hot Leg Injection)	Equation 8	Not Available	5724	15900	0.360
	Equation 9U	Not Available	6754	19080	0.354
	Equation 9E	Not Available	7613	28620	0.266
	Equation 10	Not Available	10853	27475	0.395
Auxiliary Spray Piping Inside Containment to Penetration P27 (Hot Leg Injection)	ASME Section III Class 2 Piping				
	Eq 8	8137	5581	23850*	0.234
	Eq 9B	12120	13073	26900*	0.486
	Eq 9C	12120	15978	32280*	0.495
	Eq 11	25414	23249	43375*	0.536
	ASME Section III Class 1 Piping				
	Design	9717	9717	26550	0.366
	Level B	10931	10939	29355	0.373
	Level C	14562	14565	45000	0.324
	Level D	14562	14565	58000	0.251

*Note: These allowable stress values are from the ASME Section III Code, Subsection NC-3650, 1986 Edition.

Table 2

Piping System	Pipe Support Mark Number	Support Attribute Of Concern	Resolution
Auxiliary Spray Piping	CH-227-H1	Added new pipe line CH1002	Support added on new pipe
	RC-5-471	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-124-65A	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-124-465	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-124-463	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-124-459	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-124-456	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-124-445	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-128-438	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-128-426	Excessive movement causes sliding member to fall off the supporting structure.	Attached plates to sliding member to prevent the pipe from falling off of the supporting structure.
	CH-128-425	Intermittent weld exceeds weld allowable.	Modified to a continuous weld
Chemical and Volume Control System Piping from Containment Penetration P27 to Support CH-72-H5	CH-2-H1	U-bolt loads exceeds allowable load	Modified / added structural members (Angle Iron)
	CH-2-H2	U-bolt loads exceeds allowable load	Modified / added structural members (Angle Iron)
	CH-2-H3	U-bolt loads exceeds allowable loads and structural angles stress exceeds allowable stress	Redesign support with Tube steel members in place of Angle Iron and U- bolt
	CH-71-H1	Piping overstress -required deletion of the support	Deleted support
	CH-71-H2	Piping overstress -required deletion of the support	Deleted support
	CH-72-H5	Wide flange member stress exceeds allowable stress and U-bolt loads exceeds allowable load.	Redesign support with tube steel members in place of wide flange and U- bolt.
	CH-72-H6	U-bolt load exceeds allowable loads and structural angle stress exceeds allowable stress	Modified to Tube Steel structural frame