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

August 25, 2011

L-2011-344
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 EPU Draft RAIs – Steam Generator Branch (CSGB)," 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 EPU operating temperatures and the flow accelerated corrosion (FAC) program was requested by the NRC staff in the Steam Generator Tube Integrity and Chemical Engineering Branch (CSGB) to support their review of the EPU LAR. The request for additional information (RAI) identified two 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.

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.

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 August 25, 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 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 – Steam Generator Branch (CSGB)," the NRC staff requested additional information regarding FPL's request to implement the EPU. The RAI consisted of two (2) questions from the NRC's Steam Generator Tube Integrity and Chemical Engineering Branch (CSGB). These two RAI questions and the FPL responses are documented below.

CSGB-1:

The regenerative heat exchanger (HX) cools the normal letdown flow from the reactor coolant system (RCS), which is at RCS Tcold temperature. The license amendment request (LAR) states that the design inlet temperature of the regenerative HX is 550 F. The LAR further states that the full-load EPU Tcold temperature is 551°F, one degree over the design inlet temperature for the regenerative HX, and that the regenerative HX materials were evaluated and determined to be acceptable for a range of temperature which bound the maximum EPU operating temperatures. Please provide additional details concerning the analysis performed to reach the conclusion that operations at a temperature greater than the design inlet temperature of the regenerative HX are appropriate.

Response

The design temperature of the regenerative heat exchanger is 650°F. This is the bounding value for the material properties of the heat exchanger. Since this design value is higher than the maximum expected transient temperature through the heat exchanger (551°F), the regenerative HX materials are determined to be acceptable at EPU conditions.

CSGB-2:

The LAR stated that the flow-accelerated corrosion (FAC) program manages the aging effects of loss of material due to FAC by predicting, detecting, monitoring and mitigating FAC in high energy carbon steel piping associated with main steam, extraction steam, main feedwater, heater drains and blowdown systems. Table 2.1.8-2 of the LAR lists predicted wall thickness with measured wall thickness and shows whether the CHECWORKS™ SFA predictions bound the actual FAC conditions of the plant. However, 10 of the 21 selected lines have no nondestructive evaluation (NDE) data reported. The staff requests additional information to ensure that the CHECWORKS™ SFA predictions bound actual conditions in the plant.

a. **Please provide similar data for components located in the same line, or that have similar operating conditions, as the components listed in Table 2.1.8-2 with no NDE data listed.**

Response

The following table has been generated to provide information on inspected components in the lines in Table 2.1.8-2 where "no NDE" is noted. Inspection scope (component) selection will continue to be in accordance with FPL procedures that are based on NSAC-202L. Factors considered in the selection of components for inspection are the predicted wear rate and/or time remaining to reach critical wall thickness. NDE examination data is incorporated into the CHECWORKS™ model in accordance with EPRI guidelines to enhance the predictive capability of the model.

COMPARISION OF PREDICTED AND MEASURED WALL THICKNESS FOR COMPONENTS INSPECTED IN THE LINES IN PSL2 LR TABLE 2.1.8-2 WHERE "NO NDE" IS NOTED

Line Description	Component ID	Pipe Spec.	CHECWORKS Current Wear-Rate 100% Power (mils/year)	CHECWORKS Line Correction Factor	Predicted Remaining Service Life Following SL2-20 @ EPU Wear Rate (months)	Predicted Thickness at Current Wear Rate at the end of Cycle 19 (inches)	NDE (UT or RT) Measured Thickness (inches) (Note 2)
ES: LPES TO FWH 3A,B -2-12,15	24ES6-E-2-10	24" - 0.375" Sch. 20	1.142	1.000[1]	2213.9	0.331	No NDE
	24ES6-E-4-14	24" - 0.375" Sch. 20	1.714	1.000[1]	1113.6	0.309	0.331 @ 121491 hrs
BF: HTR 5A TO SEISMC -2-22, 23	20BF8-T-1-13	20" - 1.500" Sch. 120	8.518	8.443	46.0	1.239	No NDE
	20BF8-P-2-6	20" - 1.500" Sch. 120	9.086	8.443	216.7	1.389	1.445 @ 146055 hrs
	20BF12-P-8-19	20" - 1.500" Sch. 120	5.679	8.443	299.0	1.358	1.400 @ 134721 hrs
BF: PUMPB TO HTR 5B -2-21, 22	20BF2-P-5-10	20" - 1.500" Sch. 120	6.425	3.441	199.7	1.311	No NDE
	20BF2-P-2-4	20" - 1.500" Sch. 120	7.301	3.441	219.9	1.340	1.393 @ 134721 hrs
	20BF2-P-7-16	20" - 1.500" Sch. 120	9.345	3.441	325.6	1.468	1.526 @ 146055 hrs
HD: DRNCLR B TO PUMP B -2-46	16HD38-E-6-23	16" - 0.375" Sch. STD	3.834	1.787	286.7	0.257	No NDE
	16HD35-P-6-12	16" - 0.375" Sch. STD	2.372	1.787	896.1	0.340	0.368 @ 97286 hrs
	16HD38-P-16-30	16" - 0.375" Sch. STD	2.072	1.787	883.2	0.318	0.349 @ 74456 hrs

Line Description	Component ID	Pipe Spec.	CHECWORKS Current Wear-Rate 100% Power (mils/year)	CHECWORKS Line Correction Factor	Predicted Remaining Service Life Following SL2-20 @ EPU Wear Rate (months)	Predicted Thickness at Current Wear Rate at the end of Cycle 19 (inches)	NDE (UT or RT) Measured Thickness (inches) (Note 2)
HD: FWH 3B TO FWH 2B -2-55	6HD65-P-12-23	6.625" - 0.280" Sch. 40	2.576	2.690	742.2	0.207	No NDE
	6HD65-R-2-24	6.625" - 0.280" Sch. 40	4.099	2.690	343.4	0.293	0.318 @ 146055 hrs
	6HD65-R-2-24 (D/S)	6.625" - 0.280" Sch. 40	6.838	2.690	124.9	0.237	0.278 @ 146055 hrs
	8HD66-XI-3-28	8.625" - 0.500" Sch. 80	7.060	2.690	115.4	0.314	0.357 @ 146055 hrs
	8HD66-XI-3-28 (D/S)	8.625" - 0.500" Sch. 80	2.520	2.690	792.4	0.542	0.557 @ 146055 hrs
MS: CLBK A TO HDR -2-2	34MS32-E-7-38	34" - 1.200" Sch. USR	0.380	1.000[1]	1579.6	1.189	Note 3
MS: HDR TO MSR A,B -3, 8, 9, 10	8MS19-P-7-14	8.625" - .322" Sch. 40	1.194	4.105	319.3	0.287	No NDE
	8MS21-P-19-39	8.625" - .322" Sch. 40	1.194	4.105	52.0	0.278	0.288 @ 134721 hrs
	8MS21-E-11-42	8.625" - .322" Sch. 40	2.498	4.105	191.2	0.291	0.304 @ 158598 hrs
MS: HDR to SV Inlet 2,4 -2-3	38MS14-E-14-56	38" - .1.350" Sch. USR	2.091	4.105	343.6	1.290	No NDE
	26MS6-E-15-64	26" – 1.000" Sch. USR	2.420	4.105	1362.8	1.161	1.181 @ 134721 hrs
	26MS6-P-30-65	26" – 1.000" Sch. USR	1.643	4.105	1005.9	0.998	1.011 @ 134721 hrs

Line Description	Component ID	Pipe Spec.	CHECWORKS Current Wear-Rate 100% Power (mils/year)	CHECWORKS Line Correction Factor	Predicted Remaining Service Life Following SL2-20 @ EPU Wear Rate (months)	Predicted Thickness at Current Wear Rate at the end of Cycle 19 (inches)	NDE (UT or RT) Measured Thickness (inches) (Note 2)
HR: MSR A RHTR TO FWH5B -36, 37	8HD128-E-2-5	8.625" - 0.500" Sch. 80	2.210	2.720	687.3	0.423	No NDE
	8HD128-E-1-4	8.625" - 0.500" Sch. 80	2.210	2.720	684.5	0.422	0.448 @ 97286 hrs
	6HD6-P-8-18	6.625" - 0.280" Sch. 40	0.933	2.720	265.2	0.237	0.251 @ 74456 hrs
HR: MSRAB SHL TO FWH4B -33,34	10HD1-P-12-24	10.75" - .365" Sch. 40	1.628	2.816	1293.7	0.282	No NDE
	12HD3-P-17-33	12.75" - .406" Sch. 40	2.672	2.816	887.2	0.311	0.382 @ 63854 hrs
	12HD3-E-12-36	12.75" - .406" Sch. 40	3.157	2.816	543.8	0.267	0.351 @ 63854 hrs

Notes:

1. Inspection data was not used to calibrate these lines. Line Correction Factor is equal to 1.00.
2. Latest component inspection data measured thickness is recorded along with operating hours at time of inspection.
3. Components in similar line have been examined. However, the data was not used to refine the model based on the guidance contained in EPRI 1019176, CHECWORKS Steam/ Feedwater - Application Guidelines for Plant Modeling and Evaluation of Component Inspection Data due to low recorded wear.