



July 8, 2011

L-2011-255
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 Vessels & Internals Integrity Branch Request for Additional Information Regarding Extended Power Uprate License Amendment Request

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 Plant Unit 1 EPU – Request for additional information (Reactor Vessel and Internals)," June 14, 2011, Accession No. ML111650362.
- (3) U.S. Nuclear Regulatory Commission (R.A. Nelson) letter to Electric Power Research Institute (N. Wilmhurst), "Final Safety Evaluation of EPRI report, Materials Reliability Program Report 1016596 (MRP-227), Revision 0, 'Pressurized Water Reactor (PWR) Internals Inspection and Evaluation Guidelines' (TAC No. ME0680)," June 22, 2011, Accession No. ML11600498.

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 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 June 14, 2011 [Reference 2], additional information related to the proposed EPU was requested by the NRC staff in the Vessels & Internals Integrity Branch (CVIB) 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.

This RAI response includes a revision to current commitments associated with the aging management of the reactor vessel and internals (RVI) components during the period of extended operation. The RVI Inspection Program (currently listed in Section 18.1.4 of

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the St. Lucie Unit 1 Updated Final Safety Analysis Report) was based on industry knowledge available at the time the license for St. Lucie Unit 1 was renewed. Since that time, industry-led efforts have been in progress by the Electric Power Research Institute (EPRI) Materials Reliability Program (MRP) Reactor Internals Issues Task Group (RI-ITG) and later by the MRP Reactor Internals Focus Group (RI-FG). The EPRI MRP RI-FG developed MRP-227, "Pressurized Water Reactor Internals Inspection and Evaluation Guidelines," (MRP-227, Revision 0). MRP-227, Revision 0 was approved by the NRC staff on June 22, 2011 (ML111600498) [Reference 3].

In Reference 3, the NRC requested that EPRI publish an accepted version of MRP-227 to include a "-A" (designating accepted). FPL commits to adopting MRP-227-A in place of the existing RVI Inspection program. This commitment applies to St. Lucie Unit 1 and is independent of the EPU LAR currently under staff review.

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].

Should you have any questions regarding this submittal, please contact Mr. Christopher Wasik, St. Lucie Extended Power Uprate LAR Project Manager, at 772-429-7138.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on *08-Jul-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 Company (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 1 that was submitted to the NRC by FPL via letter (L-2010-259) dated November 22, 2010, Accession Number ML103560419.

In an Email dated June 14, 2011 from NRC (Tracy Orf) to FPL (Chris Wasik), Accession Number ML111650362, Subject: St. Lucie Unit 1 EPU – request for additional information (Balance of Plant), the NRC requested additional information regarding FPL's request to implement the EPU. The RAI consisted of two (2) questions from the NRC's Vessels and Internals Integrity Branch (CVIB). Clarification of the two RAIs was provided in another Email dated June 14, 2011 from NRC (Tracy Orf) to FPL (Chris Wasik). The RAI questions and the FPL responses are documented below.

CVIB-7

RAI CVIB-5 (Ref. 1) part "a" requested the licensee to describe the method of determining if additional RVI components become susceptible to the aging effects of 1) cracking due to stress corrosion cracking or irradiation assisted stress corrosion cracking (IASCC), 2) reduction of fracture toughness due to irradiation embrittlement; 3) loss of material due to wear; 4) loss of mechanical closure integrity due to IASCC, irradiation embrittlement, irradiation creep, or stress relaxation; 5) loss of preload due to stress relaxation; and 6) dimensional change due to void swelling. RAI CVIB-5 part "c" requested the licensee clarify whether any additional reactor vessel internals components were determined to be susceptible to the aging effects listed in part "a" of the question as a result of extended power uprate (EPU), compared to those listed as susceptible to these mechanisms in the license renewal application.

The response to RAI CVIB-5 indicates that it was determined that certain components may be susceptible to additional degradation mechanisms, compared to the degradation mechanisms identified in the St. Lucie, Units 1 and 2 License Renewal Application (LRA) for those components, under EPU conditions. Specifically, the fuel alignment plate, control element assembly shroud assemblies, and the upper guide structure support plate may be susceptible to irradiation embrittlement. Cracking of these components was previously identified in the LRA. The licensee stated that the license renewal documentation would be updated to reflect this change. However, the response does not indicate specifically which aging management programs AMP(s) will manage the additional aging effects or whether changes to the existing identified AMPs will be necessary. The staff therefore requests the following information:

- a) Identify the AMP(s) that will manage aging effects associated with additional aging mechanisms that will affect certain components as a result of EPU.**
- b) Discuss the adequacy of the existing AMPs to manage the aging effects associated with the additional aging mechanisms, and describe any changes that are necessary to the existing identified AMPs.**

Response

- a) The additional reactor vessel internals (RVI) components determined to be susceptible to age related degradation resulting from EPU will be included in the St. Lucie Reactor Vessel Internals Inspection Program.
- b) FPL plans to revise the Reactor Vessel Internals Inspection Program to align with MRP-227-A, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines." The adequacy of MRP-227-A for management of aging effects associated with the reactor vessel internals has been evaluated by the NRC as documented in Final Safety Evaluation of EPRI Report, Materials Reliability Program 1016596 (MRP-227), Revision 0, "Pressurized Water Reactor (PWR) Internals Inspection and Evaluation Guidelines" (TAC No. ME0680), dated June 22, 2011. Additionally, FPL has evaluated the changes in operating parameters associated with EPU and determined that they do not challenge the bounding assumptions of MRP-227-A.

CVIB-8

NUREG-1779 (Ref. 2) documents the following commitments related to aging management of the St. Lucie, Units 1 and 2 RVI components:

Commitment	UFSAR Supplement Location (LRA Appendix A1)	Implementation Schedule	Source
Submit a report summarizing the aging effects applicable to reactor vessel internals including a description of the inspection plan.	18.1.4, Reactor Vessel Internals Inspection Program	Prior to the end of the initial operating license term.	LRA Appendix B, Subsection 3.1.4 Response to RAI 3.1-1 (FPL letter L-2002-157)
Perform a one-time inspection of the reactor vessel internals.	18.1.4, Reactor Vessel Internals Inspection Program	During the period of extended operation.	LRA Appendix B, Subsection 3.1.4

Although Florida Power & Light Company (FPL) committed to submit an RVI component inspection program for St. Lucie, Units 1 and 2 prior to the period of extended operation, FPL did not specifically commit to submit an RVI component inspection program conforming to the industry's standard program. Therefore, the staff requests the licensee discuss their plans to implement the industry's recommended inspection and evaluation guidelines for RVI components as documented in topical report MRP-227, Rev. 0, as modified by the staff's SE expected to be issued during June 2011, or the approved version of the topical report (MRP-227-A), for Saint Lucie, Unit 1.

Response

FPL hereby revises its current commitments associated with the aging management of the reactor vessel internals components during the period of extended operation to adopt MRP-227-A in place of the existing Reactor Vessel Internals Inspection Program.

NRC References

1. Letter from Tracy J. Orf to Mano Nazar dated April 19, 2011; Subject: St. Lucie Plant, Unit 1 - Request For Additional Information Regarding License Amendment Request For Extended Power Uprate (TAC NO. ME5091) (ADAMS Accession No. ML111010098).
2. NUREG-1779, Safety Evaluation Report Related to the License Renewal of St. Lucie Nuclear Plant, Units 1 and 2, Docket Nos. 50-335 and 50-389, Florida Power & Light Company, September, 2003 (ADAMS Accession No. ML032940205).