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St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
License Renewal Commitments
Reactor Vessel Internals Aging Management Plan

Reference

1. FPL Letter from Christopher Costanzo to U.S. Nuclear Regulatory Commission (L-2015-229) "St. Lucie Units 1 and 2 Docket Nos. 50-335 and 50-389, License Renewal Commitments - Reactor Vessel Internals Aging Management Plan," Dated September 28, 2015.

2. NRC e-Mail from Perry Buckberg to Ken Frehafer, Request for Additional Information, St. Lucie Plant Units 1 and 2, Reactor Vessel Internals Aging Management Plan, Docket Nos. 50-335 and 50-389, TAC Nos. MF6777 and MF6778.

3. FPL Letter from Christopher Costanzo to U.S. Nuclear Regulatory Commission (L-2015-040), Reactor Vessel Internals Aging Management Plan, dated February 26, 2016.

4. FPL Letter from Daniel DeBoer to U.S. Nuclear Regulatory Commission (L-2017-015), Reactor Vessel Internals Aging Management Plan, dated March 7, 2017.

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated September 28, 2015 (Reference 1), Florida Power & Light Company (FPL) submitted its License Renewal Reactor Internals Inspection Program in accordance with MRP-227A at St. Lucie Nuclear Plants Units 1 and 2, for NRC staff review. The NRC staff reviewed the information provided by FPL in its submittal and requested additional information to complete their review (Reference 2). The responses to RAI-1 through RAI-10 were previously submitted to the NRC on February 26, 2016 (Reference 3) and March 7, 2017 (Reference 4).

In References 3 and 4 noted above, FPL noted that PWR Owners Group (PWROG) was developing a Generic Response Report for RAI-9. FPL response to RAI-9 is noted below:

PSL RAI-9:

Applicant/Licensee Action Item (A/LAI) 7 requires an applicant or licensee to provide an evaluation demonstrating that cast austenitic stainless steel (CASS) RVI components will maintain their functionality throughout the period of extended operation (PEO), considering the potential loss of fracture toughness due to both thermal embrittlement (TE) and irradiation embrittlement (IE). In its response to A/LAI 7, the licensee identified the RVI components that are fabricated from CASS as St. Lucie Plant Unit 1 core support columns, the CEA shroud tubes for both units, and the St. Lucie Plant Unit 2 flow bypass inserts. The licensee indicated that all but one of the Unit 1 core support columns screen in for TE based on the assumption that the columns have ferrite > 20%, since certified material test reports could not be located for these columns.

The licensee then concluded that the results of this evaluation do not conflict with strategy for aging management of RVI provided in MRP-227-A. The licensee stated that it is concluded that continued application of the strategies in MRP-227-A and the St.

Lucie Plant Units 1 and 2 RVI Inspection Program will meet the requirements for managing age-related degradation of St. Lucie Plant Units 1 and 2, CASS and martensitic stainless steel RVI components. However, the licensee did not provide any justification for its position that the MRP-227A aging management requirements (which require no inspections of the core support columns) are sufficient, considering the potential for loss of fracture toughness due to two mechanisms, and the susceptibility to cracking of the columns. The staff notes that the core support column welds, which are visible from above the core support plate, are inspected as Primary components, but MRP-227-A and the St. Lucie Plant Unit 1 RVI AMP require no expansion to the columns if degradation is detected in the welds.

Since the St. Lucie Plant Unit 1 core support columns (except one) are screened in for TE, and are also susceptible to IE and several cracking mechanisms, the staff requests the licensee provide an evaluation for St. Lucie Plant Unit 1, demonstrating that the core support columns will remain functional during the PEO considering the potential combined loss of fracture toughness due to TE plus IE, along with the potential for cracking in the columns.

FPL Response:

The response to RAI-9 described the on-going work by the PWROG for the CASS lower support column welds functionality analysis on a generic basis. Westinghouse, on behalf of PWROG, has completed the functionality analysis in Report No. PWROG-14048-P, Revision 1 (Proprietary). This report demonstrates the functionality of St. Lucie Unit 1 CASS core support columns (on a generic basis), during the period of extended operation, considering the loss of fracture toughness due to both thermal embrittlement (TE) and irradiation embrittlement (IE).

Report No. PWROG-14048-P, Revision 1 was submitted to the NRC by the Owners Group via OG Letter No. OG-17-62 dated March 1, 2017. This report is currently under NRC review.

This letter is to acknowledge that FPL has reviewed PWROG-14048-P, Revision 1 and concurs that the conclusions noted in the Executive Summary and Section 7 are applicable to St. Lucie Nuclear Plant, Unit 1. No changes to the PSL RV Internals Aging Management Program as submitted to the NRC in Reference 4 are needed.

By submittal of this letter, FPL has completed responses to all ten NRC RAIs on the Reactor Vessel Inspection Program described in reference 2.

Should you have any questions, please contact Mr. Michael Snyder, Licensing Manager, at 772-467-7036.

Very truly yours,

Daniel DeBoer
Site Director
St. Lucie Plant

DD/lrb

Cc: USNRC Regional Administrator, Region II
USNRC Senior Resident Inspector, St. Lucie Units 1 and 2