



APR 01 2021

L-2021-065
10 CFR 50.55a

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington DC 20555-0001

RE: St. Lucie Nuclear Plant, Unit 2
Docket No. 50-389
Renewed Facility Operating License NPF-16

Response to Request for Additional Information, Relief Request Number RR#15, Extension of St. Lucie Unit 2 RPV Welds from 10 to 20 Years

References:

1. Florida Power & Light Company letter L-2020-160, Relief Request Number RR#15, Extension of St. Lucie Unit 2 RPV Welds from 10 to 20 Years, October 30, 2020 (ADAMS Accession No. ML20304A148)
2. NRR Email Capture, Relief Request RR#15 - Extension of St. Lucie Unit 2 RPV Welds from 10 to 20 Years - Request for Additional Information (L-2020-LLR-0157), March 4, 2021 (ADAMS Accession No. ML21063A319)

In Reference 1, Florida Power & Light Company (FPL) submitted relief request (RR) #15 from the American Society of Mechanical Engineers Section XI Code (ASME Section XI Code) for the St. Lucie Unit 2 Fourth 10-Year Inservice Inspection (ISI) Interval. The request would defer volumetric examination of the St. Lucie Unit 2 reactor pressure vessel (RPV) full penetration pressure-retaining (Examination Category B-A and B-D) welds from the fourth interval in 2023 to the fifth interval in 2032, resulting in an approximate 10-year deferral. The relief request was developed using the methodology defined in WCAP-16168-NP-A, Revision 3, "Risk-Informed Extension of the Reactor Vessel In-service Inspection Interval."

In Reference 2, the NRC requested additional information determined necessary to complete its review. The enclosure to this letter provides FPL's response to the request for additional information (RAI).

This letter contains no new regulatory commitments.

Should you have any questions regarding this submittal, please contact Mr. Ken Frehafer, St. Lucie Licensing, at (772) 467-7748.

Sincerely,

A handwritten signature in black ink that reads "Wyatt Godes".

Wyatt Godes
St. Lucie Licensing Manager
Florida Power & Light

Enclosure

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, St. Lucie Nuclear Plant, Units 1 and 2
USNRC Senior Resident Inspector, St. Lucie Nuclear Plant, Units 1 and 2
Ms. Cindy Becker, Florida Department of Health

Florida Power & Light Company

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ENCLOSURE

Response to Request for Additional Information Relief Request Number RR#15, Extension of St. Lucie Unit 2 RPV Welds from 10 to 20 Years

In Reference 1, Florida Power & Light Company (FPL) submitted relief request (RR) #15 from ASME Section XI Code for the St. Lucie Unit 2 Fourth 10-Year Inservice Inspection (ISI) Interval. The relief request was developed using the methodology defined in WCAP-16168-NP-A, Revision 3, Risk-Informed Extension of the Reactor Vessel In-service Inspection Interval (Reference 2). In Reference 3, the NRC requested additional information determined necessary to complete its review, as indicated below. FPL's response to the NRC request for additional information (RAI) follows.

Regulatory Requirements/Background

Title 10 of the Code of Federal Regulations (10 CFR) Part 50.55a(z) establishes a process for licensees to propose alternatives to codes and standard requirements. Specifically, for alternatives requested under the criteria in 10 CFR 50.55a(z)(1), FPL must demonstrate that the proposed alternative would provide an acceptable level of quality and safety. The following requests for additional information (RAIs) are needed to reach a conclusion that FPL's proposed alternative achieves an acceptable level of quality and safety in lieu of following the applicable ASME Section XI requirements referenced in the October 30, 2020 letter.

RAI-1

In FPL's proposed alternative, the licensee requests staff authorization to defer the following until the 5th 10-Year ISI interval for the unit:

- 1) the inspections of the RPV pressure retaining welds required to be inspected in accordance with ASME Section XI, Table IWB-2500-1, Examination Category B-A, Inspection Items B1.11, B1.12, B1.21, B1.22, and B1.30, and
- 2) the inspections of RPV nozzle-to-shell welds and inside radius sections required to be inspected in accordance with ASME Section XI, Table IWB-2500-1, Examination Category B-D, Inspection Items B3.90 and B3.100.

FPL makes the following statement in Section 5 of the RR#15 enclosure:

"The impact to the implementation plan in OG-10-238 would increase the number of inspections in 2032 (from three to four) and decrease the number of inspections in 2030 (from five to four)."

Tables 4-2, 6-1, and 6-2 in WCAP-18275-NP, Revision 0, as referenced in Reference No. 9 of the RR#15 enclosure, indicate that there are many more RPV weld seam and inside radius section locations that would need to be inspected during the 4th interval (i.e., if the Code rules were followed) than just eight RPV pressure retaining components. Thus, the staff is unable to determine whether the "number of inspections" terminology included in the referenced RR#15 statement is being made in reference to a specific set of eight RPV weld or nozzle inside radius section locations, or rather to a specific population of RPV components for each RPV component type that is required to be inspected in accordance with the specific ASME Section XI Inspection Items referenced in RR#15.

Request

Please clarify whether the term "number of inspections" in Section 5 of the RR#15 enclosure is being made in relation to inspection of specific RPV weld or nozzle inside radius section locations or in reference to a

specific population of RPV components for each of RPV component type that is required to be inspected in accordance with the specific ASME Section XI Inspection Items referenced in RR#15

FPL Response:

The term “number of inspections” in Section 5 of the RR#15 represents the number of expected subsequent reactor vessel ISI examinations of the U.S. PWR fleet during a specific year based on the implementation plan in OG-10-238 (Reference 4). The term “number of inspections” is not made in relation to any specific reactor pressure vessel (RPV) weld or nozzle inside radius section locations or in reference to a specific population of RPV components for each of RPV component type.

RAI-2

Issue

The criteria in ASME Section XI Paragraph IWB-2411 require the licensee to perform a volumetric inspection of essentially 100% of the population of components in the specified ASME Section XI Inspection Items for the reference B-A and B-D Examination Categories. However, the relief request does not specifically state that the licensee will inspect essentially 100% of the population of RPV components for the specified component type in each of the ASME Section XI Inspection Items referenced in RR#15.

Request

For each of the ASME Section XI, Table IWB-2500-1, Examination Category B-A and B-D inspection items referenced in RR#15, identify the percent (%) population of components that will be inspected during the alternate 20-Year ISI interval (i.e., the interval duration for the 4th and 5th 10-Year ISI Intervals combined) proposed in RR#15.

FPL Response:

Consistent with the requirements of ASME Section XI, 2007 Edition through the 2008 Addenda, Table IWB-2500-1, Examination Category B-A “Pressure Retaining Welds in Reactor Vessel” and B-D “Full Penetration Welded Nozzles in Vessels” (Reference 5), FPL will examine 100% of the required RPV welds applicable to St. Lucie Unit 2.

RAI-3

Issue

Table 2 in RR#15 identifies that FPL performed volumetric ISI examinations of the RPV pressure retaining welds in 1989, 2000, and 2012.

FPL identifies that there were five (5) indications that were detected within the inner 1/10th or inner 1 inch of the RPV wall thickness, with three (3) of the indications referenced as weld indications and two (2) of the indications referenced as plate indications. It is not evident whether the Year 2012 inspections of the welds containing these indications were the first inspections that revealed evidence of flaw indications or re-inspections of the welds containing the flaw indications (meaning the flaw indications were first detected during inspections prior to Year 2012). The staff seeks additional information relative to the risk-based assessments of these flaw indications to confirm that any potential growth of the flaws is bounded by fatigue flaw growth assumptions and values used in the WCAP-16168-NP-A, Rev. 3 methodology.

Request

- a) Clarify whether the five (5) flaw indications are a subset or the 60 flaw indications that were identified as being acceptable per ASME Section XI Table IWB-3510-1 or in addition to the 60 indications that were found to be acceptable per Table IWB-3510-1.
- b) Confirm whether the Year 2012 inspections were the first ISI inspections that detected the flaw indications and whether there is any site-specific flaw growth data for the flaw indications evaluated in Table 2 of RR#15. If there is applicable site-specific flaw growth data for the flaw indications, identify the limiting site-specific flaw growth value that was calculated for the flaws evaluated in Table 2.

FPL Response

The five (5) flaw indications in Table 2 of RR#15 (Reference 1) are a subset of the total 60 flaw indications that were identified as acceptable per ASME Section XI Table IWB-3510-1 (Reference 5).

The 2012 inspections were the first ISI examinations that detected the 60 flaw indications evaluated in Table 2 of RR#15. There is no site-specific flaw growth data for the flaw indications evaluated in Table 2 of RR#15 since these flaw indications are indicative of fabrication flaws typical of small slag inclusions.

References

1. Florida Power & Light Company letter L-2020-160, Relief Request Number RR#15, Extension of St. Lucie Unit 2 RPV Welds from 10 to 20 Years, October 30, 2020 (ADAMS Accession No. ML20304A148)
2. Westinghouse Report, WCAP-16168-NP-A, Revision 3, "Risk-Informed Extension of the Reactor Vessel In-service Inspection Interval," October 2011 (ADAMS Accession Number ML11306A084).
3. NRR Email Capture, Relief Request RR#15 - Extension of St. Lucie Unit 2 RPV Welds from 10 to 20 Years - Request for Additional Information (L-2020-LLR-0157), March 4, 2021 (ADAMS Accession No. ML21063A319)
4. Pressurized Water Reactor Owners Group (PWROG) Letter OG-10-238, "Revision to the Revised Plan for Plant Specific Implementation of Extended Inservice Inspection Interval per WCAP-16168-NP, Revision 1, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval." PA-MS-0120," July 12, 2010 (ADAMS Accession Number ML11153A033)
5. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 2007 Edition through 2008 Addenda, American Society of Mechanical Engineers, New York