

NRR-DRMAPEm Resource

From: Buckberg, Perry
Sent: Thursday, July 11, 2019 12:03 PM
To: Frehafer, Ken
Cc: Wentzel, Michael
Subject: Request for Additional Information - St. Lucie Plant, Unit No. 2, Fall 2018 Refueling Outage Steam Generator Tube Inspection Report (EPID L-2019-LRO-0023)
Attachments: Draft Request for Additional Information - St. Lucie Plant, Unit No. 2, Fall 2018 Refueling Outage Steam Generator Tube Inspection Report (EPID L-2019-LRO-0023)

Ken,

By letter dated March 22, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19081A146), Florida Power & Light Company (the licensee) submitted information summarizing the results of the fall 2018 steam generator (SG) inspections performed at St. Lucie Plant, Unit No. 2. These inspections were performed during refueling outage (RFO) 24. Technical Specification (TS) 6.9.1.12 requires that a report be submitted within 180 days after the initial entry into hot shutdown following completion of an inspection of the replacement SGs performed in accordance with TS 6.8.4.I.1, which requires that an SG Program be established and implemented to ensure SG tube integrity is maintained.

The NRC's Chemical, Corrosion, and Steam Generator Branch (MCCB) staff has reviewed the report and has identified areas where it needs additional information. The *draft* request for additional information (RAI) was provided to you in the attached June 25, 2019 e-mail. A clarification was requested and was then held on July 11, 2019. During the call it was agreed that RAI request #2 should be edited for better clarity. Edits to RAI request #2 are incorporated into the final RAI below. As requested by your staff during the July 11 call, the NRC staff requests your response to the RAI within 45 days of the date of this email.

Thanks,

Perry Buckberg

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ST. LUCIE PLANT, UNIT NO. 2

REQUEST FOR ADDITIONAL INFORMATION

FALL 2018 STEAM GENERATOR TUBE INSPECTION REPORT

DOCKET NO. 50-389

Background.

The U.S. Nuclear Regulatory Commission (NRC) staff previously reviewed the licensee's spring 2014 SG tube inspection report and provided a summary to the licensee in a letter dated August 19, 2015 (ADAMS Accession No. ML15209A646). The spring 2014 inspections were performed during RFO 21. In the summary, the NRC staff noted that the four feedring inspection port covers (two per SG) were found to be loose during the secondary side inspections. The loose covers allowed the feedrings to drain, which created steam voids in the feedrings and resulted in a water hammer event that damaged the feedring supports for both SGs. The feedring supports were repaired during RFO 21 and all four inspection port covers were replaced with welded end caps to prevent loosening.

The licensee's fall 2015 SG tube inspection report, dated April 15, 2016 (ADAMS Accession No. ML16111B235), noted that during inspection of the SG 2B feedring, the inner support brackets were found to be slightly deformed. The new brackets had been installed during RFO 21 and appeared to have been displaced by a pressure transient in the feedring during the subsequent operating cycle. The licensee noted during the inspection that the welds remained intact. The condition was documented in the corrective action program, and the brackets were repaired with support braces/stiffeners. No deficiency was observed with the SG 2A feedring and supports. These inspections and repairs were performed during RFO 22.

In the fall 2018 SG tube inspection report, the licensee stated that the secondary side inspection activities were mainly comprised of a visual inspection of the feedwater ring support system in each SG. The inner support brackets of the SG 2A feedring were found to be slightly deformed from a pressure transient in the feedring during the previous operating cycle. The licensee also stated that this condition was expected for SG 2A, based on monitoring criteria established for this phenomenon, and does not jeopardize SG tube integrity. All welds of the feedring support system were noted to be intact. The as-found condition was documented in the corrective action program, and the brackets were repaired by attaching support braces/stiffeners to them. No deficiency was observed with the SG 2B feedring supports.

Issue.

The cause of the water hammer event that initially damaged the feedring supports for both SGs, was attributed to the loose inspection port covers, which allowed the feedrings to drain. Although repairs were made in RFO 21, additional repairs were required in RFO 22 and RFO 24, due to pressure transients in the SG feedrings.

Request.

1. The fall 2018 SG tube inspection report stated, "...this condition was expected for SG 2A, based on monitoring criteria established for this phenomenon and does not jeopardize SG tube integrity." Does this statement mean that the feedwater ring support system is designed to deform during pressure transients? Discuss why this does not pose a loose part threat to tube integrity.
2. Have feedring inspection port cover inspections confirmed the weld repairs to the end caps remain adequate and functioning as designed?
3. Has a root cause analysis been performed on the initial water hammer event and the subsequent pressure transients? Is it possible for multiple transients or a larger magnitude transient to cause greater damage than has been experienced, generating loose parts that could challenge tube integrity?

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