



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 27, 2014

Mr. Mano Nazar
Executive Vice President and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE PLANT, UNIT 2 – REVIEW OF THE 2012 REFUELING OUTAGE
STEAM GENERATOR TUBE INSERVICE INSPECTION REPORT
(TAC NO. MF1786)

Dear Mr. Nazar:

By letter dated May 6, 2013, as supplemented by letter dated November 26, 2013, Florida Power and Light Company (the licensee) submitted information summarizing the results of the fall 2012 steam generator tube inspection report, for the twentieth Refueling Outage (fall 2012) in accordance with Technical Specification (TS) Section 6.9.1.12 for St. Lucie Plant, Unit 2. In addition to the above report, additional information concerning the fall 2012 inspections was summarized by the Nuclear Regulatory Commission (NRC) staff in documents dated April 4 and April 11, 2013.

The NRC staff has completed its review of these reports and concludes that the licensee provided the information required by its TSs and that no additional followup is required at this time. The NRC staff's review of the report is enclosed.

Sincerely,

A handwritten signature in cursive script, reading "Siva P. Lingam", is positioned above the typed name.

Siva P. Lingam, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-389

Enclosure:
Inspection Summary Report

cc w/encl: Distribution via ListServ

REVIEW OF THE FALL 2012 REFUELING OUTAGE

STEAM GENERATOR TUBE INSPECTION REPORT

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT, UNIT 2

DOCKET NO. 50-389

By letter dated May 6, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13141A479), as supplemented by letter dated November 26, 2013 (ADAMS Accession No. ML13338A582), Florida Power and Light Company (the licensee) submitted information summarizing the results of the fall 2012 steam generator (SG) tube inspections at St. Lucie Plant (St. Lucie), Unit 2. These inspections were performed during the twentieth refueling outage (RFO). In addition to the above report, additional information concerning the fall 2012 inspections was summarized by the Nuclear Regulatory Commission (NRC) staff in documents dated April 4, 2013 (ADAMS Accession No. ML13084A030), and April 11, 2013 (ADAMS Accession No. ML13094A174).

St. Lucie, Unit 2 has two Model 86/19TI replacement SGs that were manufactured by AREVA and installed in December 2007. Each SG has 8,999 thermally treated Alloy 690 tubes with a nominal outside diameter of 0.75 inches and a nominal wall thickness of 0.043 inches. During manufacturing, all tubes were hydraulically expanded at both ends over the full depth of the tubesheet. The tubesheet was drilled on a triangular pitch with 1.0-inch spacing, center-to-center. The radius of the row 1 U-bends is 4.134 inches. The U-bends in rows 1 through 15 were stress relieved after bending. Seven Type 410 stainless steel support plates (each 1.181 inches thick with broached trefoil holes) support the vertical section of the tubes. Four sets of anti-vibration bars (AVBs) (each 0.112 inches thick and made from Type 405 stainless steel) support the U-bend section of the tubes.

This was the third inservice inspection for the replacement SGs. At the end of RFO 20 in fall 2012, the replacement SGs had accumulated 46.40 effective full power months of operation.

The licensee provided the scope, extent, methods, and results of their SG tube inspections in the documents referenced above. In addition, the licensee described corrective actions, such as tube plugging, taken in response to the inspection findings. The tubes in both SGs were inspected during this refueling outage.

Based on its review of the reports submitted, the NRC staff has the following observations and comments:

- The only service induced indications detected were wear at the AVBs (including at the tips of the AVBs in row 69), tube support plates, and the support/positioning device. The support/positioning device supports the AVB structure, is located on the outer periphery of the tube bundle, and it contacts numerous tubes on the extrados. All tubes with indications at the support/positioning device were plugged.

Enclosure

- Approximately 11,518 indications of wear at the AVBs were detected (7,485 in SG A and 4,033 in SG B). Of these indications, the number of new indications was 1,623 in SG A and 1,070 in SG B. The average growth rate per effective full power year (2.2 percent in SG A and 0.6 percent in SG B) continues to decline.
- The licensee is implementing a power uprate in the next cycle of operation (Cycle 20) and incorporated a wear rate increase of 24 percent in their operational assessment to account for the effects of the power uprate.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by their technical specifications. In addition, the NRC staff concludes there are no technical issues that warrant follow-up action at this time, since the inspections appear to be consistent with the objective of detecting potential tube degradation, and inspection results appear to be consistent with industry operating experience at similarly designed and operated units. The NRC staff notes, however, that the number of wear indications is much greater than the number of wear indications found at other AREVA SGs of similar age.

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/RA/

Siva P. Lingam, Project Manager
Plant Licensing Branch II-2
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