



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

August 19, 2015

Mr. Mano Nazar  
President and Chief Nuclear Officer  
Nuclear Division  
NextEra Energy  
P.O. Box 14000  
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE PLANT, UNIT NO. 2 – REVIEW OF THE SPRING 2014 STEAM  
GENERATOR TUBE INSERVICE INSPECTION REPORT FOR REFUELING  
OUTAGE 21 (TAC NO. MF4847)

Dear Mr. Nazar:

By letter dated September 18, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14279A237), Florida Power and Light Company (the licensee) submitted information summarizing the results of the spring 2014 steam generator tube inspection report, for the twenty-first St. Lucie Unit No. 2 Refueling Outage in accordance with Technical Specification (TS) Section 6.9.1.12. In addition to the above report, the U.S. Nuclear Regulatory Commission (NRC) staff summarized a conference call held with the licensee in a letter dated August 8, 2014 (ADAMS Accession No. ML14189A090). Also, the licensee submitted additional information regarding the 2014 inspections in letters dated March 23 (ADAMS Accession No. ML15091A306) and June 18, 2015 (ADAMS Accession No. ML15190A336).

The NRC staff has completed its review of these submittals 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 "Farideh E. Saba".

Farideh E. Saba, 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 2014 STEAM GENERATOR TUBE

INSERVICE INSPECTION REPORT

ST. LUCIE PLANT, UNIT NO. 2

DOCKET NO. 50-389

TAC NO. MF4847

By letter dated September 18, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14279A237), Florida Power & Light Company (the licensee) submitted information summarizing the results of the spring 2014 steam generator (SG) tube inspections performed at St. Lucie Unit No. 2. These inspections were performed during Refueling Outage 21 (RFO 21). The U.S. Nuclear Regulatory Commission (NRC) staff summarized a conference call held with the licensee in a letter dated August 8, 2014 (ADAMS Accession No. ML14189A090). The licensee submitted additional information regarding the 2014 inspections in letters dated March 23 (ADAMS Accession No. ML15091A306) and June 18, 2015 (ADAMS Accession No. ML15190A336).

St. Lucie Unit No. 2 has two Model 86/19TI replacement SGs that were manufactured by AREVA and installed in 2007. Each SG has 8,999 thermally treated Alloy 690 tubes with a nominal outside diameter of 0.75 inch and a nominal wall thickness of 0.043 inch. 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 (each 0.112 inch thick and made from Type 405 stainless steel) support the U-bend section of the tubes.

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 four feeding inspection port covers (two per SG) were found to be loose during secondary side inspections. The loose covers allowed the feedings to drain, which created a steam void in the feeding system resulting in a water hammer event in the feedings that damaged the feeding supports for both SGs. The supports were repaired during RFO 21 and all four inspection port covers were replaced with welded end caps to prevent loosening in the future.

Enclosure

- One tube located in row 91, column 24 (R91C24) of SG A was plugged due to wear associated with a neighboring (R90C23) V-shaped support pad. The V-shaped support pads support the anti-vibration bar system. This is the first reported occurrence of this type of wear at St. Lucie Unit No. 2. Contact between the V-shaped support pad and adjacent tubes is not expected by design and the discovered indication is likely the result of misalignment of the V-shaped support pad during manufacturing.

Based on its review, the NRC staff concludes that the licensee submitted the information required by its TSs. In addition, the staff concludes there are no technical issues that warrant followup 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. Although the number of wear indications is greater than the number of wear indications found at other AREVA SGs of similar age, the depths of these indications (i.e., the severity) are comparable to those observed at other plants.

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Sincerely,

Farideh E. Saba, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

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**\*by memo**

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