



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

April 8, 2010

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 1 – REVIEW OF THE FALL 2008 STEAM
GENERATOR TUBE INSPECTIONS DURING REFUELING OUTAGE 22
(TAC NO. ME1060)

Dear Mr. Nazar:

By letter dated April 13, 2009 (Agencywide Documents Access Management System Accession No. ML091120207), Florida Power & Light Company (the licensee) submitted information summarizing the results of the fall 2008 steam generator tube inspections performed at St. Lucie Unit 1 during Refueling Outage 22.

The NRC staff has completed its review of the report and concludes that the licensee provided the information required by the St. Lucie Unit 1 Technical Specifications. No additional followup is required at this time. The NRC staff's review of this report is enclosed.

Should you have any questions on the issues discussed in this letter, contact me at 301-415-2020.

Sincerely,

A handwritten signature in black ink that reads "Brenda Mozafari".

Brenda L. Mozafari, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No.: 50-335

Enclosure:
Review of Inspection Summary Report

cc w/enclosure: Distribution via Listserv

ST. LUCIE PLANT UNIT 1

2008 STEAM GENERATOR TUBE INSPECTIONS

FOR THE FALL 2008 REFUELING OUTAGE 22

By letter dated April 13, 2009 (Agencywide Documents Access Management System (ADAMS) Accession No. ML091120207), Florida Power & Light Company (the licensee) submitted information summarizing the results of the fall 2008 steam generator (SG) tube inspections performed at St. Lucie Unit 1 during Refueling Outage 22.

St. Lucie Unit 1 has two recirculating SGs designed and fabricated by Babcock and Wilcox International (BWI). Each SG has 8523 thermally-treated Alloy 690 tubes that have an outside diameter of 0.75 inch and a nominal wall thickness of 0.045 inch. The tubes are arranged in a triangular pattern with a pitch of approximately 1.0 inch. The tubes were hydraulically expanded at each end for the full depth of the tubesheet. The tubesheet is 21.5-inches thick; with the clad the tubesheet is 21.875-inches thick. The tubes are supported by lattice grid tube supports and fan bars; the lowest most fan bar is also referred to as a collector bar since all other fan bars connect to it. All supports are constructed from Type 410 stainless steel. The U-bend region of the tubes in rows 1 through 20 was stress relieved after bending. The smallest U-bend radius occurs in Row 3 and is 3.905 inches. The Row 1 U-bend radius measures 4.272 inches.

The licensee provided the scope, extent, methods, and results of their SG tube inspections in the document 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 (A and B) were inspected this outage.

After reviewing the information provided by the licensee, the NRC staff has the following comments or observations:

- Refueling Outage 22 is the last scheduled inspection of the SGs in the 144 effective full power month period. The SGs have operated 99.7 effective full power months in the period.
- Peripheral tubes are monitored for reduced tube-to-tube spacing. During a conference call on September 23, 2009, the licensee provided additional information concerning this issue. This information is summarized below. During the fabrication of the SGs for another plant, the vendor, BWI, noticed that the positioning/configuration of the J-tabs may result in some of the outer periphery tubes being pushed down toward the next row of tubes. The J-tabs rest on the peripheral tubes and support the upper bundle support structure. The licensee indicated that reduced tube-to-tube spacing does not appear to be a significant issue for St. Lucie; however, they have been monitoring this condition since replacement of the SGs. The presence of this condition is monitored with a bobbin coil. A voltage offset in the bobbin coil data indicates the tube spacing may be getting closer. If there are large bobbin indications, a rotating probe examination is performed to see if there is tube-to-tube contact or if wear has been detected. No tube wear has ever been detected as a result of this issue. During the 2008 outage, there were approximately 157 locations where the tubes are in close proximity. Although many of

Enclosure

the indications tend to be present from outage-to-outage, there are some changes in the tubes that are in close proximity due to the free floating nature of the support structure and the thermal cycles that the SG experiences. Although there are changes, those tubes with larger bobbin coil signals indicative of reduced tube-to-tube spacing tend to be present from outage-to-outage while those tubes with medium or lower voltage indications may "come and go" from one outage to the next.

- An upper bundle flush was performed in both SGs to remove deposit buildup.
- A chemical excursion occurred in the SGs in August 2008 as a result of leakage into the condensate system from a flooded sump (ADAMS Accession No. ML082340003). During a conference call on September 23, 2009, the licensee indicated that the chloride and conductivity levels in the SG increased, but that the industry guidelines on water chemistry were followed. The plant was shut down to restore water chemistry to normal. The licensee further indicated that no long-term effects are anticipated as a result of this excursion, the deposits levels in the SG were within expectations, and the noise level in the eddy current data was within expectations.

Based on a review of the information provided, the Nuclear Regulatory Commission staff concludes that the licensee provided the information required by the technical specifications. In addition, the NRC staff concludes that 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 that inspection results appear to be consistent with industry-operating experience at similarly designed and operated units.

Principal Contributor: A. Obodoako, NRR

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Sincerely,

/RA/

Brenda L. Mozafari, Senior Project Manager
Plant Licensing Branch II-2
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ADAMS Accession Number: ML100960626

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* By a memorandum

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