



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

July 25, 2023

Mr. Bob Coffey
Executive Vice President, Nuclear
and Chief Nuclear Officer
Florida Power & Light Company
700 Universe Blvd.
Mail Stop: EX/JB
Juno Beach, FL 33408

SUBJECT: TURKEY POINT NUCLEAR GENERATING STATION, UNIT NO. 4 – REVIEW OF
THE SPRING 2022 STEAM GENERATOR TUBE INSPECTIONS DURING
REFUELING OUTAGE NO. 33 (EPID L-2022-LRO-0128)

Dear Mr. Coffey:

By letter dated October 4, 2022, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22277A803), Florida Power & Light Company (the licensee) submitted information summarizing the results of the spring 2022 steam generator (SG) inspections performed at Turkey Point Nuclear Generating Station, Unit 4. By letter dated March 30, 2023 (ML23089A051), the licensee submitted corrections to one of the appendices in the inspection summary. The inspections were performed during refueling outage No. 33 (U4R33).

The NRC staff has completed its review of the submittal and concludes that the licensee provided the information required by Turkey Point Nuclear Generating, Unit No. 4, Technical Specification 6.9.1.8, "Steam Generator Tube Inspection Report." In addition, the NRC staff concludes that there are no technical issues that warrant follow-up actions at this time. Enclosed is the NRC staff's review of the Turkey Point Nuclear Generating, Unit No. 4 SG tube inspection report for U4R33.

B. Coffey

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If you have any questions, please contact me at 301-415-3867 or Michael.Mahoney@nrc.gov.

Sincerely,

/RA/

Michael Mahoney, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-251

Enclosure:
Review of the Steam Generator Tube
Inspection Report

cc: Listserv



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

REVIEW OF THE FALL 2019 STEAM GENERATOR TUBE INSPECTION REPORT

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT NUCLEAR GENERATING STATION, UNIT NO. 4

DOCKET NO. 50-251

By letter dated October 4, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22277A803), Florida Power & Light Company (the licensee) submitted information summarizing the results of the spring 2022 steam generator (SG) inspections performed at Turkey Point Nuclear Generating Station, Unit 4 (Turkey Point Unit 4). These inspections were performed during refueling outage (RFO) 33. By letter dated March 30, 2023 (ML23089A051), the licensee submitted corrections to the list of eddy current indications of tube wear at tube support plates (TSPs) in SG-C.

Turkey Point Unit 4 has three Westinghouse Model 44F SGs, which were placed in service in 1983. Each SG contains 3,214 thermally treated Alloy 600 tubes with a nominal outside diameter of 0.875 inches and a nominal wall thickness of 0.050 inches. The straight length of the tubes is supported by six stainless steel quatrefoil broached-hole TSPs. Each SG has one stainless steel drilled-hole flow distribution baffle between the tubesheet secondary face and the bottom TSP. The tubes are supported in the U-bend region by two sets of chrome-plated Alloy 600 V-shaped anti-vibration bars. To reduce residual stress, the U-bend section of Rows 1-8 (small radius) was thermally stress relieved after bending.

The licensee provided the scope, extent, methods, and results of their SG tube inspections. In addition, the licensee described corrective actions, such as tube plugging, taken in response to the inspection findings. After reviewing the information provided by the licensee, the U.S. Nuclear Regulatory Commission (NRC) staff has the following comments/observations:

- The licensee performed a 100 percent, enhanced probe inspection of the type described in TSTF-577, Revision 1, "Revised Frequencies for Steam Generator Tube Inspections." The licensee submitted a License Amendment Request (LAR) to convert to Revision 5 of the Standard Technical Specifications, which incorporates TSTF-577 changes. The spring 2022 inspection supports implementation of TSTF-577 if the LAR is approved by the NRC. The inspection scope included the full length of each in-service tube with an array probe, except for the U-bends of the first two rows, which were inspected with a +Point™ rotating probe.
- Stress corrosion cracking was detected for the first time in Turkey Point Unit 4. One indication of axial outside diameter stress corrosion cracking (ODSCC) was detected in SG-C in the free span of tube Row 9 Column 80 (R9C80) near the apex of the U-bend region and on the tube flank. Row 9 is the lowest radius U-bend that was not thermally treated to relieve stress after bending. There was no ding at the crack location and no precursor signal in the data from previous inspections, which were performed with bobbin probes. The indication was detected with both the bobbin and array probes and confirmed

Enclosure

with a +Point™ rotating probe. Based on +Point™, the estimated maximum length was 0.16 inch, and the maximum depth was at 62 percent through-wall (TW) (amplitude-based sizing) and 71 percent TW (phase-based sizing). For both sizing methods, the indication was below the screening limits for burst and leakage; therefore, no in-situ pressure tests were required. The tube was plugged.

- After submitting the report, the licensee identified errors and submitted corrections (ML23089A051) to TSP wear indications listed in Appendix B of the report. Some of the wear indications at TSPs listed for SG-B had been copied inadvertently to the listing of TSP wear indications for SG-C. The correction deleted 24 wear indications listed for SG-C on 13 tubes (4 - 19 percent TW) and replaced them with 6 wear indications on 4 tubes (6 – 20 percent TW).
- Three tubes in SG-A were plugged and stabilized due to volumetric indications detected by the array probe at the top of the tubesheet, several columns away from the periphery (R35C38, R35C41, and R38C36). The indications were attributed to foreign object wear, with depths of 30, 39, and 39 percent TW based on +Point™ sizing. No foreign objects were found in visual exams. The locations had not been inspected previously with enhanced probes, and there were no indications of wear in the bobbin data from the previous inspection during RFO31.

Based on a review of the information provided, the staff concludes that the licensee provided the information required by their technical specifications. In addition, the staff concludes that there are no technical issues that warrant follow-up action currently, since the inspections appear to be consistent with the objective of detecting potential tube degradation and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

SUBJECT: TURKEY POINT NUCLEAR GENERATING STATION, UNIT NO. 4 – REVIEW OF THE SPRING 2022 STEAM GENERATOR TUBE INSPECTIONS DURING REFUELING OUTAGE NO. 33 (EPID L-2022-LRO-0128) DATED JULY 25, 2023

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