



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

December 7, 2021

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

SUBJECT: SEABROOK STATION, UNIT NO. 1 – SUMMARY OF CONFERENCE CALL
REGARDING THE FALL 2021 STEAM GENERATOR TUBE INSPECTIONS
(EPID L-2021-NFO-0010)

Dear Mr. Coffey:

On October 15, 2021, the U.S. Nuclear Regulatory Commission staff and representatives from NextEra Energy Seabrook, LLC participated in a conference call to discuss the ongoing steam generator tube inspection activities at Seabrook Station, Unit No. 1, during refueling outage 21.

A summary of the conference call is attached as an enclosure to this letter.

If you have any questions, please contact me at 301-415-2048 or via e-mail at Justin.Poole@nrc.gov.

Sincerely,

/RA/

Justin C. Poole, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:
Summary of Conference Call

cc: Listserv

SUMMARY OF CONFERENCE CALL

NEXTERA ENERGY SEABROOK, LLC

SEABROOK STATION, UNIT NO. 1

DOCKET NO. 50-443

FALL 2021 STEAM GENERATOR TUBE INSPECTIONS

On October 15, 2021, the U.S. Nuclear Regulatory Commission (NRC) staff participated in a conference call with NextEra Energy Seabrook, LLC (the licensee), regarding the ongoing steam generator (SG) tube inspection activities at Seabrook Station, Unit No. 1 (Seabrook) during refueling outage 21 (refueling outage (RFO) 21).

Seabrook has four Westinghouse Model F SGs, each of which contains 5,626 thermally treated Alloy 600 tubes. Each tube has a nominal outside diameter of 0.688 inches and a nominal wall thickness of 0.040 inches. During SG fabrication, the tube ends were hydraulically expanded over the full depth of the tubesheet. Eight horizontal stainless steel structures support the vertical section of the tubes. The lowest support is a flow distribution baffle with drilled holes. The other seven are tube support plates (TSPs) with broached quatrefoil holes. Chrome-plated Alloy 600 anti-vibration bars (AVBs) support the U-bend section of the tubes. The first 10 rows of tubes received a thermal stress-relief treatment to improve the stress corrosion cracking resistance of the bend region.

Information provided by the licensee during the October 15, 2021, conference call is summarized below:

- At the time of the call approximately 52 percent of the eddy current data acquisition and analysis had been completed.
- Primary-to-secondary leakage has trended steady at less than 1 gallon per day for several cycles.
- Secondary side pressure tests had not been performed or planned at the time of the call.
- No exceptions had been taken to the industry SG guidelines.
- Inspections were performed of the tubes in all four SGs. The inspection scope included:
 - A 100 percent full length bobbin/array combination probe examination in all in service tubes. The licensee stated that they performed the enhanced probe inspection method as described in recently NRC-approved Technical Specifications Task Force (TSTF) Traveler TSTF-577, Revision 1, "Revised Frequencies for Steam Generator Tube Inspections" (Agencywide Documents Access and Management System Package Accession No. ML21099A086).

Enclosure

- For rows 1 and 2, an array probe was used in the straight legs and a +Point™ probe was used to inspect the U-bend portion of the tube.
- A +Point™ probe was used to examine hot leg TSP locations with high noise in non-high stress tubes.
- Bobbin probe was used for dents and dings less than or equal to 5 volts. During RFO 20, the array probe was qualified by technique extension for dents less than or equal to 7.5 volts and dings between 7.5 and 11 volts. A +Point™ probe was used for dents greater than 7.5 volts and dings greater than 11 volts. The licensee reported 10 dents at the uppermost TSP on the hot-leg side (08H) that are greater than 7.5 volts. Seabrook defines dents and dings based on location, with dents in the support plate and dings in the freespan.
- Various other special interest examinations were performed.
- The licensee stated that there are 88 high-stress tubes in the SGs, which includes those that have been plugged and those still in service.
- At the time of the call the following degradation mechanisms had been identified:
 - 1007 AVB wear indications (162 in SG A, 259 in SG B, 174 in SG C, and 412 in SG D). The most significant AVB wear indications in each SG ranged from 37 to 39 percent through-wall (TW), and the licensee stated they do not appear to be growing.
 - 2 TSP wear indications – these indications were detected with the array probe, single volumetric indication identified with +Point™ probe. At the time of the call, these indications had not yet been sized. The licensee stated that they tracked these indications back to 2006 and 2012.
- No cracking had been detected at the time of the call.
- No new forms of degradation had been detected at the time of the call. In addition, no unexpected or unusual results had been identified.
- No tubes had been identified for plugging at the time of the call; however, the licensee stated that tubes would be plugged if indications are 40 percent TW or greater and tubes may be preventively plugged (e.g., if wear is projected to reach the condition monitoring limit prior to the next inspection, a large wear rate is observed, etc.).
- At the time of the call there were no plans for in-situ pressure tests or tube pulls.
- The licensee visually looked at historical foreign objects (FOs) to ensure they have not moved or showed signs of tube wear. At the time of the call, no FOs had been removed from the SGs and no tube damage associated with FOs had been identified. Below is a summary of the FOs found:
 - SG A – one piece of scale (oxide) and an unidentified metal object, neither of which could be retrieved.

- SG B – one piece of scale and a legacy sludge rock in the cold leg at tube Row 25, Column 10/11.
 - SG C – one legacy object at periphery tube Row 31, Column 11 with no change from previous inspections.
 - SG D – one legacy metal tube piece between four SG tubes with no change from previous inspections.
- The licensee discussed the following secondary side inspection and maintenance activities:
 - Visual inspection around the annulus, no tube lane, and in the tube bundle 10 columns deep on both the hot and cold legs.
 - Will perform upper internal visual inspections on SG B, which includes the feeding, moisture separators, and instrument taps.
 - Sludge lancing prior to FO search and retrieval. The licensee also performed a cleanliness inspection at the top of the tubesheet to benchmark the cleaning effectiveness.
- The licensee stated that there is no history of erosion of the moisture separators.
- There was no special activity for assessing deposit loading during RFO 21; however, the licensee stated that they do plan to perform deposit loading analysis in the future. The licensee also stated that they have not observed the type of wear caused by scale similar to recent international experience.
- Tube plug verification and condition inspections were complete in the hot leg of SGs A, C, and D.
- Primary side visual inspections were complete in the hot leg of SGs B, C, and D.
- Visual inspections of the channel head components were complete in the hot leg of SGs B, C, and D.
- The licensee reported no change in the channel head cladding anomaly in the cold leg of SG B.

The NRC staff did not identify any issues that required follow-up action at this time.

SUBJECT: SEABROOK STATION, UNIT NO. 1 – SUMMARY OF CONFERENCE CALL
REGARDING THE FALL 2021 STEAM GENERATOR TUBE INSPECTIONS
(EPID L-2021-NFO-0010) DATED DECEMBER 7, 2021

DISTRIBUTION:

PUBLIC

PM File Copy

RidsACRS_MailCTR Resource

RidsNrrDorLpl1 Resource

RidsNrrPMSeabrook Resource

RidsNrrLAKZeletznock Resource

RidsRgn1MailCenter Resource

RidsNrrDnrINcsg Resource

SBloom, NRR

AJohnson, NRR

PKlein, NRR

GMakar, NRR

LTerry, NRR

ADAMS Accession No. ML21336A407***by memorandum**

OFFICE	NRR/DORL/LPL1/PM	NRR/DORL/LPL1/LA	NRR/DNRL/NCSG/BC*
NAME	JPoole	KZeletznock	SBoom
DATE	12/06/2021	12/06/2021	10/25/2021
OFFICE	NRR/DORL/LPL1/BC	NRR/DORL/LPL1/PM	
NAME	JDanna	JPoole	
DATE	12/07/2021	12/07/2021	

OFFICIAL RECORD COPY