NEXTera® ENERGY
SEABROOK

October 27, 2016
SBK-L-16170
Docket No. 50-443

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Seabrook Station

Response to Request for Additional Information
for the April 22, 2016 Steam Generator Tube Inspection Report

References:

1. NextEra Energy Seabrook letter SBK-L-16058, Steam Generator Tube Inspection Report, dated April 22, 2016 (ML16120A203)
2. NRC Email, Request for Additional Information for the Refueling Outage Steam Generator Inspection Report (ML16243A465)

In Reference 1, NextEra Energy Seabrook, LLC (NextEra Energy Seabrook) submitted its Steam Generator Tube Inspection Report for the fall 2015 refueling outage. In Reference 2, the NRC advised it had determined additional information is necessary for it to complete its review.

The enclosure to this letter contains NextEra Energy Seabrook's response to the request for additional information.

This letter contains no new regulatory commitments.

If you have any questions regarding this submittal, please contact me at (603) 773-7932.

Sincerely,

NextEra Energy Seabrook, LLC.

Kenneth Browne
Licensing Manager

A047
NRR

Enclosure

cc: D. Dorman, NRC Region I Administrator
J. Poole, NRC Project Manager
P. Cataldo, NRC Senior Resident Inspector

Enclosure to SBK-L-16170

Response to Request for Additional Information
for the April 22, 2016 Steam Generator Tube Inspection Report

Enclosure to SBK-L-16170
Response to Request for Additional Information (RAI)

RAI-1

Section A: The last sub-bullet on page 1 contains a statement regarding the augmented inspections performed after the bobbin coil inspections, to improve the probability of detection (POD) of axial outside diameter stress corrosion cracking (ODSCC) flaws at tube support plates. The sub-bullet appears to indicate that approximately 68 percent of hot-leg tubes were inspected (from three inches above the top-of-the-tubesheet to the H* depth) in targeted zones that are prone to sludge deposition, using the +Point™ probe. A bullet on page 2 indicates that for the ODSCC indication, the inspection scope was increased from 68 percent to 100 percent of the hot-leg tubes (from three inches above to three inches below the top-of-the-tubesheet) in the affected SG (SG-C). Please clarify the scope of the examinations in the tubesheet and at the top of the tubesheet. Were 68 percent of all tubes (not just tubes in the targeted zones) inspected from +3 inches to the H* depth in all four SGs? Were 100 percent of all tubes in SGs A and C inspected from +3 to -3 inches on the hot-leg?

NextEra Energy Seabrook Response:

Prior to the SCC indications identified in OR17, 68% percent of all hotleg tubes (not just tubes in the targeted zones) were inspected from +3" to the H* depth in all four SGs. After the PWSCC indications were identified, the 68% samples in SG-A and SG-C, were increased to 100% from +3 inches to the H* depth.

RAI-2

In reviewing the reported volumetric indications in Table 4, it appears that the indication in the tube in row 22 column 97 in SG B was present in 2009 with a 32 percent through-wall depth, but was not reported (since Table 4 also states that the indication is a newly reported TSP indication). Please confirm and discuss why the indication was not reported previously, or clarify the information in the table (since normally a 32 percent through-wall wear flaw would be readily detectible with a high probability of detection).

NextEra Energy Seabrook Response:

During the OR17 inspection, a small signal amplitude (0.39 Volt on the P1 mix channel) distorted support indication (DSI) was reported from bobbin coil analysis on R22 C97 at the 05H tube support plate (TSP) in SG-B. The depth of the indication was conservatively reported at 32%TW by +Point™ rotating probe inspection. The historic bobbin coil data was reviewed for this tube for the 2014, 2009, 2006, and 2003 outages. This review concluded that there was essentially no signal change from 2006 to 2015 while the 2003 bobbin data shows no reportable degradation at this location.

The bobbin coil P1 (630/150 kHz) signal amplitude response is only 0.39 volt (peak-to-peak), with a phase angle of 134 degrees. This amplitude is lower than typically associated with a 32%TW, tapered wear scar at broached TSPs. For the case of R22 C97 the wear is present only at the lower edge of the TSP and is relatively short. Using available industry data for tapered wear at broached TSPs a 0.39 volt

indication would have an expected depth of approximately 16%TW. By comparison, the phase angle response of the 20%TW flat bottom holes (FBH) of the ASME standard is approximately 125 degrees.

The mixing process was performed in accordance with the applicable EPRI guidance. The probability of detection (POD) for small amplitude signals such as this one can be degraded by the mix residual component. Mix residual is basically the signal which remains due to the incomplete cancellation of the TSP material response.

This item is being tracked in the corrective action program. Although the indication has an expected depth of approximately 16%TW using available industry data for tapered wear at broached TSPs, the indication will be resized during the next applicable inspection (OR19).

RAI-3

The report states on page 9 that all tube plugs were inspected and classified as Category 1, Westinghouse procedure MRS 2.4.2 Gen-44, Revision 1; "Visual Inspection of Plugs." The U.S. Nuclear Regulatory Commission staff is not familiar with the characteristics of a Category 1 plug. Please clarify whether any degradation was noted on the plugs during the visual inspection.

NextEra Energy Seabrook Response:

During the inspection of tube plugs, all plugs were confirmed to be in their correct location. In addition, all plugs were found to be dry; no dripping plugs were identified. No degradation or visible signs of leakage were noted on the plugs during the visual inspection.

RAI-4

Section I on page 11 states, "Since there is no observed operating leakage from the remaining SGs (SG-A, SG-C and SG-D), the predicted accident induced leakage for each of these is zero." Please clarify this statement. Please confirm that since there was no observed operational leakage from SGs A, C, and D, the predicted accident-induced leakage from the tubesheet expansion region is zero, from these three SGs. Also, please confirm that there were no other sources of accident-induced leakage (other than the expansion region in SG B) in all four SGs.

NextEra Energy Seabrook Response:

For application of H* during condition monitoring assessment, Seabrook committed (Ref. NRC ADAMS Accession No. ML12178A537) that the component of operational leakage from the prior cycle from below the H* distance will be multiplied by a leak rate factor of 2.49 and added to the total accident leakage from any other source and compared to the allowable accident induced leakage limit. Since there was no observed operational leakage from SGs A, C, and D, the predicted accident-induced leakage from the tubesheet expansion region is zero, from these three SGs.

During the OR17 SG tube inspection, no other degradation mechanism was identified to be the source of the observed leakage in SG-B, therefore, the entire observed operational leakage is assumed to come from the tubesheet expansion region. Other than the expansion region in SG-B, there were no other sources of accident induced leakage from any of the SGs.