NEXTera ENERGY SEABROOK

September 13, 2013

SBK-L-13172
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
Regarding the 2012 Steam Generator Tube Inspection Report

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-12274, "Steam Generator Tube Inspection Report," December 31, 2012

2. NRC letter "Seabrook Station, Unit No. 1 – Request for Additional Information for the 2012 Steam Generator Tube Inspections (TAC No. MF0940)," August 6, 2013

In Reference 1, NextEra Energy Seabrook, LLC (NextEra) submitted its report on the Steam Generator Tube Inspections performed during the 15th refueling outage.

In Reference 2, the NRC staff requested additional information to complete its review of the report. The Enclosure to this letter contains NextEra's response to the request for additional information.

Should you have any questions regarding this letter, please contact me at (603) 773-7512.

Sincerely,

Michael H. Ossing
Licensing Manager
NextEra Energy Seabrook, LLC

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Enclosure

cc: NRC Region I Administrator
NRC Project Manager, Project Directorate I-2
NRC Senior Resident Inspector

Enclosure

Response to Request for Additional Information (RAI)

RAI #1:

Provide the effective full power years (EFPY) of steam generator (SG) operation for the last three refueling outages.

Response

The following are the cumulative effective full power years of steam generator operation for the last three refueling outages:

OR13	16.53 EFPY
OR14	17.84 EFPY
OR15	18.95 EFPY

RAI #2:

In the Seabrook Final Safety Analysis Report (FSAR), the Main Steam Line Break accident (Section 15.1) assumes leakage of 500 gallons per day (GPD) though the faulted SG and 940 gpd through the remaining three SGs, for a total leakage of 1440 gpd, which is also equal to 1 gallon per minute (gpm).

Section 6.7.6.k.b.2 of the Seabrook Technical Specification states, in part, "The primary to secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage for all SGs *and* leakage rate for an individual SG. *Leakage is not to exceed 1 gpm total or 500 gpd through any one SG.*"

Section 9.0 of your December 31, 2012 letter states in part, "Because the predicted accident induced leakage form any of the Seabrook SGs is less [than] 1 gpm, the leakage criteria for condition monitoring are met."

a. Please clarify the sentence in your December 31, 2012, letter, given the wording in your Technical Specifications and FSAR. Please confirm that the Accident Induced Leakage Performance Criteria were met during the prior cycle.

Response

Section 9.0 currently reads:

> For application of H*, Seabrook committed to use a leakage factor of 2.49 for the tubesheet expansion region to determine accident induced leakage for the limiting design basis accident.

The assumed value for accident induced leakage in the Seabrook FSAR is 500 gpd (0.35 gpm) for the faulted steam generator.

Because there is no other degradation mechanism in SG-B that has been shown to be the source of the observed normal operating leak, the entire observed operating leakage is assumed to come from the tubesheet expansion region. Conservatively assuming that the observed normal operating leakage in SG-B is the upper end of the observed range, i.e., 0.9 gpd, the predicted accident induced leakage is:

$$Q_{DBA} = 2.49 \times 0.9 \text{ gpd} = 2.24 \text{ gpd} (=0.0016 \text{ gpm})$$

The predicted accident induced leakage from SG-B, 2.24 gpd, is much less than the assumed accident induced in the FSAR of 500 gpd for the faulted SG.

There is no observed normal operating leakage from SGs–A, C, and D; therefore, the predicted accident induced leakage for each of these SGs is zero.

Because the predicted accident induced leakage from any of the Seabrook SGs is less than 1 gpm, the leakage criteria for condition monitoring are met.

For clarification, please revise section 9.0 to read (changes shown in *bold italics*):

For application of H*, Seabrook committed ***that the component of operational leakage from the prior cycle from below the H* distance will be multiplied by a factor of 2.49 and added to the total accident leakage from any other source and compared to the allowable accident induced leakage limit.***

The assumed value for accident induced leakage in the Seabrook UFSAR is 500 gpd (0.35 gpm) for the faulted steam generator ***and 940 gpd through the remaining three SGs, for a total leakage of 1440 gpd (1.0 gpm).***

SG-B has leakage in the range of 0.2 gpd to 0.9 gpd. There is no observed operating leakage from SGs-A, C, and D; therefore, the predicted accident induced leakage for each of these SGs is zero.

Because there is no other degradation mechanism in SG-B that has been shown to be the source of the observed leakage, the entire observed operating leakage is assumed to come from the tubesheet expansion region. Conservatively assuming that the operating leakage in SG-B is at the upper end of the observed range, i.e., 0.9 gpd, the predicted accident induced leakage (Q_{DBA}) is:

$$Q_{DBA} = 2.49 \times 0.9 \text{ gpd} = 2.24 \text{ gpd} (=0.0016 \text{ gpm})$$

Because the predicted accident induced leakage ***of 2.24 gpd from SG-B, which is the only SG with observed leakage, is less than the 500 gpd limit for leakage through any one SG and less than the 1.0 gpm total leakage limit for all SGs, the accident induced leakage performance criteria*** *were* met *during the prior cycle.*