NEXTera ENERGY SEABROOK

November 3, 2010

SBK-L-10177
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 Seabrook Station
2009 Steam Generator Tube Inspection Report

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-10065, "Steam Generator Tube Inspection Report," April 7, 2010

2. NRC E-mail "Seabrook Station Unit No.1 – Electronic Transmission, Draft Request for Additional Information Regarding 2009 Steam Generator Tube Inspection Report (TAC NO. ME3771)," September 17, 2010

In Reference 1, NextEra Energy Seabrook, LLC (NextEra) submitted the 2009 Steam Generator Tube Inspection Report, which provided the results of the steam generator tube inspections conducted during refueling outage 13 in October 2009.

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

Should you have any questions regarding this letter, please contact Mr. Michael O'Keefe, Licensing Manager, at (603) 773-7745.

A001
NRR

Sincerely,

NextEra Energy Seabrook, LLC.

Paul Freeman
Site Vice President

Enclosure

cc: NRC Region I Administrator
G. E. Miller, NRC Project Manager, Project Directorate I-2
W. J. Raymond, NRC Senior Resident Inspector

Enclosure

Response to Request for Additional Information Regarding Seabrook Station 2009 Steam Generator Tube Inspection Report

RAI 1.

Please provide the results of the secondary side upper bundle in bundle (UBIB) inspection that was performed in SG C.

Response:

Upper-Bundle-In-Bundle (UBIB) inspection was performed in SG C at columns 70 and 96 on both the hot leg side and the cold leg side of the steam generator, with column 70 being closer to the bundle centerline. The inspection was performed after the full bundle Advanced Scale Conditioning Agents (ASCA) were applied. The results of the inspection were as expected with heavier scale buildup decreasing from the center line towards the outer columns as well as decreasing from upper support plate elevations to lower support plate elevations. Also, as expected, scale is more prevalent on the hot leg side than the cold leg side of the steam generator. The inspection showed that the majority of quatrefoils holes remain open and that there were no completely blocked quatrefoils at any support plate elevation. Seabrook is planning future UBIB to monitor the condition of the support plate quatrefoils and additional ASCA applications to ensure that they remain open to flow.

Column 70 Inspection:

Bottom of 7th support plate on the hot leg side showed some blockage at the leading edge of the quatrefoil but remained open. There was essentially no blockage on the cold leg side.

Top of the 6th support plate on the hot leg side showed scale that had spalled off the tubes laying on the support plate and a thin layer of scale on the tubes. The cold leg side showed less spalled scale lying on the support plate.

Bottom of the 6th support plate on the hot leg side showed hard scale inside the quatrefoils and on the tube surfaces. On the cold leg side the quatrefoils were free of scale buildup.

Top of the 5th support plate on the hot leg side showed some hard scale inside the quatrefoil. There was spalled scale on the tube support plate and some in the quatrefoils. On the cold leg side there was some hard scale on the surface of the quatrefoils.

Bottom of the 5th support plate showed hard scale on the quatrefoil surfaces on the hot leg side while the cold leg side quatrefoil surfaces were essentially scale free.

Top of the 4th support plate showed minimal scale build up on the quatrefoil surfaces with the same on the cold leg side.

Column 96 Inspection

Bottom of the 7th support plate on the hot leg side showed a moderate buildup on the tube surfaces and the beginning of blockage of the quatrefoil edges due to hard scale on the support plate. On the cold leg side the quatrefoils were open with no signs of blockage starting.

Top of the 6th support plate on the hot leg side showed a thin layer of sludge was observed on the support plate and some hard sludge was evident inside the quatrefoils. There were deposits of spalled scale on the support plate. On the cold leg side a thin layer of sludge was observed on the support plate and some hard sludge was evident inside the quatrefoils. Again, spalled scale was noted lying on the support plate.

Bottom of the 6th support plate on the hot leg side showed the quatrefoils to be open but with some hard scale on the surfaces of the quatrefoil. On the cold leg side the quatrefoils were open but with minimal hard scale on the quatrefoil surfaces.

Top of the 5th support plate on the hot leg side showed hard scale on the support plate and inside the quatrefoils. There were areas of heavy scale spalling. On the cold leg side there was hard scale on the support plate surface and inside the quatrefoils but there was less spalling.

Bottom of the 5th support plate on the hot leg side showed tube scale spalled within the quatrefoil. Light sludge was observed on the support plate surfaces. On the cold leg side there was a thin layer of scale on the support plate but the quatrefoils had minimal scale buildup.

Top of the 4th support plate showed areas of spalled scale with some scale within the quatrefoils. The cold leg side showed some scale and sludge build up on the support plate but the quatrefoils were free from obstruction.

RAI 2.

Please provide the results of the plug visual inspection.

Response:

All existing plugs were inspected for leakage and position. All plugs were in the correct positions and all plugs were classified at Category 1. Category 1 plugs exhibit dry or no boric acid residue and are not leaking.

RAI 3.

Please clarify the following regarding the discussion of foreign objects and potential loose part (PLP) indications in SG B (1st paragraph, page 6):

a. The statement is made that twelve of the PLP's are within eight inches of the top of the tubesheet in SG B, yet Table 3 indicates that this statement might be accurate for the four SGs, not SG B, please clarify.

b. The statement is made that five additional PLPs signals were found at higher elevations in the SG (presumably SG B) from the support plate (TSP) 3 to TSP 5, yet Table 3 indicates that the five PLP signals were found from TSP 3 to TSP 6 in SG B; please clarify.

c. The statement is made that one of these two PLP signals had been previously reported in OR11; to what signals in Table 3 does statement refer to?

Response:

a. The first paragraph on page 6 applies only to SG B and includes a statement that twelve of the PLPs are at, or near, the TTS in an axial range of approximately 0 to 8 inches above the TTS. The precise axial range of the 12 PLP indications varies within 8.53 inches from the top of the tubesheet. There are 17 total PLP indications listed in the table for SG B.

b. The staffs' observation is correct. A total of 5 (of the 17) PLP indications were found from TSP 3H to 5H on the hot leg side and from TSP 2C to 6C on the cold leg side.

c. A review of the results determined that three (i.e., not two) of the 5 PLP indications detected at TSP's were previously reported in OR11. Those three PLP indications are R4C101-6C, R4C103-2C, and R2C103-2C.

In order to clarify the potential loose part signals in SG B, the first paragraph (page 6) is rewritten to read as follows:

In SG-B, 17 PLP indications were detected. Of the 17 PLP indications reported, ten PLP signals are principally at, or near, the periphery (radial location) of the bundle, with eight of these ten PLP indications reported following the previous inspection in OR11. Of the 17 PLP's reported, twelve are at, or near the TTS in an axial range of 0 to 8.53 inches above the TTS. Five of the 17 PLP signals were found at elevations in the SG from TSP 3H on the hot leg side to TSP 2C on the cold leg side. Three of these five PLP signals were previously reported at OR11. The three previously reported were R4C101-6C, R4C103-2C, and R2C103-2C. None of the PLP signals were associated with any damage. Inspection of the adjacent tubes confirmed the absence of PLP signals in the surrounding tubes. Because of their history and location, the PLPs are attributed to

sludge rocks and scale, which are benign to the tubes. These tubes remain in service.

RAI 4.

In section 6.0., page 8, item 9 directs the reader to Appendix C for tubes identified with potentially elevated residual stress, but Appendix C contains a table of foreign object tracking, not tubes with potentially elevated stress. Please provide a table of all tubes at Seabrook with potentially elevated stress levels (i.e. the 2 sigma tubes). Please discuss whether the axial outside diameter stress corrosion cracking indication at the top of the SG C tubesheet, row 27 column 61 (R27C61), was a in tube with potentially elevated residual stress.

Response:

The staff is correct. References to Table C were made for foreign object tracking and tubes identified with potentially higher residual stress. Attached to this response is a table of those tubes that have potentially higher residual stress for each of the four steam generators. Tube R27C61 in SG C that has an axial outside diameter stress corrosion cracking indication is not listed as one of the tubes in SG C with potentially higher residual stress.

RAI 5.

Two indications were reported in the tube in R1C32 in SG D. Please confirm that one indication was attributed to pressure pulse cleaning and the other was attributed to a transient loose part. Please confirm that both indications measured 23 percent through-wall. If the above is correct, please discuss how you distinguished that one indication was attributed to pressure pulse cleaning and the other to a transient loose part. Please indicate whether a visual inspection of this region has been performed. Additionally, please indicate whether a non-conductive loose part be at this location.

Response:

The entries in Table 1 and Table 2 for tube R1C32 in SG D refer to the same indication, which is due to Pressure Pulse Cleaning operations. Thus, there is only 1 indication in this tube. This is consistent with the single indication listed in Appendix B (Pg. 38) for this tube. Further, this indication is not new and it is not associated with a transient loose part. The NA entries in Table 1 for this tube are incorrect as this indication was also present in previous inspections. This location corresponds to the location of the transducer used in the Pressure Pulse Cleaning operation. A visual inspection at this location was not performed in OR13 as the wear indication has not changed in several inspections.

SG-C Susceptible Tubes and Ranking

Row	Col	Offset	2-Sigma	Δ	Rank
22	114	2.48	4.10	2.000921	1
26	78	2.89	3.91	1.467357	2
18	97	3.65	4.30	0.72659	3
43	82	2.78	3.08	0.560993	4
11	2	4.33	4.64	0.555898	5
18	101	3.93	4.30	0.535342	6
18	102	3.48	4.30	0.533739	7
42	104	2.98	3.13	0.53068	8
15	17	4.07	4.45	0.378804	9
48	62	2.42	2.84	0.315849	10
19	88	3.94	4.25	0.301291	11
13	109	4.15	4.54	0.286214	12
14	86	4.35	4.49	0.233384	13
17	14	4.34	4.35	0.214799	14
11	100	4.45	4.64	0.189949	15
23	76	4.03	4.06	0.134069	16
42	77	3.12	3.13	0.097172	17
48	69	2.80	2.84	0.049378	18

SG-A Susceptible Tubes and Ranking

Row	Col	Offset	2-Sigma	Δ	Rank
29	10	2.540046	3.652661	1.136642	1
22	22	3.329519	3.995186	1.080998	2
22	26	3.867925	3.995186	0.80179	3
22	28	3.859112	3.995186	0.673593	4
38	34	2.841176	3.212271	0.662271	5
29	9	3.36	3.652661	0.630438	6
22	32	3.969372	3.995186	0.540362	7
15	25	4.011834	4.337712	0.42351	8
21	18	3.741419	4.044118	0.385079	9
22	18	3.871854	3.995186	0.164522	10
30	14	3.562929	3.603728	0.154072	11
27	19	3.635556	3.750525	0.128303	12
35	20	3.350114	3.359067	0.105063	13
24	19	3.831111	3.897322	0.092877	14
43	48	2.902941	2.96761	0.077904	15

Steam Generator B-Susceptible Tubes and Ranking

Row	Col	Offset	2-Ssigma	Δ	Rank
29	97	0.503748	3.635961	3.267146	1
21	24	3.177515	4.063999	0.95749	2
28	21	2.973373	3.689466	0.866981	3
17	7	4.012442	4.278017	0.820785	4
30	32	3	3.582457	0.729341	5
25	55	3.755523	3.84998	0.72185	6
21	21	3.434911	4.063999	0.677904	7
21	17	3.550296	4.063999	0.558081	8
26	36	3.436202	3.796475	0.542766	9
17	8	4.115086	4.278017	0.508188	10
21	14	3.71517	4.063999	0.488147	11
24	55	3.826215	3.903485	0.439567	12
21	35	3.694362	4.063999	0.431951	13
22	27	3.756677	4.010494	0.409604	14
27	21	3.550296	3.742971	0.276994	15
27	31	3.667656	3.742971	0.240003	16
25	27	3.845697	3.84998	0.213482	17
21	6	4.03096	4.063999	0.204865	18
20	35	4.050445	4.117503	0.133824	19
44	43	2.756024	2.833392	0.130021	20
17	27	4.246291	4.278017	0.125198	21
26	24	3.789941	3.796475	0.104168	22
16	25	4.228748	4.331522	0.102774	23
30	39	3.578635	3.582457	0.066136	24
20	32	4.068249	4.117503	0.058156	25
13	28	4.479134	4.492036	0.022175	26

SG-D Susceptible Tubes and Ranking

Row	Col	Offset	2-Sigma	Δ	Rank
26	32	3.48	3.66	0.98	1
26	34	3.62	3.66	0.93	2
27	31	2.91	3.62	0.68	3
15	78	4.09	4.12	0.38	4
14	118	4.09	4.16	0.23	5
43	70	2.63	2.95	0.21	6
12	18	3.98	4.25	0.18	7
13	28	4.05	4.20	0.11	8