FPL Energy
Seabrook Station

FPL Energy Seabrook Station
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June 18, 2008
SBK-L-08102
Docket No. 50-443

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Seabrook Station
Response to Request for Additional Information
Related to Steam Generator Inspections Performed During the Eleventh Refueling Outage

References:

1. FPL Energy Seabrook letter to NRC, Steam Generator Inservice Inspection, dated May 23, 2007.
2. NRC letter to FPL Energy Seabrook, Summary of Conference Call and Request for Additional Information Regarding the Fall 2006 Steam Generator Inspections (TAC No. MD2791), dated March 7, 2008.

In Reference 1, FPL Energy Seabrook, LLC (FPL Energy Seabrook) provided the Steam Generator Inservice Inspection Report for the Seabrook Station eleventh refueling outage. In Reference 2, the NRC provided a request for additional information (RAI) related to the Seabrook Station Steam Generator Inspection Report. The attachment to this letter provides the FPL Energy Seabrook response to the RAI.

Should you have any questions regarding the response to the RAI, please contact Mr. Paul R. Willoughby at (603) 773-7350.

Sincerely,

Gene St. Pierre
Site Vice President

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

A047
A001
NRR

Attachment to SBK-L-08102

Attachment

Response to Request for Additional Information Related to Steam Generator Inspections Performed During the Eleventh Refueling Outage

RAI 1. For each refueling outage or SG inspection outage, since the beginning of the second inspection interval, please provide the cumulative effective full power months (or years) of operation that the SGs had accumulated at the time of the outage.

FPL Energy Response 1:

The second interval for Seabrook Station is 90 EFPM. The start of the second interval was at the beginning of cycle 9. The inspection closest to the midpoint where 50% of the tubes are required to be inspected corresponds to OR11 at 49.1 EFPM. The last inspection in the interval will be in OR13 at 82.7(est.) EFPM.

Table 1

Year		**2003**	**2005**	**2006**	**2008**	**2009**
Refuel		**OR09**	**OR10**	**OR11**	**OR12**	**OR13**
SG - A	Bobbin +Point™R1/2 U-bend +Point™>5volt Ding/Dent +Point™ OXP/BLG	100% 20% 20%	0%	100% 30% 30% 50%	0%	100% 50% 50% 50%
SG - B	Bobbin +Point™R1/2 U-bend +Point™>5volt Ding/Dent +Point™ OXP/BLG	100% 20% 20%	0%	100% 30% 30% 50%	0%	100% 50% 50% 50%
SG - C	Bobbin +Point™R1/2 U-bend +Point™>5volt Ding/Dent +Point™ OXP/BLG	100% 20% 20%	0%	100% 30% 30% 50%	0%	100% 50% 50% 50%
SG - D	Bobbin +Point™R1/2 U-bend +Point™>5volt Ding/Dent +Point™ OXP/BLG	100% 20% 20%	0%	100% 30% 30% 50%	0%	100% 50% 50% 50%
EOC		9	10	11	12	13
EFPM		15.5	32.3	49.1	65.9	82.7 Est.
Interval		Interval 2 (90 EFPM)				

RAI 2. In the May 23, 2007, letter, Table 1 identifies SG B, tube R27C97 (Row 27, Column 97) as having been plugged in OR11 due to potentially elevated residual stress. In previous letters dated October 12, 2004 (ADAMS accession No. ML042940501), and October 26, 2006, you indicated SG B, tube R29C97 as having potentially elevated residual stress that would result in plugging in OR11. Please Clarify which tube was plugged and which tube had the elevated residual stress.

FPL Energy Response 2:

The tube that was plugged administratively for potential elevated residual stress in Steam Generator B was R29C97. This was verified from the OR11 Degradation Assessment, Plugging Records, the 15 day plugging report, and the original study that was performed for elevated residual stress levels. Tube R27C97 is currently in operation. Tube R27C97 does not have elevated residual stresses. The information in the May 23, 2007 letter was a typographical error.

RAI 3. Please provide the scope and results of any secondary side inspections (including foreign object search and retrieval) performed in OR11.

FPL Energy Response 3:

Foreign Object Search and Retrieval (FOSAR) was performed in all four Steam Generators. The Foreign Object search consists of visual inspection in the tube annulus area and the tube lane. In SG-A, three foreign objects were successfully removed. In SG-B, two foreign objects were located and removed. In SG-C, two foreign objects were successfully removed. At R31C11 in SG-C, a "dumbbell"-shaped foreign object has been resident since OR01 and was visually verified as remaining fixed in place. No foreign objects were observed in SG-D at OR11. No other secondary side inspections were performed in OR11. See Table 2 below.

Inspections of the tube support plate quatrefoils have been implemented in previous refueling outages using the Upper Bundle In Bundle (UBIB) tool. Those inspections showed insignificant blockage in the tube support plate quatrefoil area. In addition, Seabrook has started Advanced Scale Conditioning Agent (ASCA) treatment to reduce the total scale loading in the steam generators. In OR12, a full bundle copper ASCA was performed.

Table 2 Foreign Objects

	Description	Location	Dimension LxHxW	Comment
SG A	Gasket Material	TTS R55C64 CL	.5x.18x.01	Removed
SG A	Socket Head Screw	TTS R17C59 HL	.292x.125x.125	Removed
SG A	Metal Tie Wrap	TTS R19C59 HL	.3x.18x.05	Removed
SG B	Twisted Wire	TTS R40C18 HL	1x.062x.062	Removed
SG B	Scale	TTS R55C	2x.125x.125	Removed –upon removing it was scale
SG C	Wire	TTS R60C59 HL	3x.125x.125	Removed –laying in annulus
SG C	Gasket Material	TTS R51C91 HL	2x.18x.01	Removed
Notes: R=Row; C=Column, CL=Cold Leg side, HL = Hot Leg side, all dimensions are in inches.				

RAI 4. With respect to the inspections performed in the u-bend region of the tubes in row one and two, and at dings and dents whose voltage exceeds five volts, please discuss whether 50 percent of these locations have been inspected since the start of the 90 effective full power month period.

FPL Energy Response 4:

As shown in the Table 1 in RAI Response 1, 50% of the row one and row two u-bends, and dings/dents >5 volts were completed by the outage closest to the midpoint at 49.1 EFPM, with the actual midpoint being 45 EFPM. There were two inspection outages during the first half of the second interval. 20% of the row one and two were inspected in the first inspection outage and 30% were inspected in the second inspection outage. The dings/dents were inspected by the same percentages.

RAI 5. Regarding the tubes in SG C with foreign object wear and the surrounding tubes, please identify those which were plugged and also stabilized. If plugged and not stabilized, discuss how the condition of these tubes will be monitored or why no monitoring is necessary.

FPL Energy Response 5:

In SG-C, (see Sketch 1) two tubes reported with possible loose parts (PLPs) were also found to have wear of 48% (R59C57) through wall depth (TWD) and 39% (R58C54) TWD at just above the flow distribution baffle on the cold leg of the SG. Both of these tubes were plugged. The tubes surrounding these locations were inspected by RPC in order to "box" in the location of tubes potentially affected by wear degradation. Since the location of these tubes is inaccessible with the current secondary side retrieval tooling, all of the surrounding tubes were also plugged, in lieu of stabilizing R59C57 and R58C54, to bound the potential for adjacent tubes to be affected (also see response to RAI 7)

The observed degradation suggests a linear object lying on the flow distribution baffle. A postulated tube severance from a linear object is considered extremely unlikely; nevertheless, a postulated severed tube is constrained from further propagation by the surrounding tubes that were plugged. If R59C57 and R58C54 become severed, presumed flow induced oscillations may result in wear scars on the adjacent tubes. Postulated wear on the adjacent plugged tubes would be limited to the surface exposed to the postulated oscillating tubes and result in an essentially axially oriented defect. Axially oriented defects are unlikely to lead to tube separation; therefore further propagation of postulated wear damage to adjacent plugged tubes in the unlikely event that R59C57 and R58C54 become separated is expected to be limited in extent such that separation of adjacent plugged tubes is prevented

RAI 6 The May 23, 2007, submittal does not appear to provide the location and percentages of wall thickness for indications with an imperfection. Specifically, it appears that this information is not provided for wear at the anti-vibration bars and wear flow distribution baffle (FDB). Please provide this information for all imperfections.

FPL Energy Response 6:

See attached Tables 3, 4, 5, 6, 7, 8, 9, and 10 for the location and percentages of wall thickness for indications with an imperfection.

RAI 7. You indicated that two tubes in SG C with possible loose part (PLP) signals could not be accessed for removal of the foreign object. Since both of these tubes are in the periphery of the tube bundle, please discuss the location of the indications and the challenges in removing any PLPs at these locations.

FPL Energy Response 7:

The Flow Distribution Baffle (FDB) is a partial support that is similar in shape to a "doughnut", in that there is a cut out in the center region and located 20.38 inches above the top of the tubesheet. The location of the PLPs is at the periphery and on the top side of the FDB. The periphery of the FDB also butts up against the inside surface of the wrapper barrel, which prevents access from the four hand holes access openings below the FDB. The location of the PLPs was also a significant distance from the two hand hole access openings located just above the FDB for accessing the top of the FDB. In order to articulate an inspection probe to the PLP location, the probe (which can not support itself) would have to traverse an open cutout area of the FDB , then turn 90 degrees, again traversing another open area prior to coming back onto the FDB. In addition, the area between the tubes and the wrapper barrel was very narrow at some points along the periphery, which could cause the probe to become lodged in the steam generator. Therefore, it was not possible to visually confirm the nature of the PLP, and was necessary to rely on the eddy current information. (see response to RAI 5 also)

RAI 8. Please discuss how pressure pulse cleaning caused indications at the FDB. In addition, discuss the purpose of the pressure pulse cleaning.

The Pressure Pulse Cleaning (PPC) System is a high-pressure gas cleaning and filtration process that is performed inside the secondary side of recirculation steam generators. The sudden release of gas through the PPC nozzles causes the mass of water in the steam generator to move upward and act as a washing action to dislodge sludge deposits from the steam generator tubes and support surfaces. A combination of the water displacement, pressure wave, and attendant vibration loosens and removes corrosion deposits by utilizing the tubesheet cleaning and filtration system.

The PPC process consists of introducing pressure pulses in approximately ten second intervals by means of pressure pulsers externally mounted to the hand holes and remotely controlled from the control trailer outside containment. These pressure pulsers provide for a sudden release of gas underwater. The gas expands rapidly causing a virtually instantaneous upward movement of the incompressible mass of water within the steam generator. These pulses are transmitted throughout the tube bundle and the expansion and rising of the gas bubbles produces a washing action throughout. The repetitive action of the pulsations dislodges sludge deposits, which are removed by the filtration system.

Because the pulsers are located near the FDB, the pulsations cause a small relative displacement of structural components and/or tubes that has resulted in minor wear on the tubes at Seabrook and at other operating plants. Consistent with industry guidelines, these wear indications have been retested at subsequent inspections and have been found not to increase in depth. At Seabrook, these indications have been tracked since OR04 and OR05 when PPC was applied to the SGs.

SKETCH 1

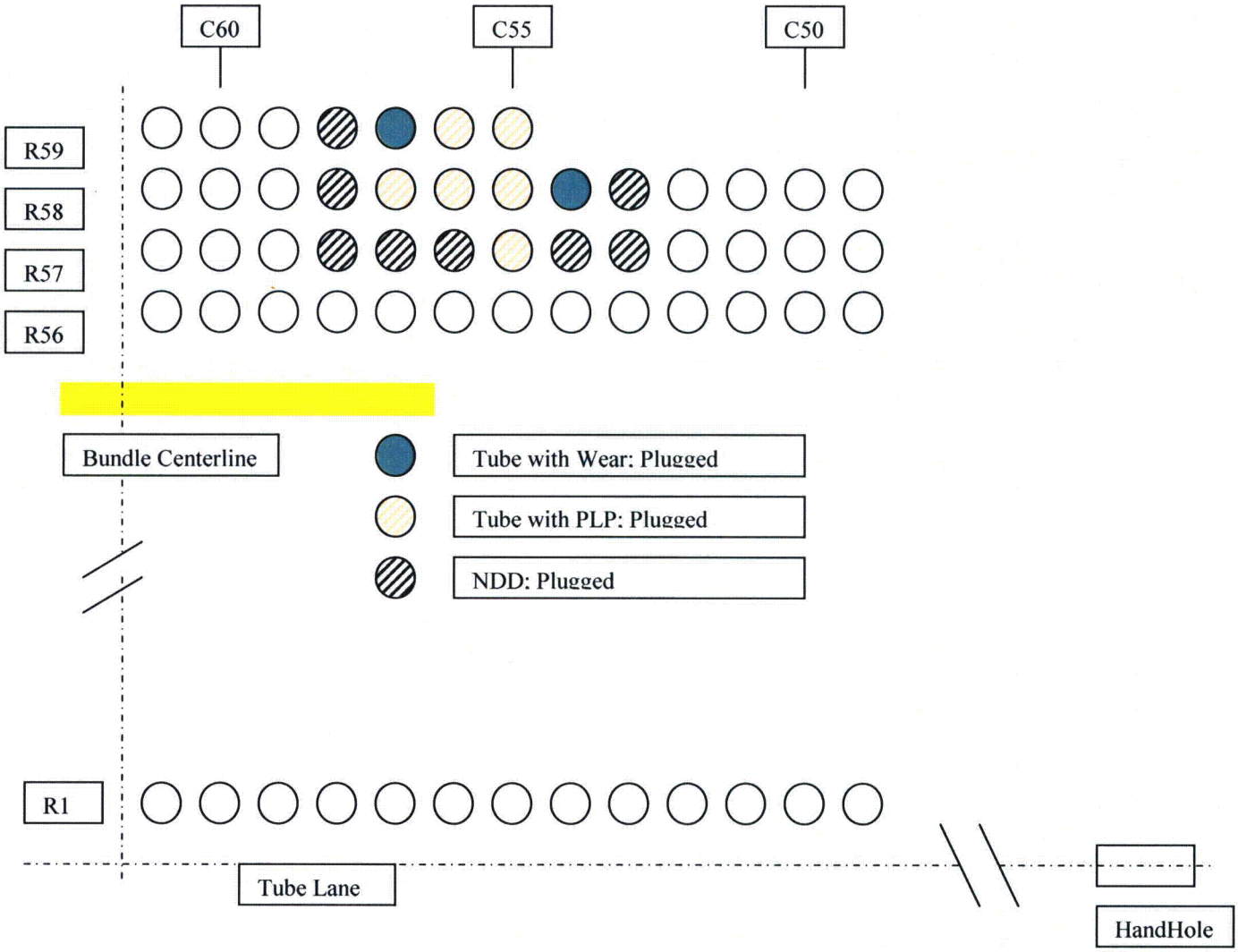
C60
C55
C50
R59
R58
R57
R56
Bundle Centerline
Tube with Wear: Plugged
Tube with PLP: Plugged
NDD: Plugged
R1
Tube Lane
HandHole

Table 3
Seabrook OR11; SG-A
Listing of AVB Wear Signals

Row	Column	Percent Throughwall	Nominal Location
17	71	17	AV1
18	58	14	AV1
19	40	23	AV1
19	54	20	AV1
19	58	20	AV1
20	48	11	AV1
23	8	12	AV1
23	36	12	AV1
23	42	18	AV6
23	45	16	AV5
23	45	12	AV6
23	52	13	AV2
23	59	18	AV2
23	59	15	AV5
24	7	14	AV1
24	7	15	AV6
24	59	19	AV2
24	59	17	AV5
24	71	10	AV2
24	71	14	AV5
25	7	19	AV1
25	8	14	AV1
25	56	17	AV2
25	59	12	AV2
26	107	25	AV6
27	12	18	AV6
27	63	16	AV2
27	93	11	AV1
27	112	8	AV5
28	44	15	AV2
28	59	21	AV2
28	59	20	AV5
29	11	17	AV2
29	11	10	AV6
29	71	11	AV2
29	82	21	AV2
29	82	12	AV6
29	84	13	AV5

Row	Column	Percent Throughwall	Nominal Location
29	94	14	AV2
30	11	10	AV1
30	11	12	AV2
30	11	18	AV5
30	11	10	AV6
30	12	17	AV1
30	12	17	AV5
30	12	16	AV6
30	31	14	AV5
30	58	21	AV5
30	58	16	AV6
30	68	17	AV1
30	68	17	AV2
30	95	11	AV6
30	109	11	AV5
30	109	13	AV6
30	111	12	AV5
31	11	17	AV2
31	11	16	AV5
31	11	18	AV6
31	12	32	AV5
31	12	18	AV6
31	13	16	AV6
31	64	14	AV2
31	68	13	AV2
31	105	10	AV1
32	89	13	AV1
32	89	18	AV3
33	14	15	AV1
33	14	10	AV2
33	15	13	AV4
33	15	22	AV5
33	15	18	AV6
33	71	11	AV1
33	71	13	AV2
33	106	8	AV1
34	17	13	AV3
34	17	14	AV6
34	31	12	AV1
34	51	16	AV2
34	51	16	AV3
34	59	18	AV3

Row	Column	Percent Throughwall	Nominal Location
34	87	12	AV3
35	14	14	AV2
35	14	11	AV3
35	14	13	AV4
35	14	16	AV5
35	14	10	AV6
35	31	12	AV3
35	31	15	AV5
35	58	21	AV1
35	58	31	AV2
35	58	32	AV3
35	58	28	AV4
35	58	20	AV5
35	58	18	AV6
35	61	12	AV1
35	61	14	AV2
35	61	14	AV3
35	61	27	AV4
35	61	25	AV5
35	61	10	AV6
35	70	13	AV2
35	73	15	AV2
36	60	14	AV2
36	60	12	AV4
36	60	13	AV5
36	81	36	AV2
36	81	25	AV3
36	81	23	AV4
36	110	9	AV2
37	18	18	AV5
37	21	16	AV2
37	21	11	AV3
37	21	11	AV4
37	87	12	AV2
37	99	11	AV3
37	102	11	AV5
37	105	10	AV1
37	105	15	AV4
38	24	15	AV3
38	28	20	AV2
39	63	15	AV2
39	63	12	AV3

Row	Column	Percent Throughwall	Nominal Location
39	79	14	AV2
39	79	18	AV3
39	79	24	AV4
39	79	21	AV5
39	80	17	AV3
40	30	16	AV4
40	71	20	AV2
40	86	15	AV1
40	86	16	AV2
40	86	17	AV4
40	90	13	AV1
40	90	30	AV2
40	90	25	AV3
40	90	24	AV4
40	90	36	AV5
40	90	13	AV6
40	96	10	AV1
40	102	13	AV3
40	102	15	AV4
40	103	14	AV3
40	103	19	AV4
40	103	17	AV5
41	21	13	AV3
41	21	13	AV4
41	21	11	AV5
41	35	17	AV3
41	50	10	AV1
41	50	19	AV2
41	50	18	AV3
41	50	22	AV5
41	53	16	AV1
41	53	20	AV2
41	53	18	AV3
41	53	18	AV4
41	53	19	AV5
41	54	20	AV2
41	54	21	AV3
41	58	11	AV1
41	58	18	AV2
41	58	17	AV3
41	58	20	AV4
41	58	16	AV5

Row	Column	Percent Throughwall	Nominal Location
41	59	20	AV2
41	59	17	AV3
41	59	12	AV5
41	68	19	AV2
41	68	28	AV3
41	68	23	AV4
41	68	20	AV5
41	68	13	AV6
41	78	20	AV2
41	78	17	AV3
41	78	14	AV5
41	102	12	AV4
41	102	18	AV5
41	103	13	AV1
41	103	10	AV3
41	103	16	AV4
41	103	19	AV5
42	22	13	AV4
42	26	13	AV3
42	26	11	AV4
42	26	11	AV5
42	58	25	AV3
42	58	17	AV4
42	58	14	AV5
42	72	12	AV1
42	72	19	AV2
42	72	30	AV3
42	72	14	AV4
42	72	25	AV5
42	72	11	AV6
42	80	26	AV2
42	80	26	AV3
42	80	15	AV4
42	80	15	AV5
42	80	26	AV6
42	81	21	AV4
42	103	13	AV1
43	21	13	AV3
43	21	12	AV4
43	28	14	AV4
43	55	14	AV2
43	77	25	AV3

Row	Column	Percent Throughwall	Nominal Location
43	77	37	AV4
43	77	35	AV5
43	77	22	AV6
43	98	18	AV5
44	94	11	AV2
44	94	16	AV3
44	98	13	AV1
44	98	19	AV2
44	98	18	AV3
44	98	14	AV4
44	98	13	AV5
44	100	14	AV5
44	101	13	AV1
44	102	13	AV3
45	67	24	AV2
45	68	18	AV2
45	74	21	AV1
45	74	21	AV2
45	74	22	AV3
45	74	31	AV4
45	76	16	AV1
45	98	12	AV4
46	26	13	AV4
46	26	15	AV5
46	28	19	AV4
46	65	23	AV4
46	65	21	AV5
46	71	12	AV4
46	71	17	AV5
46	77	14	AV2
46	77	12	AV3
46	77	17	AV4
46	94	11	AV6
46	95	17	AV5
46	95	20	AV6
46	98	19	AV4
46	98	16	AV5
46	98	13	AV6
47	26	14	AV5
47	30	17	AV4
47	31	11	AV2
47	34	13	AV3

Row	Column	Percent Throughwall	Nominal Location
47	85	22	AV5
47	89	15	AV3
47	95	10	AV1
47	95	17	AV2
47	95	16	AV3
47	95	18	AV4
47	95	14	AV5
47	95	10	AV6
47	98	13	AV5
48	31	11	AV1
48	31	12	AV2
48	31	14	AV3
48	31	11	AV4
48	31	14	AV6
48	32	15	AV4
48	60	26	AV6
48	63	15	AV1
48	63	14	AV2
48	63	20	AV3
48	63	27	AV4
48	63	18	AV5
48	64	25	AV2
48	83	21	AV4
48	94	14	AV4
48	94	14	AV6
48	95	15	AV5
48	95	20	AV6
48	96	14	AV6
49	28	23	AV2
49	30	19	AV5
49	48	11	AV1
49	57	13	AV4
49	57	11	AV6
49	60	15	AV3
49	63	15	AV2
49	63	18	AV3
49	63	19	AV4
49	63	33	AV5
49	64	23	AV1
49	65	25	AV2
49	65	25	AV3
49	65	17	AV4

Row	Column	Percent Throughwall	Nominal Location
49	65	11	AV5
49	67	17	AV1
49	67	29	AV2
49	67	37	AV3
49	67	32	AV4
49	67	18	AV5
49	67	19	AV6
49	76	19	AV2
49	88	27	AV3
49	88	22	AV4
49	88	26	AV5
49	88	13	AV6
50	28	13	AV2
50	28	18	AV5
50	38	18	AV4
50	38	22	AV5
50	60	15	AV2
50	60	14	AV3
50	65	16	AV3
50	65	28	AV4
50	65	18	AV5
50	66	14	AV2
50	79	32	AV3
50	79	34	AV4
50	80	12	AV3
50	80	15	AV4
50	80	14	AV5
50	85	14	AV2
50	85	26	AV3
50	85	26	AV4
50	85	18	AV5
50	85	18	AV6
50	88	25	AV6
50	95	20	AV3
50	95	21	AV4
50	95	32	AV5
50	95	26	AV6
51	53	12	AV4
51	71	14	AV4
51	75	16	AV5
51	86	19	AV1
51	86	27	AV2

Row	Column	Percent Throughwall	Nominal Location
51	86	11	AV3
51	86	19	AV6
51	90	13	AV3
51	90	20	AV4
51	90	24	AV5
51	90	11	AV6
52	53	10	AV2
52	73	17	AV5
52	88	18	AV3
52	88	31	AV4
52	88	25	AV5
52	88	19	AV6
52	89	16	AV3
52	89	26	AV4
52	89	29	AV5
52	89	28	AV6
52	90	18	AV6
53	45	21	AV2
53	45	14	AV3
53	69	10	AV5
53	90	18	AV4
54	48	16	AV1
54	86	15	AV2
55	41	19	AV6
56	57	17	AV2
56	81	20	AV4
57	52	14	AV1
57	53	13	AV1
57	61	14	AV2
58	50	17	AV6
59	58	17	AV1

Table 4
Seabrook OR11; SG-A
Non- AVB Imperfections

Row	Column	Percent Throughwall	Nominal Location	
1	36	27	TSC	Sludge lance rail
1	87	26	TSC	Sludge lance rail
49	29	22	TSH	Foreign Object - old
50	29	11	TSH	Foreign Object - old

Table 5
Seabrook OR11; SG-B
Listing of AVB Wear Signals

Row	Column	Percent Throughwall	Nominal Location
15	68	14	AV1
17	64	21	AV1
17	77	16	AV1
18	66	15	AV1
18	74	21	AV1
19	66	17	AV1
21	68	16	AV1
21	77	17	AV1
22	69	17	AV1
22	86	14	AV2
22	86	12	AV5
22	89	18	AV2
22	89	19	AV6
22	116	10	AV1
23	47	12	AV1
23	47	12	AV2
23	56	15	AV1
23	56	16	AV2
25	51	16	AV1
25	51	18	AV2
25	51	14	AV5
27	57	17	AV2
27	63	18	AV5
27	81	19	AV5
27	112	12	AV1
28	42	17	AV5
28	78	22	AV2
28	115	12	AV5
29	38	13	AV2
29	51	17	AV2
29	79	28	AV1
29	79	23	AV2
29	79	25	AV5
29	79	13	AV6
29	113	17	AV1
29	113	17	AV5
30	43	15	AV2
30	43	20	AV5

Row	Column	Percent Throughwall	Nominal Location
30	43	17	AV6
30	49	12	AV2
30	58	14	AV5
30	61	20	AV2
30	61	31	AV5
30	62	16	AV2
30	66	17	AV1
30	66	17	AV2
30	66	23	AV5
30	66	13	AV6
30	73	19	AV5
30	75	32	AV2
30	75	27	AV5
30	80	12	AV1
30	80	20	AV2
30	80	16	AV5
30	81	28	AV2
30	81	32	AV5
30	87	22	AV2
30	87	27	AV5
30	106	20	AV6
30	111	18	AV2
30	111	19	AV5
30	112	23	AV2
30	112	19	AV5
31	52	13	AV1
31	52	16	AV5
31	66	14	AV6
31	111	14	AV5
31	112	22	AV2
31	112	26	AV2
32	82	23	AV2
32	82	16	AV5
32	82	14	AV6
32	83	16	AV5
32	86	15	AV2
32	86	13	AV3
32	86	16	AV4
32	88	16	AV2
32	88	18	AV3
32	88	14	AV5
32	109	18	AV5

Row	Column	Percent Throughwall	Nominal Location
32	109	13	AV6
33	107	19	AV5
33	109	19	AV4
33	109	32	AV5
34	14	14	AV5
34	14	10	AV6
34	70	18	AV2
34	70	16	AV3
34	70	17	AV4
34	72	21	AV2
34	94	18	AV5
34	98	15	AV3
34	103	15	AV5
34	103	16	AV6
34	105	18	AV6
35	44	15	AV1
35	44	20	AV2
35	55	25	AV4
35	58	10	AV2
35	58	18	AV3
35	58	14	AV4
35	58	17	AV5
35	59	21	AV1
35	59	23	AV2
35	59	22	AV3
35	59	21	AV4
35	67	15	AV2
35	68	11	AV1
35	68	20	AV2
35	68	22	AV3
35	68	21	AV4
35	68	28	AV5
36	59	18	AV2
36	64	13	AV3
36	64	14	AV4
36	65	31	AV2
36	65	18	AV3
36	65	15	AV4
36	65	25	AV5
37	54	13	AV2
37	54	20	AV4
37	58	12	AV3

Row	Column	Percent Throughwall	Nominal Location
37	69	22	AV2
37	87	16	AV2
38	52	13	AV2
38	66	12	AV1
39	48	13	AV2
39	48	19	AV3
39	48	15	AV4
39	48	16	AV5
39	49	20	AV1
39	49	25	AV2
39	49	25	AV3
39	49	13	AV4
39	54	12	AV1
39	54	21	AV2
39	54	17	AV3
39	54	21	AV4
39	54	19	AV5
39	56	13	AV1
39	56	15	AV2
39	57	14	AV2
39	57	10	AV4
39	60	16	AV1
39	60	18	AV2
39	60	24	AV3
39	60	13	AV4
40	48	10	AV1
40	48	19	AV2
40	48	31	AV2
40	48	34	AV3
40	48	29	AV4
40	48	27	AV5
40	48	20	AV6
40	74	18	AV2
40	105	15	AV3
40	105	14	AV4
41	61	13	AV2
41	61	25	AV4
41	61	13	AV5
41	75	20	AV2
41	75	25	AV3
41	75	12	AV4
42	64	12	AV2

Row	Column	Percent Throughwall	Nominal Location
42	81	23	AV2
43	20	14	AV2
43	69	22	AV2
43	69	20	AV3
43	69	22	AV4
43	69	25	AV5
43	70	11	AV3
43	75	23	AV2
43	75	19	AV3
43	75	31	AV4
43	75	27	AV5
44	62	11	AV4
45	27	13	AV6
45	33	14	AV2
45	41	21	AV2
45	41	18	AV3
45	41	18	AV4
45	86	22	AV1
46	50	18	AV2
46	50	24	AV3
46	50	27	AV4
46	50	34	AV5
46	50	12	AV6
46	66	11	AV3
47	71	16	AV1
47	71	18	AV2
47	71	26	AV3
47	71	16	AV4
47	94	12	AV3
48	25	18	AV5
48	52	14	AV5
49	96	16	AV4
50	36	17	AV5
50	36	16	AV6
50	68	14	AV3
50	93	13	AV2
50	93	17	AV4
50	95	23	AV6
51	70	16	AV5
51	70	16	AV6
53	34	25	AV6
53	44	19	AV6

Row	Column	Percent Throughwall	Nominal Location
53	90	24	AV5
54	36	15	AV5
54	43	15	AV5
54	66	21	AV3
54	86	16	AV3
54	86	18	AV5
54	87	26	AV5
55	43	13	AV5
56	68	16	AV2
56	71	18	AV2
56	82	18	AV5
57	55	18	AV6
57	68	11	AV5
58	48	16	AV6
58	68	11	AV2
58	76	13	AV3
58	76	10	AV4
59	68	12	AV3

Table 6
Seabrook OR11; SG-B
Non- AVB Imperfections

Row	Column	Percent Throughwall	Nominal Location	
1	87	32	TSH	Sludge Lance Rail
1	87	37	TSC	Sludge Lance Rail
1	112	19	TSH	Sludge Lance Rail
43	96	22	TSH	Foreign Object
2	98	32	06C	Foreign Object

Table 7
Seabrook OR11; SG-C
Listing of AVB Wear Signals

Row	Column	Percent Throughwall	Nominal Location
10	64	17	AV1
15	67	14	AV1
22	34	14	AV2
24	7	18	AV1
24	7	11	AV6
24	98	10	AV1
25	91	28	AV2
26	8	16	AV1
28	8	13	AV6
28	66	19	AV2
30	11	12	AV1
30	11	13	AV5
30	11	10	AV6
30	113	24	AV2
30	113	18	AV6
30	114	14	AV2
30	114	11	AV5
31	111	19	AV5
32	17	10	AV1
33	106	20	AV4
33	111	16	AV2
33	111	19	AV5
34	28	17	AV4
34	28	12	AV5
35	13	23	AV2
35	13	12	AV3
35	13	13	AV4
35	13	24	AV5
35	13	16	AV6
35	39	31	AV2
35	39	26	AV3
35	39	27	AV4
35	39	27	AV5
35	73	12	AV2
37	17	13	AV5
37	23	18	AV5
37	40	16	AV3
37	40	11	AV6

Row	Column	Percent Throughwall	Nominal Location
37	55	15	AV2
37	56	17	AV2
37	85	21	AV2
37	85	13	AV3
37	85	20	AV4
37	85	17	AV5
37	85	15	AV6
38	79	19	AV2
38	101	13	AV6
38	102	17	AV5
39	42	21	AV2
39	42	14	AV4
39	45	15	AV2
39	45	19	AV3
39	45	20	AV4
39	45	27	AV5
39	45	10	AV6
39	49	33	AV2
39	49	28	AV3
39	49	24	AV4
39	49	30	AV5
39	53	16	AV2
39	53	27	AV3
39	53	31	AV4
39	53	24	AV5
39	53	23	AV6
39	69	23	AV2
39	69	17	AV3
39	69	28	AV4
39	69	20	AV5
40	46	17	AV1
40	46	17	AV2
40	46	9	AV3
40	46	15	AV4
40	46	26	AV5
40	46	12	AV6
41	22	15	AV2
41	22	19	AV3
41	22	16	AV5
41	23	13	AV1
41	23	16	AV5
41	30	11	AV4

Row	Column	Percent Throughwall	Nominal Location
41	30	15	AV5
41	30	14	AV6
41	39	15	AV2
41	39	10	AV5
41	39	13	AV6
41	41	9	AV1
41	41	25	AV2
41	41	14	AV3
41	41	14	AV4
41	43	14	AV2
41	43	16	AV3
41	43	18	AV4
41	80	20	AV2
41	80	26	AV3
41	80	15	AV4
41	80	12	AV5
41	93	12	AV1
41	93	13	AV3
41	93	15	AV4
41	93	20	AV5
41	100	18	AV3
41	100	15	AV4
41	100	23	AV5
41	100	11	AV6
42	23	21	AV4
42	23	26	AV5
42	25	14	AV4
42	25	17	AV5
42	25	13	AV6
42	31	10	AV1
42	31	21	AV2
42	31	13	AV3
42	46	9	AV5
42	66	28	AV1
42	66	33	AV2
42	66	32	AV3
42	66	28	AV4
42	66	19	AV6
42	71	17	AV2
42	71	19	AV5
42	92	14	AV2
42	92	14	AV3

Row	Column	Percent Throughwall	Nominal Location
42	92	10	AV4
42	92	17	AV5
42	102	13	AV1
42	102	30	AV3
42	102	31	AV4
42	102	15	AV5
42	102	22	AV6
43	23	21	AV3
43	23	20	AV4
43	68	12	AV3
43	100	14	AV2
43	100	31	AV4
43	100	18	AV5
43	102	21	AV3
43	102	31	AV4
43	102	31	AV5
43	102	15	AV6
44	75	19	AV1
44	75	18	AV2
44	100	22	AV3
44	100	32	AV4
44	100	31	AV5
46	36	19	AV2
46	36	23	AV3
46	36	27	AV4
46	36	19	AV5
46	79	17	AV2
46	79	19	AV3
46	79	25	AV4
46	79	19	AV6
46	97	10	AV3
46	97	21	AV4
47	30	15	AV5
47	35	13	AV2
47	35	19	AV3
47	35	20	AV4
47	40	13	AV3
47	67	19	AV1
47	67	33	AV2
47	67	30	AV3
47	67	30	AV4
47	67	29	AV5

Row	Column	Percent Throughwall	Nominal Location
47	67	20	AV6
47	76	15	AV1
47	76	18	AV2
47	83	19	AV5
47	86	14	AV4
47	86	20	AV5
47	93	22	AV3
47	93	23	AV4
47	93	30	AV5
47	94	16	AV2
47	94	17	AV3
47	94	21	AV4
47	94	12	AV5
47	94	18	AV6
47	96	15	AV5
47	98	14	AV3
47	98	14	AV4
47	99	13	AV4
47	99	31	AV5
47	99	26	AV6
48	30	14	AV4
48	30	14	AV5
48	33	15	AV5
48	35	18	AV4
48	96	15	AV2
48	96	15	AV3
48	96	39	AV4
48	96	29	AV5
48	96	30	AV6
48	97	11	AV3
48	97	11	AV4
49	95	28	AV5
51	51	18	AV3
51	51	29	AV4
51	51	39	AV5
51	84	32	AV2
53	33	13	AV3
53	35	13	AV2
53	67	29	AV2
53	67	32	AV3
53	67	27	AV4
53	70	13	AV1

Row	Column	Percent Throughwall	Nominal Location
53	70	22	AV2
53	70	16	AV3
54	35	15	AV4
54	68	18	AV2
54	87	20	AV3
54	87	17	AV4
54	87	27	AV5
55	39	14	AV1
56	65	20	AV3
57	50	12	AV2

Table 8
Seabrook OR11; SG-C
Non- AVB Imperfections

Row	Column	Percent Throughwall	Nominal Location	
1	87	37	TSH	Sludge Lance Rail
1	87	34	TSC	Sludge Lance Rail
1	112	25	TSH	Sludge Lance Rail
3	113	34	05C	Foreign Object -old
43	26	21	TSH	Foreign Object -old
44	26	13	TSH	Foreign Object -old

Table 9
Seabrook OR11; SG-D
Listing of AVB Wear Signals

Row	Column	Percent Throughwall	Nominal Location
17	72	14	AV1
17	75	15	AV6
22	86	13	AV2
22	93	12	AV6
24	6	15	AV1
24	6	18	AV6
25	82	12	AV2
25	82	16	AV5
26	8	13	AV1
26	8	19	AV6
26	40	12	AV5
26	41	12	AV2
27	8	10	AV1
27	8	21	AV6
27	39	21	AV2
27	39	20	AV5
27	39	19	AV6
27	44	21	AV2
27	76	11	AV1
27	76	11	AV2
27	96	12	AV6
27	111	11	AV5
27	115	19	AV2
27	115	15	AV5
28	88	16	AV5
28	115	13	AV2
28	115	13	AV5
29	34	23	AV2
29	34	21	AV5
29	83	8	AV1
29	83	15	AV5
30	66	12	AV2
30	66	17	AV5
31	113	13	AV1
32	12	10	AV1
32	12	10	AV3
32	12	32	AV5
33	58	11	AV1

Row	Column	Percent Throughwall	Nominal Location
33	58	13	AV2
33	96	11	AV2
33	107	14	AV4
34	15	13	AV1
34	15	17	AV4
34	17	13	AV3
34	22	11	AV3
34	22	11	AV6
34	30	10	AV3
34	30	10	AV5
34	35	11	AV2
34	35	10	AV5
34	40	15	AV5
34	40	14	AV6
34	48	12	AV5
34	50	13	AV3
34	69	21	AV2
34	69	12	AV3
34	69	17	AV4
34	69	16	AV5
34	70	10	AV2
34	71	14	AV2
34	73	18	AV2
34	73	16	AV4
34	73	16	AV5
34	76	10	AV2
34	92	10	AV4
34	109	19	AV5
35	37	24	AV2
35	37	17	AV3
35	37	9	AV6
35	51	13	AV1
35	69	28	AV2
35	69	29	AV3
35	69	13	AV4
35	69	12	AV6
35	71	11	AV1
35	71	12	AV2
35	71	11	AV3
35	83	13	AV3
35	83	12	AV4
35	86	11	AV4

Row	Column	Percent Throughwall	Nominal Location
35	86	11	AV6
35	88	10	AV2
35	88	10	AV3
35	88	14	AV4
35	89	14	AV2
35	89	10	AV3
36	16	9	AV3
36	40	11	AV2
36	40	13	AV3
36	40	9	AV4
36	40	9	AV5
36	40	10	AV6
36	41	12	AV2
36	46	17	AV5
36	67	16	AV2
36	80	11	AV3
36	82	16	AV1
36	82	25	AV2
36	82	14	AV3
36	82	19	AV4
36	82	21	AV5
36	90	15	AV2
37	16	13	AV1
37	16	16	AV3
37	16	14	AV4
37	16	9	AV6
37	34	11	AV2
37	36	19	AV2
37	36	18	AV3
37	36	28	AV4
37	36	31	AV5
37	36	17	AV6
37	38	8	AV2
37	38	9	AV3
37	38	17	AV4
37	38	10	AV5
37	39	8	AV2
37	39	14	AV3
37	39	15	AV4
37	39	16	AV5
37	39	10	AV6
37	40	9	AV4

Row	Column	Percent Throughwall	Nominal Location
37	45	15	AV2
37	45	12	AV3
37	45	12	AV4
37	48	11	AV1
37	48	19	AV3
37	48	15	AV4
37	48	12	AV5
37	58	16	AV2
37	59	16	AV2
37	59	10	AV3
37	59	16	AV4
37	59	12	AV5
37	73	10	AV2
37	77	10	AV1
37	77	13	AV2
37	77	25	AV3
37	77	24	AV4
37	77	14	AV5
37	84	11	AV4
37	84	14	AV6
38	35	13	AV6
38	73	13	AV2
38	73	19	AV3
38	73	20	AV4
38	73	17	AV5
39	18	18	AV5
39	19	12	AV2
39	19	18	AV3
39	36	18	AV5
39	38	9	AV3
39	41	10	AV2
39	41	16	AV3
39	41	21	AV4
39	41	16	AV5
39	41	14	AV6
39	44	12	AV1
39	44	12	AV4
39	44	17	AV5
39	44	10	AV6
39	50	18	AV3
39	50	17	AV5
39	57	13	AV1

Row	Column	Percent Throughwall	Nominal Location
39	57	22	AV2
39	57	22	AV3
39	57	11	AV4
39	57	11	AV5
39	62	14	AV2
39	74	10	AV2
39	75	12	AV2
39	82	16	AV1
39	82	20	AV2
39	82	19	AV3
39	82	12	AV4
39	82	13	AV5
39	89	16	AV1
39	89	17	AV2
39	94	19	AV2
39	94	13	AV3
39	94	14	AV4
39	96	14	AV5
39	102	17	AV1
40	21	11	AV6
40	23	12	AV1
40	23	13	AV4
40	26	12	AV3
40	66	30	AV2
40	66	23	AV3
40	66	20	AV3
40	66	14	AV4
40	66	22	AV4
40	66	22	AV5
40	66	16	AV6
41	18	20	AV4
41	20	17	AV2
41	20	18	AV3
41	20	19	AV4
41	20	24	AV5
41	20	14	AV6
41	34	12	AV2
41	34	14	AV3
41	34	13	AV4
41	35	10	AV3
41	36	13	AV1
41	36	10	AV3

Row	Column	Percent Throughwall	Nominal Location
41	38	18	AV3
41	51	11	AV2
41	51	15	AV3
41	56	12	AV1
41	56	30	AV2
41	56	19	AV3
41	56	28	AV4
41	56	32	AV5
41	56	22	AV6
41	59	17	AV4
41	66	29	AV2
41	66	20	AV3
41	66	10	AV4
41	66	14	AV5
41	71	11	AV2
41	104	9	AV2
41	104	9	AV5
42	19	9	AV1
42	19	14	AV3
42	19	11	AV4
42	19	12	AV5
42	20	13	AV6
42	24	28	AV4
42	37	23	AV2
42	37	22	AV3
42	37	12	AV4
42	37	11	AV6
42	39	12	AV3
42	39	14	AV4
42	40	12	AV6
42	46	23	AV3
42	46	15	AV4
42	46	18	AV5
42	47	14	AV2
42	47	13	AV3
42	47	11	AV4
42	47	19	AV5
42	77	11	AV5
42	92	12	AV1
42	92	12	AV3
42	92	11	AV4
42	92	14	AV5

Row	Column	Percent Throughwall	Nominal Location
42	92	11	AV6
42	98	10	AV3
42	98	14	AV4
42	98	14	AV5
43	21	10	AV2
43	21	17	AV3
43	21	16	AV4
43	21	23	AV5
43	21	19	AV6
43	49	13	AV3
43	49	12	AV4
43	51	13	AV2
43	51	15	AV3
43	51	11	AV4
43	51	26	AV5
44	26	17	AV2
44	26	10	AV3
44	26	18	AV4
44	26	12	AV5
44	36	17	AV1
44	36	15	AV3
44	45	12	AV3
44	45	23	AV5
44	45	12	AV6
44	48	23	AV3
44	48	14	AV4
44	48	19	AV5
44	91	18	AV2
44	91	28	AV3
44	91	27	AV4
44	91	22	AV5
44	101	11	AV3
45	27	13	AV5
45	32	10	AV2
45	40	17	AV5
45	40	10	AV6
45	66	11	AV1
45	66	21	AV2
45	66	18	AV3
46	25	15	AV5
46	25	17	AV6
46	30	14	AV3

Row	Column	Percent Throughwall	Nominal Location
46	30	30	AV4
46	30	30	AV5
46	38	13	AV2
46	38	14	AV3
46	38	26	AV4
46	38	15	AV5
46	39	16	AV4
46	39	27	AV5
46	39	16	AV6
46	42	19	AV4
46	42	25	AV5
46	51	16	AV1
46	51	25	AV2
46	51	16	AV3
46	51	34	AV4
46	51	32	AV5
46	60	13	AV4
47	49	26	AV2
47	49	19	AV3
47	53	18	AV4
47	53	25	AV5
47	53	17	AV6
47	59	21	AV1
47	59	36	AV2
47	59	21	AV3
47	59	32	AV4
47	59	22	AV5
47	61	16	AV6
47	75	17	AV1
47	75	17	AV2
47	75	27	AV3
47	75	25	AV4
47	75	32	AV5
47	92	11	AV3
47	97	14	AV3
47	97	11	AV5
48	28	16	AV2
48	28	35	AV3
48	28	35	AV4
48	28	25	AV5
48	65	19	AV4
49	28	17	AV5

Row	Column	Percent Throughwall	Nominal Location
49	36	13	AV2
49	36	14	AV4
49	36	13	AV5
49	42	15	AV6
49	43	11	AV1
49	43	12	AV2
49	43	12	AV5
49	52	24	AV2
49	52	20	AV3
49	52	19	AV4
49	52	13	AV6
49	55	14	AV1
49	55	12	AV2
49	81	22	AV4
49	81	16	AV5
49	87	15	AV3
49	87	18	AV4
49	94	10	AV2
49	94	8	AV3
49	94	13	AV5
49	94	14	AV6
50	35	10	AV5
50	44	11	AV2
50	50	19	AV4
50	94	18	AV5
50	94	24	AV6
51	35	11	AV3
51	62	11	AV2
52	33	29	AV4
52	33	15	AV5
52	33	16	AV6
52	35	17	AV2
52	35	22	AV3
52	35	28	AV5
52	35	16	AV6
53	43	10	AV2
53	62	13	AV1
54	43	10	AV2
54	43	14	AV4
55	39	10	AV3
55	41	8	AV2
55	82	11	AV2

Row	Column	Percent Throughwall	Nominal Location
56	41	23	AV2
56	41	28	AV4
56	41	25	AV5
56	41	12	AV6
56	69	15	AV4
56	69	22	AV5
56	69	16	AV6
56	81	19	AV5
56	81	19	AV6
56	82	10	AV5
58	49	12	AV1
58	49	12	AV4
58	75	10	AV5
58	75	12	AV6
59	66	14	AV1

Table 10
Seabrook OR11; SG-D
Non- AVB Imperfections

Row	Column	Percent Throughwall	Nominal Location	
1	32	23	01H	FDB Wear
13	4	26	01C	FDB Wear
11	102	40	06C	Foreign Object