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William J. Steelman
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W3F1-2011-0072

November 3, 2011

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

SUBJECT: 180 Day Steam Generator Tube Inspection Report
for the 17TH Refueling Outage
Waterford Steam Electric Station, Unit 3
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

Attached is the 180 Day RF17 Steam Generator Tube Inspection Report for Entergy Operations, Inc (EOI) Waterford Steam Electric Station Unit 3. This report is being submitted in accordance with Technical Specification 6.9.1.5 and provides the complete results of the Refueling Outage 17 Steam Generator Tube Inspection.

There are no new commitments contained in this letter.

Please contact William J. Steelman at (504) 739-6685 if you have questions regarding this information.

Sincerely,

William Steelman

WJS/RJP/ssf

Attachments

1. 180-Day Steam Generator Tube Inspection Report for the 17TH Refueling Outage
2. Additional Tables Relative to the 17TH Refueling Outage Steam Generator Tube Inspection Report

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Attachment 1
to
W3F1-2011-0072

180-Day Steam Generator Tube Inspection Report for the 17TH Refueling Outage

Refuel (RF) 17 180-Day Special Report

In November 2010, Entergy determined that plans to replace Steam Generators during RF17 were challenged due to damage to the Replacement Steam Generators [RSG] during hydrostatic testing. This condition was entered into the site's Corrective Action Program under Condition Report CR-WF3-2010-07045. Entergy's final decision to operate the original steam generators for an additional cycle [Cycle 18] was made in January 2011.

Waterford Three (WF3) Technical Specification (TS) 6.9.1.5 requires Entergy Operations to submit a 180 day report to the NRC that outlines the details of the steam generator (SG) tubing inspections that were performed during the reporting period. The report shall include:

6.9.1.5

- **A. The scope of inspections performed on each steam generator.**
- **B. Active degradation mechanisms found.**
- **C. Nondestructive examination techniques utilized for each degradation mechanism.**
- **D. Location, orientation (if linear), and measured sizes (if available) of service induced indications.**
- **E. Number of tubes plugged during the inspection outage for each active degradation mechanism.**
- **F. Total number and percentage of tubes plugged to date.**
- **G. The results of condition monitoring, including the results of tube pulls and in-situ testing and assessment of accident-induced leakage from all tubesheet indications.**
- **H. Effective plugging percentage for all plugging in each generator.**

Entergy performed a SG inspection in April, 2011 during refueling outage RF17. Waterford 3 began RF17 with 7943 in SG31 and 8093 in SG32 tubes in service. This inspection was the 17th in-service inspection (ISI) since the start of commercial operation in September 1985 and the 1st of four scheduled inspections in the 5th sequential inspection period. The unit initially entered MODE 4 following this inspection on May 8, 2011.

References

1. W3F1-2006-0070 dated 12-20-06 to U.S. NRC, Entergy Actions to Address RF14 Batwing Failures [ADAMS Accession Number ML063600109]
2. Augmented Batwing Examination [CMS A-27017] [Required]

DESIGN

The Waterford 3 Model 70 re-circulating steam generators were designed and fabricated by Nuclear Steam System Supplier Combustion Engineering (CE), Inc. in accordance with ASME Code, Section III NB for Class I vessels. The Waterford 3 steam generators each consist of 9,350 high temperature mill annealed INCONEL® 600 U-tubes arranged in a one-inch inner diameter triangular pitch pattern representing 103,574 ft² of heat transfer area. The U-tubes are 3/4" O.D. by 0.048" nominal wall thickness explosively expanded the full depth of the tube sheet (CE's Explansion Process) and welded to the primary cladding. The secondary tube bundle support structure consists of carbon steel eggcrates. The secondary supports are arranged in the following order:

- seven full horizontal eggcrate supports (01H – 07H, 01C – 07C)
- three horizontal partial eggcrates supports (08H-10H, 08C – 10C)
- two anti-vibration straps (hot and cold batwings, BW1 and BW9)
- seven vertical straps (BW2 through BW8)

A. The Scope of Inspections Performed on Each Steam Generator.

The RF17 initial inspection plan included:

1. 100% full length 0.600" bobbin examination (Rows 3 and up), 100% 0.600" bobbin examination of hot and cold leg straight sections in Rows 1 and 2

2. 100% +Point™ inspection of all eggcrate distorted signal indication (DSI) signals

3. 100% +Point inspection of all >2V dents at eggcrates (based on RF15 bobbin data)

4. 20% +Point inspection at dented diagonal bar and vertical strap locations >2V

5. 20% +Point inspection at freespan dings >5V

6. 100% hot leg Top of Tube Sheet (TTS) +Point inspection in each SG from 3 inches above to 12 inches below TTS

7. 100% Row 1 and 2 small radius U-bend +Point inspection in each SG using a mid-range +Point coil

8. 100% +Point inspection of all newly reported indications at diagonal bar and vertical straps (confirmation of mechanism)

9. 100% +Point inspection of historical % Through Wall (TW) indications at diagonal bar and vertical straps

10. 100% +Point inspection special interest testing including:

    a. freespan signals unresolved in history or showing change

    b. any bobbin signal suggestive of tube wear at eggcrate structures

    c. any bobbin signal suggestive of axial degradation within the cold leg tubesheet region

    d. possible loose part (PLP) or loose part indication (LPI) signals reported either by bobbin or MPRC®; all surrounding tube locations were inspected with MPRC

    e. Three tube deep peripheral cold leg top of tubesheet inspection with +Point coil from 3 inches above to 3 inches below top of tubesheet (PLP concern)

11. Plug visual examination

    a. 100% of the installed plugs were visually examined for signs of leakage.

12. Secondary side inspection and Foreign Object Search and Retrieval (FOSAR)

The inspection plan was developed to specifically address the areas of active degradation as well as areas expected to be affected based on recent industry experience as well as experience from the Fall 2009 [RF16] Waterford 3 inspection and recent industry inspection results. These included:

a. FOSAR of annulus region at the top of the tubesheet,
b. Bottom up visual of the batwings in the central stay cavity.
c. Video probe inspection of the batwings in the central stay cavity (45-degree), and
d. Visual and Ultrasonic Test (UT) inspection of the feed ring.

B. Active Degradation Mechanisms Found.

- Axial Outside Diameter Stress Corrosion Cracking (ODSCC) at non-dented hot and cold leg eggcrate intersections in SG31 and SG32
- Axial ODSCC at non-dented vertical strap (BW2 to BW8) intersections in SG31 and SG32
- Circumferential Primary Water Stress Corrosion Cracking (PWSCC) at the hot leg expansion transition and expanded tubesheet region in SG31 and SG32
- Axial PWSCC at the hot leg expansion transition and expanded tubesheet region in SG31 and SG32
- Wear at eggcrate, diagonal bar (BW1, BW9), and vertical strap sites (BW2 to BW8) in SG31 and SG32
- Axial ODSCC in the freespan region in SG31 not associated with dings
- Axial ODSCC in the freespan region in SG31 and SG32 associated with dings

C. Nondestructive Examination Techniques Utilized for Each Degradation Mechanism.

Table C-1 Techniques

Probe and Technique Sheet Application: Detection and Confirmation: Waterford 3 RF17							
Degradation Mechanism	Location	Detection Probe Type	ETSS - Detection	Confirmation Probe Type	ETSS - Confirmation	Detection Variable	App. H/I Qualified?
Existing Degradation Mechanisms							
Circ PWSCC	Row 1 and 2 U-bends both SGs	Mid-Range +Point:	#96511.2	N/A	N/A		Yes
	Row 1 and 2 U-bends both SGs – high noise	High Freq. +Point	#99997.1	N/A	N/A	Phase	Yes
Tube Wear	Eggcrate Supports, Diagonal and Vertical Bars	Bobbin	#96004.1	+Point (1)	#96004.1 (bobbin sizing) #96910.1 (+Point)	Phase	Yes
Axial ODSCC	(Eggcrates, Diagonal and Vertical Bars)	Bobbin	#I28413, #96008.1	+Point	#I28425, #21409.1	Phase	Yes
Axial ODSCC	Freespan	Bobbin	#I28413, #96008.1	+Point	#I28425, #21409.1	Phase	Yes
Axial ODSCC	Sludge pile and expansion transition	+Point	#I28424, #21409.1	N/A	N/A	Phase	Yes
Circ ODSCC	Hot leg TTS expansion transition	+Point	#21410.1	N/A	N/A	Phase	Yes
Axial PWSCC	Hot Leg TTS expansion transition and expanded tubesheet	+Point	#20511.1	N/A	N/A	Phase	Yes
Circ PWSCC	Expanded tube in tubesheet and expansion transition (7)	+Point	#20510.1	N/A	N/A	Phase	Yes

Probe and Technique Sheet Application: Detection and Confirmation: Waterford 3 RF17							
Degradation Mechanism	Location	Detection Probe Type	ETSS - Detection	Confirmation Probe Type	ETSS - Confirmation	Detection Variable	App. H/I Qualified?
Tube Wear (loose parts)	All locations	Bobbin	#27091.2	+Point	#21998.1	Phase	Yes (4)
	TTS periphery and tube lane	+Point	#21998.1	N/A	N/A	Phase	Yes
Potential Degradation Mechanisms							
Axial PWSCC	Row 1-2 U-bends	Mid-range +Point .	#96511.2	N/A	N/A	Phase	Yes
	Row 1-2 U-bends: high noise	High Freq. +Point	#99997.1	N/A	N/A	Phase	Yes
Axial ODSCC	Wear Sites on Bars	Bobbin	#96004.1, #96008.1	+Point	#21409.1, #I28425 (1)	Phase	No (2, 6)
Circ ODSCC	Dented Eggcrates and Support Bars	+Point	#22842.1	N/A	N/A	Phase	Yes
Volumetric wall loss	Freespan	Bobbin	#27091.2	+Point	#21998.1	Phase	Yes
Pitting	Sludge Pile	Bobbin	#96005.2	+Point	#21998.1	Phase	Yes
Axial PWSCC	Dented Supports	+Point	#96703.1	N/A	N/A	Phase	Yes
Axial ODSCC	Freespan Dings $\leq$ 5 V	Bobbin	#24013.1	+Point	#22401.1	Phase	Yes
Axial ODSCC	Freespan dings >5V, dented support structures >2V	+Point	#22401.1	N/A	N/A	Phase	Yes
Wear at Dented Supports	Dented Eggcrates and Support Bars	+Point	(5)	N/A	N/A	Phase	No (3)

Non-Relevant Degradation Mechanisms in the RF17 EC Inspection Scope							
Degradation Mechanism	Location	Detection Probe Type	ETSS - Detection	Confirmation Probe Type	ETSS - Confirmation	Detection Variable	App. H/I Qualified?
Oblique PWSCC	Large Radius U-bends	+Point	#96511.2	N/A	N/A	Phase	Yes
Axial and Circ ODSCC and PWSCC	Cold Leg TTS and expanded tube in tubesheet	+Point Bobbin	#20511.1 #20510.1 #21409.1 #21410.1 #I28424 #I28413	N/A N/A N/A N/A N/A +Point	N/A N/A N/A N/A N/A #I28424	Phase Phase Phase Phase Phase Phase	Yes Yes Yes Yes Yes Yes
PWSCC	CL Tube Ends	+Point:	#20511.1	N/A	N/A	Phase	Yes
		+Point	#20510.1	N/A	N/A	Phase	Yes
Tube-to-Tube Contact Wear	Square bend region (+/-12 inches)	Bobbin or +Point	#96004.1 or #96910.1, plus (8)	+Point	#96910.1	Phase	Yes
Resolution for Classification of Indications							
	Location	Detection Probe Type	ETSS - Detection	Confirmation Probe Type	Disposition		
Potential MBMs	All	Bobbin	#96010.1	+Point	ETSS for flaw type confirmed if any	Phase	Yes
Permeability Variations	All	Bobbin Mag. Bias Bobbin	#96010.1	Mag. Bias +Point	ETSS for flaw type confirmed if any	Phase	Yes
To Be Defined	Bobbin Signals at Suspected Wear Sites not yet characterized	+Point	#I28425,#21409.1	N/A	N/A	Phase	Yes

Notes for Table C-1

(1): This inspection is included to characterize bobbin signals at diagonal bars and vertical straps as either wear or ODSCC based on recommendation of Section 3.6.c of *Steam Generator Management Program: PWR SG Examination Guideline: Revision 7*. EPRI, Palo Alto, CA: 2007 1013706.

(2): No industry qualification exists for this mechanism at this location. MRS-TRC-1708, "Bobbin Detection of Wear at Dented Vertical Straps and Diagonal Bars," Westinghouse Electric Co. LLC, December 2005 provides site validation of the technique for Waterford 3.

(3): No industry qualification exists for this mechanism at this location. LTR-CDME-07-119, "Site Validation of Wear + Denting and Wear + ODSCC for Palisades," Westinghouse Electric Company LLC, May 2007 provides site validation of the technique for Waterford 3. The

+Point coil is judged sufficient for detection of indications >40%TW in all dented intersections at Waterford 3.

(4): No industry qualification exists for the three frequency bobbin mix at the top of tubesheet for this mechanism. ETSS 27091.2 is judged to provide detection conditions consistent with qualification bases in the three-frequency mode.

(5): No industry qualification for combined volumetric and SCC conditions. Reference 15 LTR-CDME-07-119, "Site Validation of Wear + Denting and Wear + ODSCC for Palisades," Westinghouse Electric Company LLC, May 2007 provides site validation of the technique for Waterford 3.

(6): Both techniques are individually qualified for detection of either wear or axial ODSCC. For combined signals, the amplitude and phase responses are expected to bound the response for individual signals. Reference 15 provides site validation of the +Point technique for Waterford 3.

(7): RF16 circumferential PWSCC indications were reported in SG31 at 14" below the top of tubesheet and in SG32 in the expansion transition.

(8): LTR-SGMP-09-12, "Bobbin Coil Detection Capability of Tube to Tube Contact Wear," Westinghouse Electric Co. LLC, February 2009.

D. Location, Orientation (if linear), and Measured Sizes (if available) of Service Induced Indications.

See Attachment 2 for the following Tables

Table D-1 “SG31 Service Induced Indications- Crack Indications– RF17”
Table D-2 “SG32 Service Induced Indications- Crack Indications – RF17”
Table D-3 “SG31 Service Induced Indications- Wear at Supports – RF17”
Table D-4 “SG32 Service Induced Indications- Wear at Supports – RF17”
Table D-5 “SG31 Service Induced Indications – Historical Volumetric”

E. Number of Tubes Plugged During the Inspection Outage for Each Active Degradation Mechanism.

Table E-1 Tube Plugging

Tube Status	SG - 31	SG - 32
Tubes inservice prior to RF17	7943	8093
Total Number of tubes previously removed from service	1407	1257
Repair Candidates from RF 17:		
Hot Leg Top of Tubesheet Axial Indications (Above TTS)	1	0
Hot Leg Top of Tubesheet Circ. Indications (Above TTS)	1	0
Hot Leg Tube Sheet Axial Indications (Within Tubesheet)	7	4
Hot Leg Tube Sheet Circ. Indications (Within Tubesheet)	2	1
Tubesheet with Axial and Circumferential Indications	0	0
Tubesheet and Support Plate with Axial Indications	0	0
Tubesheet Circumferential and Support Plate Axial Indications	0	0
Egg-Crate With Axial Indications	42	16
Batwings With Axial Indication	2	1
Batwings With Axial Indication and Support Plate Axial Indication	0	0
Hot Leg Freespan Axials	3	0
Batwings With Volumetric Indication	0	0
Hot Leg Volumetric Indications	0	0
Cold Leg Volumetric Indications	0	0
Row 1 - Row 2 U-Bend Indications	0	0
U-Bend Indications	2	1
Bobbin Percents => 40%	0	2
Customer Decision to Plug	1	0
Total Candidate Tubes to be Repaired	61	25
Hot Leg 54" Stabilizers Installed During RF17*	2	1
Hot Leg 268" Stabilizers Installed During RF17*	0	0
Hot Leg 384" Stabilizers Installed During RF17*	0	0
Cold Leg 54" Stabilizers Installed During RF17*	0	0
Cold Leg 268" Stabilizers Installed During RF17*	0	0
Cold Leg 384" Stabilizers Installed During RF17*	0	0
Hot Leg Total Tubes Deplugged and Replugged - Post RF17	0	2
Cold Leg Total Tubes Deplugged and Replugged - Post RF17	0	0
Total Repair	SG - 31	SG - 32
Total Stabilizers Installed - RF17	2	1
Total Tubes Plugged - Post RF17	1468	1282
Total SG % Plugged - Post RF17	15.7%	13.7%
Note: Above Tubesheet is all calls => .01" above. Note: Within Tubesheet is all calls =<.00". Note: *Denotes Includes Deplugged tubes		

See Attachment 2 for the following Tables

Table E-2 “SG31 Plugging List – RF17”
Table E-3 “SG32 Plugging List – RF17”

F. Total Number and Percentage of Tubes Plugged to Date.

Table F-1 WF3 Historical Plugging

Year	Outage	EFPY	SG31 Plugs	SG32 Plugs	Total	Cum % Plug	Cumulative Plugging
1985	Pre-Service		154	169	323	1.7	323
1986	RF01	1.01	0 0	0	0	1.7	323
1987	RF02	2.08	0	1	1	1.7	324
1989	RF03	3.31	11	8	19	1.8	343
1991	RF04	4.55	161	161	322	3.6	665
1992	RF05	5.83	4	5	9	3.6	674
1994	RF06	7.15	4	2	6	3.6	680
1995	RF07	8.52	15	4	19	3.7	699
1997	RF08	9.90	29	26	55	4.0	754
1999	RF09	11.02	12	10	22	4.2	776
2000	RF10	12.37	28	38	66	4.5	842
2002	RF11	13.70	26	10	36	4.7	878
2003	RF12	15.18	127	50	177	5.6	1055
2005	RF13	16.68	247	223	470	8.2	1525
2006	RF14	18.12	358	460*	818	12.5	2343
2008	RF15	19.41	143	51	194	13.6	2536
2009	RF16	20.79	88	40	128	14.2	2664
2011	RF17	22.26	61	25	86	14.7	2750
Total Plugged to Date			**1468**	**1282**	**2750**		**2750**
Percent Plugged to Date			**15.70**	**13.71**		**14.7**	

***Includes tube plugged on one end**

G. The Results of Condition Monitoring, Including the Results of Tube Pulls and In-situ Testing and Assessment of Accident-Induced Leakage from all Tubesheet Indications.

Waterford 3 did not perform any tube pulls. Three in-situ tests were required and performed in RF17.

Summary of In Situ Pressure Testing

As part of Waterford 3's adherence to perform In-situ Screening in accordance with EPRI, TR-1014983, "Steam Generator In-Situ Pressure Test Guidelines", Rev. 3, all indication identified were screened with three tests required.

The tubes requiring in-situ testing were entered into Entergy's corrective action program. There were no tubes with Circumferential Cracks that met the in-situ testing criteria.

At RF17, R9 C125, R74 C88, and R95 C55, all in SG31, were in situ pressure tested in a full tube mode. That is, the entire tube length was pressurized, not just the localized flaw. Tube R9 C125 required the full tube test due to the flaw length exceeding the test chamber length of the local tool. Tube R74 C88 required the full tube test due to the location of the flaw, which was just below the square bend, which prevented the local tool to be fully inserted. Tube R95 C55 could have been tested with the local tool however the decision was made to test all in the full tube mode to expedite the testing process.

Since the tubes were tested in a full tube mode pressurized water was applied to the tube ID for all test pressures. As such, if leakage would have occurred at any time during the testing it would have been detected.

The maximum test pressure applied to all tubes was a minimum of 4900 psi. No leakage or burst was reported. Each tube tested achieved an actual pressure of 5000 psi.

Post test +Pt examination was performed for each in-situ test. None of the flaws experienced significant change, suggesting that the indicated flaw depths were not as deep as anticipated.

> ***CR-WF3-2011-02578 - A flaw was found in SG31 Row 9 Column 125 in the freespan between 01Hot and 02Hot eggcrate supports. Based on the size of the flaw, screening and profiling for possible in-situ pressure testing is required. This flaw is inspected with the Appendix I technique of the SG Program Guidelines.***
>
> ***CR-WF3-2011-02616 - Second Flaw in SG31 Requires In-Situ Pressure Testing. A flaw was found in SG31 Row 74 Column 88 at BW1. Based on the size of the flaw, screening and profiling for possible in-situ pressure testing is required.***
>
> ***CR-WF3-2011-02642 - A flaw was found in Steam Generator 31 (SG MSG0001) tube Row 95 Column 55 in the freespan between 01Hot and 02Hot eggcrate supports. Based on the size of the flaw, screening and profiling for possible in-situ pressure testing is required. This flaw is inspected with the Appendix I technique of the SG Program Guidelines.***

Tube R9C125 in SG31 which had been called DFH (distorted freespan historical) in previous inspections was called DFI (distorted freespan indication) this outage.
The indication was reported by the resolution analyst because it showed possible crack like characteristics from bobbin probe. The area was Rotating Pancake Coil (RPC) +Point (+PT) tested and was reported as a 7" long crack like signal indicative of axial ODSCC. As a result, the +PT RPC program was expanded to include all reported freespan bobbin indications regardless of any history change from 1994. This expansion included 882 tubes in S/G 31 and 812 tubes in S/G32. All of these freespan indications were tested by RPC from structure below to structure above the indication.

No additional flaws were identified as a result of these expanded inspections.

Table G1 Waterford RF17 Flaw Summary of Indications to be In Situ Pressure Tested

SG	Row	Col	Location	+Pt V (300 khz)	Max Depth (1)	Total Length	Str. Eq. Depth	Str. Eq. Length	Calculated Burst Pressure (2)
31	9	125	01H +23	0.84	75	7.18	65.7	1.47	3039
31	74	88	BW1 +2	0.55	67	1.44	62.1	0.65	4105
31	95	55	01H +12	0.88 (3)	76	0.68	74	0.60	3082

(1): ODSCC depths are calculated using EPRI ETSS I28432 amplitude based sizing regression.
(2): Burst pressures calculated at lower 95% probability at 650^{o}F.
(3): Axial ODSCC in freespan ding. The resultant signal formed by combination of the ding and flaw lead to an artificially elevated voltage which in turn results in a gross overestimate of depth.

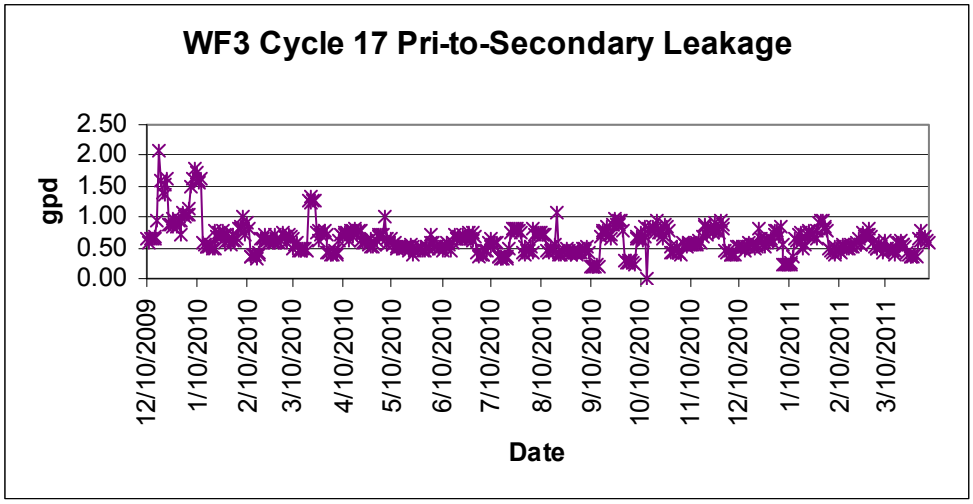
Table G2 Summary of Flaw Parameters for In Situ Pressure Tested Tubes

Row	Col	Pre 300 kHz +Pt V	Pre Length	Pre Phase Angle	Post 300 kHz +Pt V	Post Length	Post Phase Angle	Observations
9	125	0.84	7.18	104	0.90	7.09	115	No significant change (1)
74	88	0.55	1.44	100	0.61	1.47	95	No observable change
95	55	0.88	0.75	12	0.80	0.84	11	No observable change
(1): A slight change in the signal formation was observed. This has been observed in laboratory pressure testing of EDM notches, a slight bulge occurs on the tube ID, possibly due to elastic elongation of the tube during pressurization and dimpling of the ID surface upon contraction. This has been observed for EDM notch depths as shallow as 40%TW.								

Based on the Waterford 3 RF17 inspection results and in-situ pressure testing, no tubes contained indications which represented a challenge to structural or leakage integrity and all condition monitoring requirements are satisfied. Structural and leakage integrity was established by analysis and through comparison of past in situ testing results as well as by comparison of observed flaw parameters against the leaking testing thresholds established by EPRI TR-1014983 Steam Generator In Situ Pressure Test Guidelines Rev 3.

No primary to secondary leakage is predicted for the eddy current indications observed at RF17 in the event of a postulated Steam Line Break (SLB) event. The relative severity levels of the observed degradation was judged consistent with or bounded by the levels associated with the RF16 inspection, and recent inspections of similar CE SGs.

Waterford 3 has a current Plant Specific Leakage limit of 0.375 gallons per minute for an "accident-induced leakage limit" and applies a reduction of 0.1 gallons per minute to this value to provide the basis for the approved tube leakage integrity criteria. The inspection requirements described in TS 6.5.9.c.1 applies an alternate repair criteria [C*] which utilized this reduction. The predicted leakage is zero, thus the accident-induced leakage limit is met.



Cold Leg Volumetric Indications

In SG31, one tube (R2 C156) was reported with a volumetric signal just above the top of tubesheet. This location was also reported as a volumetric signal at RF16, RF15 and at RF14. At RF14, FOSAR showed no evidence of a foreign object/loose part and the +Pt eddy current data showed no evidence of a PLP. An object was likely adjacent to this tube at one point in time but is no longer present. At RF14 the indication was sized at 21%TW and left in service. This indication has been sized and justified for continued operation at each subsequent outage; the estimated depth based on the +Pt signal amplitude has remained essentially constant over this period. The slight difference in depth reports from outage to outage is due to the different calibration curves for each outage.

At RF15, in SG32 a volumetric signal (R104 C30) was reported the approximate mid-span elevation between just above the 07H eggcrate. A review of the bobbin history data shows no change in the signal since 1994. This signal is most likely attributed to a manufacturing artifact, such as a lap. The depth based on sizing with the +Point coil according to ETSS 21998.1 was 19%TW at RF15; there was no change in the signal response at RF16. At RF17 the NDE results were No Degradation Found (NDF) / No Degradation Detected (NDD) at this location. This tube remains in service.

One tube in SG31 was plugged due to data quality reasons associated with copper deposits (CUD). The location is R64 C10 at the 01H eggcrate location. The signal was not in the flaw-plane but still could potentially mask an indication so the Integrity Engineer conservatively decided to remove tube from service. The copper signal did not meet the in-situ screening criteria and there were no other similar signals.

Secondary Side Inspections

The secondary inspection plans for RF17 were developed to ensure component integrity. The utility's original Steam Generator replacement outage was deferred from RF17 to RF18.

Entergy has a commitment to complete "augmented" inspections of the Steam Generator batwings. Additional "directed" inspections were performed to address the conditions identified during RF16 Secondary Side Inspections.

Augmented Inspections

Entergy committed to performing "augmented" examinations of the batwings. These inspections were completed during RF17.

The augmented examinations for RF17 were performed under WO-00259170 and WO-00259181. The augmented examination results were reviewed and evaluated by Engineering. For SG31 and SG32 the RF17 augmented inspection result is documented in CR-WF3-2006-03966 CA-0067.

Inspections of Steam Generator #1 (SG 31) and Steam Generator #2 (SG32) were performed during the Spring 2011 Refuel 17 (RF17) outage to determine if there were any changes in extent of condition or the critical variables that were the basis for the mitigating actions taken in Refuel 14 (RF14), Mid-Cycle 15 (MC15) outage Operational Assessment, Refuel 15 (RF15), and Refuel 16 (RF16). The visual inspections performed consisted of an upper batwing weld and wrap around bar inspection, diagonal 45º Through-Tube Bundle Inspection, a Bottom-Up Inspection of the batwings in the central stay cavity region, and a Foreign Object Search and Retrieval (FOSAR).

The RF17 secondary side visual inspections of failed batwings in SG 31 revealed some small changes due to additional broken batwings found at the perforated bar; however, the inspection videos indicate the progression of the batwing condition in SG 31 appears to be following the progression of SG32.

The RF17 secondary side visual inspections of failed batwings in SG 32 showed little or no change from previous inspections.

All inspection results met the established acceptance criteria. There were no changes to the extent of condition or the critical variables that were the basis for the mitigating actions taken in RF14, MC15 Operational Assessment, RF15, and RF16. Additionally, the assessments performed in RF14, MC15 outage, RF15, and RF16 remain valid and bounding.

Waterford 3 originally had planned on replacing both steam generators during RF17; however, subsequent to hydrostatic testing, which is the last step in the SG fabrication process,

Westinghouse discovered the separation of stainless steel cladding from the carbon steel base metal in the channel head of both SGs. It was concluded that necessary repairs would not be completed in time to support SG installation during RF17 and SG replacement was deferred until RF18 (Fall 2012) outage. Therefore in accordance with commitment A27017 Waterford 3 performed an augmented inspection of the SG secondary side during RF17.

The full augmented inspection report is attached to a Condition Report Corrective Action. [CR-WF3-2006-03966 CA-0067]

Directed Inspections

During RF16, limited feedring erosion and a detached T-vent were identified during secondary side inspections. These conditions were entered into the Site's Corrective Action Program. The conditions were evaluated for a single cycle [Cycle 17] of operation under Engineering Evaluation, EC-18652.

This condition was considered a Significantly Degraded Non-Conformance and tracked by a corrective action, CR-WF3-2006-03966 CA-00068 with the planned RF17 SG replacement. Due to the Steam Generator replacement deferral until RF18, a directed inspection plan for RF17 was developed to establish the basis for continued operation and identify any additional degradation. The directed inspections included the re-examination of the RF16 locations to establish wear rates and component conditions. These examinations included UT and visual examinations. Acceptance criteria was established with the aid of Westinghouse prior to the outage.

The directed inspections were completed concurrently with the Augmented Examinations but were documented separately. The secondary side directed inspections were documented in WO-261343 and WO-261344. The RF17 directed examinations as found conditions were evaluated for Cycle 18 Operation under Engineering Evaluation, EC-28600. The result of the evaluation determined that it was acceptable to operate the W3 original SG for an additional cycle. Attached to the engineering evaluation are Westinghouse Letters LTR-SGDA-11-47 "Requirements for Inspection of the Internal Feedwater Piping Assembly at Waterford 3 during RF17" [March 2011] and LTR-SGDA-11-108 "Review and Assessment of Results of Inspection of the Internal Feedwater Header Assembly at Waterford Unit 3 during RF17" [April 2011]. These letters established acceptance criteria and evaluated the inspection results.

This condition continues to be a non-conformance condition with a single cycle [Cycle 18] of operation evaluated. An additional corrective action, CR-WF3-2006-03966 CA-0081 is in-place to address the non-conformances under the unlikely event that the SG replacement does not occur during RF18.

<u>Foreign Object/Loose Parts Wear</u>

Examinations for loose parts were performed as planned. The PLP indications were re-examined and bounding MPRC exams were performed. A total of 12 tubes were added in S/G 31 and 5 tubes were added in S/G 32 to the +PT RPC special interest program to encompass all adjacent tubes to Cold Leg Top of Tubesheet PLP (Possible Loose Part) indications. A total of 8 tubes were tested in S/G 32 H/L to encompass a PLP reported above the Tubesheet area. All other PLP indications were already boxed in at the area of the PLP indication from the Top of

Tubesheet Hot Leg +PT RPC program. No new foreign object associated wear was reported at RF17.

FOSAR was performed at the TTS peripheral annulus and tube lane region. In SG31 a metallic "clip" thought to be part of a dosimeter was retrieved from the annulus.

In SG32 several pieces of gasket were observed and could not be removed. The first and most significant of these two was reported at R145 C73/R144 C74/R143 C75. This object was reported during the Cycle 14 mid cycle outage. Repeated attempts to remove the object were unsuccessful. Since these tubes were plugged using sentinel plugs (on the cold leg) to address potential batwing to wrap around bar weld failures, potential through-wall penetration could lead to inadvertent plant shutdown due to leakage.

R144 C74 was deplugged on the hot leg side and eddy current inspected to assess the interaction condition with the object. No degradation was reported from eddy current testing. Based on this it was judged that the object represented a negligible potential to result in primary-to-secondary leakage during Cycle 18. Tube R144 C74 was replugged.

Another piece of gasket was observed in the vicinity of R139 C63. The WF3-RF17 Potential Loose Part Evaluation describes the analysis supporting continued operation of SG32 with these objects remaining.

The WF3-RF17 Potential Loose Part Evaluation was performed under the Site's Corrective Action Program and is attached to CR-WF3-2011-2601 CA-008.

OVERALL CONCLUSIONS

During the Waterford RF17 steam generator tube inspection, no indications exceeding the structural integrity limits for either axial or circumferential degradation (i.e., burst integrity > 3 times normal operating primary to secondary pressure differential across SG tubes) were encountered.

While the calculated burst pressures of some indications were less than the performance criterion, the verification of structural and leakage integrity was performed by in situ pressure testing.

Therefore, no tubes were identified to contain eddy current indications that could potentially challenge the tube integrity requirements of NEI 97-06. Similarly, all operational assessment structural and leakage integrity requirements are satisfied at EOC-18 for the degradation mechanisms observed at EOC-17. The projected EOC-18 indication maximum depths are all below the breakthrough depth associated with leakage at SLB conditions of 95%TW for long (i.e., >0.43 inch, the through wall (TW) critical flaw length associated with burst at three time normal operating pressure differential) flaws. Based on the observed indications at RF17, the Waterford 3 SGs are expected to meet all structural and leakage integrity requirements at EOC-18.

H. Effective Plugging Percentage for all Plugging in Each Generator.

Table H-1 Effective Plugging Percentage

Generator	# Plugged	% Plugged
SG31	1468	15.70%
SG32	1282	13.71%

Attachment 2
to
W3F1-2011-0072

Additional Tables
Relative to the 17th Refueling Outage
Steam Generator Tube Inspection Report

Table D-1
SG31 Service Induced Indications
Crack Indications – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	LOCN	INCH1	INCH2	CRLEN	CRWID
1	31	10	12	0.26	83	SAI	07C	0.39	0.89	0.5	0.33
2	31	27	19	0.28	24	SAI	BW5	0.98		0.9	0.35
3	31	31	31	0.34	112	SAI	07H	-0.17		0.27	0.38
4	31	46	32	0.35	122	SAI	07H	-0.39		0.52	0.38
5	31	88	32	0.22	107	SAI	01H	0.11	0.6	0.53	0.45
6	31	31	35	0.24	103	SAI	05H	-0.61		0.35	0.37
7	31	42	36	0.17	92	SAI	06H	0.67		0.17	0.34
8	31	27	37	0.28	92	SAI	07H	0.36		0.3	0.34
9	31	119	37	1.72	18	SAI	TSH	0.69	1.03	0.34	0.34
10	31	25	47	0.6	94	SAI	TSH	25.16	25.38	0.22	0.38
11	31	50	48	0.29	83	SAI	05H	0.65	1	0.37	0.28
12	31	50	50	0.31	116	SAI	06H	0.51		0.44	0.31
13	31	95	55	0.88	12	SAI	01H	11.36	11.74	0.75	0.26
14	31	35	57	0.41	105	SAI	06H	-0.02	0.87	0.89	0.34
15	31	35	57	0.4	111	SAI	06H	0.33		0.93	1.18
16	31	30	58	0.19	101	SAI	01H	-0.86	-0.67	0.19	0.44
17	31	38	58	0.34	121	SAI	06H	-0.99	-0.08	0.91	0.34
18	31	40	58	0.26	126	SAI	07H	0.01		0.5	0.33
19	31	59	61	0.25	86	SAI	05H	0.51	0.58	0.29	0.36
20	31	44	64	0.57	12	SAI	TSH	-0.45	-0.38	0.12	0.38
21	31	40	66	0.44	106	SAI	05H	-0.3	-0.11	0.19	0.43
22	31	72	72	0.29	108	SAI	08H	0.49	1.18	0.68	0.27
23	31	71	73	0.24	104	SAI	05H	0.39	1.06	0.75	0.29
24	31	75	73	0.26	116	SAI	05H	0.6		0.56	0.26
25	31	59	77	0.23	101	SAI	05H	0.92		0.29	0.26
26	31	74	88	0.55	117	SAI	BW1	1.97	3.37	1.41	0.45
27	31	86	88	0.25	93	SAI	05H	0.7	0.9	0.22	0.27
28	31	58	94	0.19	89	SAI	07H	0.43	0.57	0.19	0.22
29	31	76	98	0.95	20	SCI	TSH	-3.2	-2.95	0.25	0.19
30	31	75	101	0.27	114	SAI	05H	0.25	0.48	0.7	0.32
31	31	68	102	0.42	15	SCI	TSH	-0.08	0.08	0.1	0.25
32	31	82	104	0.08	74	SAI	06H	0.5	0.95	0.43	0.2
33	31	82	104	0.32	105	SAI	06H	0.73	1.18	0.46	0.28
34	31	86	106	1.48	24	SCI	TSH	-7.21		0.18	0.4
35	31	108	108	0.22	82	SAI	07H	0.45		0.51	0.33
36	31	47	113	0.91	20	SAI	TSH	-0.86	-0.5	0.35	0.48
37	31	49	113	0.81	16	SAI	TSH	-2.17	-1.97	0.2	0.47
38	31	49	113	0.91	16	SAI	TSH	-1.16	-0.91	0.25	0.53
39	31	49	113	0.7	16	SAI	TSH	-0.51	-0.31	0.2	0.53
40	31	18	114	0.55	15	SAI	TSH	-1.5	-1.37	0.23	0.37
41	31	18	114	0.79	19	SAI	TSH	-0.63	-0.25	0.2	0.37
42	31	14	116	0.26	101	SAI	07H	-0.75		0.38	0.27
43	31	16	116	0.75	18	MAI	TSH	-1.79	-0.76	0.45	0.46
44	31	16	116	0.47	16	SAI	TSH	-1.16	-1.26	0.25	0.34

Table D-1
SG31 Service Induced Indications
Crack Indications – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	LOCN	INCH1	INCH2	CRLEN	CRWID
45	31	16	116	0.79	18	SAI	TSH	-0.58	-0.96	0.38	0.34
46	31	116	116	0.26	131	SAI	09H	23.09	25.99	5.19	0.32
47	31	21	117	0.48	99	SAI	07C	0.35	0.98	0.53	0.26
48	31	26	118	0.83	15	SAI	TSH	-1.51	-1.09	0.28	0.46
49	31	19	119	0.44	103	SAI	07H	0.57		0.72	0.31
50	31	21	119	0.3	98	SAI	04H	0.26		0.42	0.29
51	31	24	120	0.22	90	SAI	01H	0.26		0.25	0.32
52	31	77	123	0.22	98	SAI	07H	-0.38		0.3	0.29
53	31	2	124	0.32	101	SAI	07H	0.18	0.53	0.35	0.45
54	31	48	124	0.41	119	SAI	07H	-0.72		0.82	0.33
55	31	9	125	0.05	146	SAI	01H	12.3		0	0.24
56	31	9	125	0.2	142	SAI	01H	15.79		0	1.18
57	31	9	125	0.84	109	SAI	01H	22.99		0	0.24
58	31	9	125	0.2	111	SAI	01H	29.51		0	0.24
59	31	9	125	0.14	152	SAI	01H	33.84		0	0.24
60	31	51	131	0.44	105	SAI	07H	-0.17		0.47	0.27
61	31	16	140	0.31	108	SAI	04H	0.94		0.38	0.44
62	31	9	143	0.19	110	SAI	06H	0.89		0.64	0.31
63	31	31	143	0.44	104	SAI	07H	0.62		0.4	0.35
64	31	34	144	1.16	18	SAI	TSH	-5.8	-5.3	0.5	0.38
65	31	21	147	0.16	104	SAI	07H	-0.95		0.17	0.24
66	31	21	147	0.34	97	SAI	07H	0.15		0.22	0.27
67	31	101	147	0.2	149	SAI	01H	0.77		0.55	0.61
68	31	36	152	0.45	105	SAI	07H	0.7		0.48	0.33
69	31	29	159	0.38	96	SAI	07H	-0.76	-0.21	0.59	0.39
70	31	8	160	0.33	126	SAI	03H	0.85		0.14	0.37
71	31	10	162	0.26	145	SAI	03H	0.9		0.24	0.32
72	31	54	164	0.21	113	SAI	BW4	0.27		0.13	1.18

Table D-2
SG32 Service Induced Indications
Crack Indications – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	LOCN	INCH1	INCH2	CRLEN	CRWID	CEG
1	32	7	35	0.22	137	SAI	07C	0.91		0.16	0.31	47
2	32	89	35	0.37	99	SAI	07H	0.5	0.83	0.33	0.27	42
3	32	92	36	0.23	108	SAI	BW4	-0.97		0.42	0.2	31
4	32	27	37	0.32	85	SAI	07H	-0.77	-0.61	0.16	0.25	39
5	32	27	37	0.26	107	SAI	07H	0.51	0.77	0.26	0.24	37
6	32	28	50	0.3	89	SAI	03H	0.72		0	1.18	180
7	32	28	50	0.2	100	SAI	06H	0.75		0.38	0.42	64
8	32	93	57	0.2	77	SAI	01H	-0.6		0	1.18	180
9	32	76	76	0.18	85	SAI	06H	0.83		0.3	0.31	47
10	32	68	94	0.23	82	SAI	07H	0.83		0.21	0.35	53
11	32	98	98	0.6	8	SAI	09H	7.81	8.4	0.45	0.27	42
12	32	64	102	0.12	51	SAI	01H	0.79		0.75	0.53	80
13	32	39	111	0.93	14	SAI	TSH	-3.99	-3.89	0.08	0.34	51
14	32	39	111	0.72	13	SAI	TSH	-3.26	-3.14	0.08	0.43	66
15	32	71	111	0.67	15	SAI	TSH	-1.59	-1.5	0.08	0.43	66
16	32	54	114	0.74	17	SAI	TSH	-3.46	-3.28	0.18	0.42	64
17	32	54	114	0.96	21	SAI	TSH	-3.18	-3	0.18	0.48	74
18	32	39	115	0.65	12	SAI	TSH	-2.93	-2.84	0.18	0.28	43
19	32	39	115	0.83	13	SAI	TSH	-2.44	-2.3	0.2	0.39	59
20	32	12	116	0.36	74	SAI	07H	0.41		0.56	0.28	43
21	32	42	120	0.69	23	SCI	TSH	-0.17	0.04	0.29	0.31	47
22	32	55	123	0.22	102	SAI	03H	0.91		0.26	0.65	100
23	32	101	127	0.3	111	SAI	07H	-0.68		0.23	0.27	42
24	32	11	131	0.21	103	SAI	01H	0.7		0.51	0.5	77
25	32	92	132	0.27	94	SAI	01H	-0.6		0.29	0.45	69
26	32	7	137	0.22	121	SAI	07C	0.4	0.67	0.27	0.28	43
27	32	20	152	0.25	135	SAI	07C	0.49	0.7	0.21	0.26	40
28	32	22	152	0.22	118	SAI	04H	0.59	0.94	0.35	0.48	74

Table D-3
SG31 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
1	31	20	4	0.08	0	PCT	7	01C	0.5
2	31	41	5	0.29	0	PCT	12	06H	-0.89
3	31	8	6	0.27	0	PCT	17	03H	0.85
4	31	42	6	0.36	0	PCT	20	BW5	-0.46
5	31	5	7	0.26	0	PCT	16	07H	-0.47
6	31	5	7	0.32	0	PCT	18	07H	-0.62
7	31	15	9	0.31	0	PCT	13	03H	0.87
8	31	74	14	0.25	0	PCT	10	BW1	-1.86
9	31	74	14	0.44	0	PCT	16	BW4	0.89
10	31	19	15	0.28	0	PCT	11	BW5	-0.86
11	31	19	15	0.26	0	PCT	10	BW5	0.8
12	31	61	15	0.45	0	PCT	17	BW5	-0.89
13	31	61	15	0.22	0	PCT	9	BW5	0.32
14	31	61	15	0.36	0	PCT	14	BW5	0.8
15	31	61	15	0.95	0	PCT	27	BW6	-1.11
16	31	61	15	0.42	0	PCT	16	BW6	0.95
17	31	36	16	0.35	0	PCT	21	BW5	1.01
18	31	64	16	0.46	0	PCT	17	BW5	-0.98
19	31	64	16	0.27	0	PCT	11	BW5	0.92
20	31	45	17	0.21	0	PCT	9	BW5	-0.94
21	31	45	17	0.34	0	PCT	13	BW5	0.88
22	31	36	18	0.34	0	PCT	13	BW5	-1.01
23	31	36	18	0.26	0	PCT	10	BW5	0.81
24	31	62	18	0.44	0	PCT	23	BW4	0.83
25	31	42	20	0.32	0	PCT	20	BW5	-0.79
26	31	81	21	0.54	0	PCT	25	08C	0.71
27	31	32	22	0.28	0	PCT	11	BW5	-0.99
28	31	78	22	0.33	0	PCT	13	BW5	0.98
29	31	78	22	0.35	0	PCT	14	BW6	0.96
30	31	70	24	0.45	0	PCT	16	BW5	-0.82
31	31	70	24	0.42	0	PCT	16	BW6	0.85
32	31	5	25	0.34	0	PCT	19	07H	-0.44
33	31	5	25	0.33	0	PCT	18	07H	-0.51
34	31	37	25	0.3	0	PCT	12	BW5	-0.78
35	31	37	25	0.18	0	PCT	8	BW5	-0.03
36	31	37	25	0.3	0	PCT	12	BW5	0.88
37	31	19	27	0.34	0	PCT	20	BW5	1.04
38	31	77	27	0.29	0	PCT	12	BW4	-0.77
39	31	77	27	0.35	0	PCT	14	BW5	-0.8
40	31	77	27	0.33	0	PCT	13	BW5	0.78
41	31	77	27	0.5	0	PCT	17	BW6	-0.81
42	31	77	27	0.35	0	PCT	14	BW6	0.75
43	31	91	27	0.21	0	PCT	9	08C	-0.33
44	31	50	28	0.17	0	PCT	13	BW5	-0.75
45	31	50	28	0.44	0	PCT	23	BW5	0.98
46	31	66	28	0.33	0	PCT	20	03C	0.2
47	31	105	29	0.25	0	PCT	11	BW7	-0.82

Table D-3
SG31 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
48	31	105	31	0.27	0	PCT	16	BW7	-1.09
49	31	105	31	0.3	0	PCT	17	04C	0.75
50	31	107	31	0.44	0	PCT	16	BW7	-0.72
51	31	82	32	0.27	0	PCT	18	BW4	0.65
52	31	100	32	0.36	0	PCT	14	09H	-0.79
53	31	114	34	0.34	0	PCT	19	BW9	1.55
54	31	61	35	0.39	0	PCT	15	BW5	1.11
55	31	61	35	0.37	0	PCT	14	BW6	1.01
56	31	77	35	0.25	0	PCT	10	BW5	-0.8
57	31	77	35	0.22	0	PCT	10	BW5	0.96
58	31	105	35	1.05	0	PCT	29	BW5	0.85
59	31	59	37	0.47	0	PCT	24	BW6	-0.92
60	31	119	37	0.14	0	PCT	10	09H	-0.09
61	31	119	37	0.3	0	PCT	17	10H	-0.98
62	31	80	38	0.23	0	PCT	10	BW4	-0.8
63	31	80	38	0.31	0	PCT	12	BW4	0.89
64	31	80	38	0.22	0	PCT	10	BW5	-0.8
65	31	80	38	0.57	0	PCT	19	BW6	-0.89
66	31	82	38	0.4	0	PCT	15	BW5	-0.74
67	31	82	38	0.98	0	PCT	26	BW6	-0.74
68	31	21	39	0.21	0	PCT	9	BW5	0.91
69	31	51	39	0.2	0	PCT	15	BW6	1.16
70	31	113	39	0.64	0	PCT	21	BW7	0.92
71	31	2	40	0.4	0	PCT	15	04C	0.88
72	31	42	40	0.25	0	PCT	17	BW5	0.89
73	31	50	40	0.33	0	PCT	20	BW5	-0.76
74	31	37	41	0.21	0	PCT	15	BW5	-1
75	31	39	41	0.86	0	PCT	32	BW5	-1.06
76	31	39	41	0.25	0	PCT	17	BW5	0.83
77	31	51	41	0.23	0	PCT	16	BW6	0.89
78	31	102	42	0.68	0	PCT	27	BW3	-0.66
79	31	1	43	0.07	0	PCT	3	07H	0.35
80	31	59	43	0.2	0	PCT	9	BW5	0.92
81	31	105	45	0.34	0	PCT	20	BW7	0.96
82	31	123	45	0.4	0	PCT	15	02H	1.05
83	31	22	46	0.18	0	PCT	8	BW5	-0.95
84	31	128	46	0.24	0	PCT	15	02H	-0.09
85	31	129	47	0.11	0	PCT	5	01C	0.85
86	31	45	49	0.03	0	PCT	2	BW5	0.08
87	31	45	49	0.33	0	PCT	20	BW5	0.96
88	31	59	49	0.36	0	PCT	21	BW5	0.64
89	31	99	51	0.26	0	PCT	18	04H	0.27
90	31	131	51	0.13	0	PCT	6	10H	-0.82
91	31	131	51	0.33	0	PCT	13	10H	0.82
92	31	46	52	0.53	0	PCT	26	BW5	0.89
93	31	43	53	0.56	0	PCT	26	BW5	0.9
94	31	105	53	0.48	0	PCT	17	BW3	-0.86

Table D-3
SG31 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
95	31	133	53	0.31	0	PCT	13	09C	-0.85
96	31	133	53	0.36	0	PCT	14	08C	0.89
97	31	22	54	0.2	0	PCT	14	BW5	-0.82
98	31	82	54	0.77	0	PCT	24	BW5	-0.94
99	31	82	54	1.03	0	PCT	28	BW5	0.74
100	31	82	54	0.3	0	PCT	12	BW6	-0.86
101	31	82	54	0.33	0	PCT	13	BW6	0.96
102	31	19	55	0.69	0	PCT	28	BW5	1.08
103	31	41	55	0.26	0	PCT	12	BW5	0.79
104	31	24	56	0.21	0	PCT	9	BW5	-0.8
105	31	50	56	0.38	0	PCT	15	BW5	-0.76
106	31	50	56	0.57	0	PCT	20	BW5	0.92
107	31	23	57	0.32	0	PCT	19	BW5	0.9
108	31	41	57	0.34	0	PCT	14	BW5	0.98
109	31	51	57	0.25	0	PCT	16	BW4	0.8
110	31	125	57	0.44	0	PCT	16	08C	0.52
111	31	133	57	0.21	0	PCT	9	08C	-0.22
112	31	135	57	0.36	0	PCT	14	10H	0.85
113	31	76	58	0.31	0	PCT	13	BW6	-0.85
114	31	129	59	0.38	0	PCT	14	BW3	-0.49
115	31	137	59	0.29	0	PCT	12	BW2	-0.8
116	31	24	60	0.27	0	PCT	11	BW5	-0.81
117	31	30	60	0.44	0	PCT	16	BW5	0.86
118	31	138	60	0.46	0	PCT	17	09H	-1.01
119	31	81	61	0.53	0	PCT	22	BW4	0.86
120	31	133	61	0.24	0	PCT	10	BW5	-0.78
121	31	133	61	0.24	0	PCT	10	BW5	0.86
122	31	82	62	0.35	0	PCT	14	BW4	-1
123	31	82	62	0.26	0	PCT	11	BW5	1.09
124	31	82	62	0.3	0	PCT	12	BW6	-0.66
125	31	138	62	0.34	0	PCT	19	01H	0.79
126	31	19	63	0.14	0	PCT	11	BW5	-0.72
127	31	19	63	0.45	0	PCT	23	BW5	1.11
128	31	35	63	0.37	0	PCT	20	BW5	-0.69
129	31	35	63	0.46	0	PCT	23	BW5	0.92
130	31	61	63	0.25	0	PCT	16	BW5	-0.83
131	31	61	63	0.46	0	PCT	23	BW5	0.86
132	31	63	63	0.39	0	PCT	21	BW4	-0.71
133	31	63	63	0.24	0	PCT	16	BW4	0.8
134	31	63	63	0.35	0	PCT	20	BW5	0.86
135	31	63	63	0.44	0	PCT	23	BW6	0.76
136	31	133	63	0.27	0	PCT	17	BW5	0.84
137	31	139	63	0.28	0	PCT	11	BW1	-1.61
138	31	23	65	0.3	0	PCT	18	BW5	0.96
139	31	135	65	0.28	0	PCT	11	BW8	-0.84
140	31	137	65	0.17	0	PCT	7	BW2	-0.62
141	31	137	65	0.28	0	PCT	11	BW4	0.95

Table D-3
SG31 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
142	31	42	66	0.34	0	PCT	18	06C	0.78
143	31	44	66	0.56	0	PCT	24	BW5	0.98
144	31	46	66	0.39	0	PCT	15	BW9	1.74
145	31	50	66	1.72	0	PCT	37	BW5	-0.88
146	31	50	66	0.21	0	PCT	9	BW5	-0.43
147	31	50	66	0.21	0	PCT	9	BW5	0.88
148	31	51	67	0.05	0	PCT	5	BW4	-0.75
149	31	51	67	1.01	0	PCT	32	BW4	0.92
150	31	51	67	0.38	0	PCT	20	BW5	-0.71
151	31	51	67	0.2	0	PCT	13	BW6	-0.9
152	31	121	67	0.24	0	PCT	17	03H	0.84
153	31	135	67	0.28	0	PCT	12	BW3	-0.68
154	31	40	68	0.26	0	PCT	11	BW5	0.89
155	31	46	70	0.62	0	PCT	20	BW5	-0.88
156	31	46	70	0.46	0	PCT	17	BW5	-0.16
157	31	46	70	0.87	0	PCT	25	BW5	0.98
158	31	50	70	0.33	0	PCT	13	BW5	0.75
159	31	138	70	0.29	0	PCT	17	08C	0.81
160	31	78	72	0.41	0	PCT	16	08C	-0.92
161	31	82	72	0.33	0	PCT	13	08C	0
162	31	108	74	0.3	0	PCT	20	BW3	-0.97
163	31	103	75	0.22	0	PCT	10	02H	0.8
164	31	138	76	0.32	0	PCT	18	09C	-1.01
165	31	133	77	0.35	0	PCT	14	BW3	-0.53
166	31	133	77	0.29	0	PCT	11	BW4	-0.66
167	31	68	78	0.51	0	PCT	18	BW6	1.1
168	31	136	78	0.21	0	PCT	14	BW2	-0.96
169	31	61	79	0.29	0	PCT	17	BW5	0.97
170	31	78	80	0.33	0	PCT	12	BW5	-0.65
171	31	78	80	0.25	0	PCT	10	BW6	0.81
172	31	96	80	0.19	0	PCT	8	03H	0.87
173	31	83	81	0.33	0	PCT	20	BW3	0.95
174	31	107	81	0.27	0	PCT	18	BW3	0.45
175	31	143	81	0.38	0	PCT	14	03H	-0.99
176	31	82	82	0.59	0	PCT	27	BW5	0.96
177	31	93	83	0.35	0	PCT	13	BW9	1.51
178	31	119	83	0.35	0	PCT	13	07C	-0.09
179	31	82	84	0.14	0	PCT	6	BW6	-0.84
180	31	82	84	0.28	0	PCT	11	BW6	0.87
181	31	83	87	0.26	0	PCT	11	BW7	1.15
182	31	70	88	0.3	0	PCT	12	BW9	-0.62
183	31	55	89	0.42	0	PCT	15	BW1	-1.8
184	31	69	91	0.14	0	PCT	7	BW9	-0.49
185	31	121	91	0.26	0	PCT	10	02H	-0.83
186	31	144	92	0.23	0	PCT	10	04H	0.92
187	31	71	93	0.37	0	PCT	15	BW9	-1.64
188	31	133	93	0.23	0	PCT	15	BW1	-1.39

Table D-3
SG31 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
189	31	139	93	0.11	0	PCT	10	BW1	-1.85
190	31	139	93	0.05	0	PCT	4	BW9	1.99
191	31	56	94	0.58	0	PCT	19	BW9	4.01
192	31	69	95	0.32	0	PCT	13	BW9	1.93
193	31	82	96	0.57	0	PCT	27	BW5	-0.76
194	31	83	97	0.38	0	PCT	22	BW5	-0.78
195	31	83	97	0.22	0	PCT	16	BW5	0.74
196	31	83	97	0.33	0	PCT	21	BW6	-0.8
197	31	83	97	0.25	0	PCT	17	BW6	0.84
198	31	121	97	0.26	0	PCT	18	03H	-0.77
199	31	78	98	0.42	0	PCT	15	BW4	-0.7
200	31	78	98	0.08	0	PCT	3	BW4	0.89
201	31	78	98	0.46	0	PCT	16	BW6	0.93
202	31	78	98	0.26	0	PCT	10	08C	0.83
203	31	130	98	0.06	0	PCT	3	BW1	-1.59
204	31	134	98	0.26	0	PCT	11	01H	0.68
205	31	78	100	0.32	0	PCT	20	BW5	-0.67
206	31	78	100	0.19	0	PCT	15	BW5	0.06
207	31	78	100	0.34	0	PCT	21	BW5	0.77
208	31	78	100	0.26	0	PCT	18	BW6	-0.81
209	31	78	100	0.14	0	PCT	12	BW6	-0.15
210	31	78	100	0.6	0	PCT	28	BW6	0.77
211	31	98	100	0.06	0	PCT	10	04H	0.89
212	31	78	102	0.19	0	PCT	15	03H	-0.8
213	31	141	105	0.41	0	PCT	21	09H	-0.52
214	31	141	105	0.52	0	PCT	24	09H	-0.41
215	31	42	108	0.91	0	PCT	33	BW5	-0.58
216	31	42	108	0.15	0	PCT	13	BW5	0.29
217	31	42	108	0.69	0	PCT	29	BW5	1.06
218	31	78	108	0.49	0	PCT	25	BW4	-0.78
219	31	78	108	0.46	0	PCT	24	BW5	-0.84
220	31	78	108	0.25	0	PCT	17	BW6	-0.81
221	31	140	108	0.34	0	PCT	14	08H	0.94
222	31	39	111	0.12	0	PCT	6	BW5	0.36
223	31	39	111	0.68	0	PCT	22	BW5	1.05
224	31	131	111	0.34	0	PCT	13	09C	0.88
225	31	22	112	0.17	0	PCT	12	BW5	1.02
226	31	36	112	0.6	0	PCT	26	BW5	-0.62
227	31	40	112	0.25	0	PCT	16	BW5	-0.61
228	31	40	112	0.25	0	PCT	16	BW5	1.18
229	31	49	113	0.42	0	PCT	16	BW5	0.62
230	31	141	113	0.42	0	PCT	15	BW9	-1.79
231	31	45	115	0.32	0	PCT	13	BW5	-0.75
232	31	45	115	0.09	0	PCT	4	BW5	-0.29
233	31	45	115	0.24	0	PCT	10	BW5	0.94
234	31	49	115	0.37	0	PCT	14	BW5	-0.74
235	31	49	115	0.22	0	PCT	10	BW5	0.9

Table D-3
SG31 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
236	31	45	117	0.41	0	PCT	16	BW5	-0.68
237	31	99	117	0.27	0	PCT	18	BW4	-0.96
238	31	135	119	1.17	0	PCT	36	BW2	-0.27
239	31	135	119	0.64	0	PCT	28	BW2	0.79
240	31	135	119	0.15	0	PCT	12	BW3	-0.88
241	31	135	119	0.74	0	PCT	30	BW3	0.83
242	31	135	119	0.71	0	PCT	29	BW4	-0.98
243	31	135	119	0.11	0	PCT	10	BW4	0.42
244	31	135	119	0.68	0	PCT	28	BW4	0.87
245	31	135	119	0.38	0	PCT	22	BW7	-0.77
246	31	135	119	0.1	0	PCT	9	BW7	-0.06
247	31	135	119	0.21	0	PCT	15	BW7	1.09
248	31	22	120	0.17	0	PCT	11	BW5	-0.93
249	31	22	120	0.09	0	PCT	7	BW5	0.85
250	31	134	120	0.66	0	PCT	28	01C	0.88
251	31	133	121	0.7	0	PCT	29	BW2	-0.76
252	31	133	121	0.13	0	PCT	11	BW2	-0.1
253	31	133	121	1.28	0	PCT	37	BW2	0.73
254	31	133	121	0.35	0	PCT	21	BW3	-0.51
255	31	133	121	0.16	0	PCT	13	BW3	0
256	31	133	121	0.33	0	PCT	20	BW4	-0.8
257	31	134	122	0.26	0	PCT	11	02C	-0.71
258	31	132	124	0.23	0	PCT	10	08H	0.84
259	31	133	125	0.33	0	PCT	13	07C	-1.1
260	31	40	126	0.25	0	PCT	12	BW5	-0.52
261	31	72	126	0.36	0	PCT	13	BW4	-0.83
262	31	72	126	0.64	0	PCT	20	BW4	0.83
263	31	72	126	0.25	0	PCT	10	BW5	-0.92
264	31	72	126	0.25	0	PCT	10	BW5	0.12
265	31	82	126	0.27	0	PCT	11	BW6	1.07
266	31	131	127	0.11	0	PCT	10	07H	-0.74
267	31	131	127	0.27	0	PCT	18	07H	0.81
268	31	76	128	0.48	0	PCT	24	BW4	0.83
269	31	76	128	0.43	0	PCT	23	BW5	-0.68
270	31	76	128	0.24	0	PCT	17	BW5	0.09
271	31	76	128	0.39	0	PCT	22	BW5	1.05
272	31	76	128	0.4	0	PCT	22	BW6	-0.71
273	31	76	128	0.91	0	PCT	33	BW6	0.99
274	31	105	129	0.16	0	PCT	13	BW1	2
275	31	127	129	0.36	0	PCT	21	BW2	-0.76
276	31	128	130	0.2	0	PCT	9	01H	0.9
277	31	128	130	0.58	0	PCT	19	03C	-0.92
278	31	74	134	0.4	0	PCT	14	BW6	0.64
279	31	92	134	0.19	0	PCT	8	03C	0.18
280	31	123	135	0.23	0	PCT	16	09H	1.07
281	31	122	136	0.26	0	PCT	11	02C	0.83
282	31	63	137	0.25	0	PCT	13	BW4	-0.7

Table D-3
SG31 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
283	31	63	137	0.42	0	PCT	18	BW5	-0.9
284	31	78	138	0.62	0	PCT	27	BW4	-0.86
285	31	78	138	0.15	0	PCT	12	BW4	0.92
286	31	82	138	0.25	0	PCT	17	BW4	-0.68
287	31	82	138	0.28	0	PCT	18	BW4	0.82
288	31	82	138	0.39	0	PCT	21	BW5	0.77
289	31	82	138	0.98	0	PCT	33	BW6	0.89
290	31	118	138	0.2	0	PCT	14	07H	0.22
291	31	1	139	0.24	0	PCT	15	04C	0.8
292	31	67	139	0.26	0	PCT	10	08C	0.86
293	31	76	140	0.21	0	PCT	15	BW4	-0.77
294	31	76	140	0.21	0	PCT	15	BW4	0.98
295	31	76	140	0.17	0	PCT	13	BW5	-0.71
296	31	76	140	0.26	0	PCT	17	BW5	0.25
297	31	76	140	0.29	0	PCT	18	BW5	0.8
298	31	76	140	0.14	0	PCT	11	BW6	0.18
299	31	76	140	0.83	0	PCT	31	BW6	0.77
300	31	82	140	0.62	0	PCT	27	BW4	1.15
301	31	82	140	0.88	0	PCT	32	BW6	-0.8
302	31	82	140	0.34	0	PCT	20	BW6	0.83
303	31	84	140	0.27	0	PCT	17	02H	-0.12
304	31	84	140	0.15	0	PCT	12	02H	0.99
305	31	92	140	0.15	0	PCT	12	02H	0.86
306	31	105	141	0.16	0	PCT	13	09C	-0.28
307	31	78	142	0.35	0	PCT	12	BW4	-0.83
308	31	78	142	0.27	0	PCT	10	BW4	0.83
309	31	78	142	0.3	0	PCT	11	BW5	0.09
310	31	78	142	0.42	0	PCT	14	BW6	-0.76
311	31	82	142	0.56	0	PCT	18	BW6	-0.71
312	31	98	142	0.2	0	PCT	9	09C	-0.43
313	31	105	143	0.32	0	PCT	20	09C	0.74
314	31	113	143	0.38	0	PCT	22	BW9	1.57
315	31	48	144	1.25	0	PCT	37	BW5	-0.95
316	31	48	144	0.5	0	PCT	25	BW5	1.05
317	31	74	144	0.34	0	PCT	20	BW5	0.78
318	31	74	144	0.47	0	PCT	24	BW6	0.78
319	31	78	144	1.35	0	PCT	38	BW4	-0.9
320	31	78	144	0.28	0	PCT	18	BW4	0.03
321	31	78	144	1.02	0	PCT	34	BW4	0.87
322	31	78	144	0.39	0	PCT	22	BW5	-0.75
323	31	78	144	0.64	0	PCT	28	BW5	-0.03
324	31	78	144	0.2	0	PCT	14	BW5	0.77
325	31	78	144	0.3	0	PCT	19	BW6	-0.68
326	31	78	144	1.02	0	PCT	34	BW6	0.92
327	31	95	145	0.42	0	PCT	23	09C	0.7
328	31	81	147	0.35	0	PCT	20	BW6	0.77
329	31	103	147	0.36	0	PCT	21	BW3	0.74

Table D-3
SG31 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
330	31	76	148	0.13	0	PCT	12	BW4	-0.81
331	31	104	148	0.37	0	PCT	14	02C	-0.97
332	31	83	149	0.59	0	PCT	18	BW7	0.94
333	31	101	149	0.32	0	PCT	20	BW7	0.94
334	31	103	149	0.23	0	PCT	16	01H	0.83
335	31	102	150	0.31	0	PCT	12	07H	0.9
336	31	83	155	0.15	0	PCT	7	08C	-0.89
337	31	93	155	0.24	0	PCT	10	02C	-0.91
338	31	44	156	0.13	0	PCT	10	BW5	0.1
339	31	44	156	0.22	0	PCT	17	BW5	0.82
340	31	90	156	0.4	0	PCT	15	01C	0.69
341	31	48	158	0.4	0	PCT	15	BW5	0
342	31	82	158	0.88	0	PCT	33	01C	0.75
343	31	81	159	0.19	0	PCT	8	BW9	1.99
344	31	12	160	0.26	0	PCT	11	03H	1.1
345	31	79	161	0.43	0	PCT	16	02C	0.72
346	31	72	162	0.39	0	PCT	22	02C	-0.84
347	31	18	164	0.25	0	PCT	11	02H	0.85
348	31	60	164	0.44	0	PCT	16	01C	-0.97
349	31	1	167	0.38	0	PCT	20	03C	0.83
350	31	19	167	0.36	0	PCT	13	BW5	-1.11
351	31	19	167	0.58	0	PCT	19	BW5	0.82
352	31	1	169	0.32	0	PCT	18	03C	-0.19
353	31	1	169	0.19	0	PCT	13	03C	0.99
354	31	53	169	0.13	0	PCT	10	01H	0.06
355	31	42	170	0.46	0	PCT	16	01C	0.16
356	31	19	171	0.14	0	PCT	6	BW5	-0.98
357	31	16	172	0.38	0	PCT	15	01C	-0.33
358	31	21	173	0.24	0	PCT	10	BW5	0.97
359	31	25	173	0.24	0	PCT	10	01H	-0.67
360	31	25	173	0.27	0	PCT	11	01H	0.88
361	31	5	175	0.37	0	PCT	15	01C	-0.2

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
1	32	19	3	0.19	0	PCT	12	BW5	-0.87
2	32	19	3	1.24	0	PCT	34	BW5	0.92
3	32	46	6	0.36	0	PCT	16	BW5	-0.86
4	32	29	7	0.33	0	PCT	15	BW5	-0.71
5	32	2	8	0.3	0	PCT	14	BW9	-0.97
6	32	41	9	0.24	0	PCT	12	BW5	-0.35
7	32	44	10	0.23	0	PCT	14	BW5	-0.7
8	32	44	10	0.09	0	PCT	7	BW5	-0.26
9	32	44	10	0.67	0	PCT	26	BW5	1.02
10	32	65	11	0.28	0	PCT	16	01C	0.12
11	32	67	11	0.24	0	PCT	19	BW5	-0.9
12	32	67	11	1.36	0	PCT	35	BW6	-0.8
13	32	67	11	0.46	0	PCT	19	BW6	0.45
14	32	67	11	0.5	0	PCT	20	BW6	0.8
15	32	19	13	0.29	0	PCT	16	05H	0.36
16	32	23	15	0.2	0	PCT	13	BW5	-0.82
17	32	33	15	0.31	0	PCT	18	BW5	-0.82
18	32	44	16	1.25	0	PCT	35	BW5	-0.61
19	32	44	16	0.66	0	PCT	26	BW5	0.8
20	32	80	16	0.16	0	PCT	12	BW9	1.09
21	32	82	16	0.33	0	PCT	15	BW9	-1.37
22	32	35	17	0.21	0	PCT	11	BW5	-0.76
23	32	46	18	0.37	0	PCT	20	BW5	-0.77
24	32	46	18	0.36	0	PCT	19	BW5	0.96
25	32	46	18	0.43	0	PCT	21	07C	0.82
26	32	48	18	1.58	0	PCT	38	BW5	-0.73
27	32	48	18	0.22	0	PCT	14	BW5	0.06
28	32	48	18	0.99	0	PCT	32	BW5	0.96
29	32	62	18	0.33	0	PCT	18	01H	0.76
30	32	43	19	0.21	0	PCT	14	BW9	1.99
31	32	71	19	0.14	0	PCT	11	BW9	1.76
32	32	73	19	0.38	0	PCT	16	08C	-0.96
33	32	81	19	0.13	0	PCT	7	BW9	1.64
34	32	4	20	0.32	0	PCT	18	06C	-0.1
35	32	74	20	0.33	0	PCT	15	BW9	-1.93
36	32	80	20	0.31	0	PCT	18	BW9	1.54
37	32	82	20	0.2	0	PCT	10	BW9	1.75
38	32	90	20	0.31	0	PCT	14	05H	0.79
39	32	90	20	0.65	0	PCT	23	09H	-1.03
40	32	79	21	0.45	0	PCT	23	BW9	1.65
41	32	81	21	0.34	0	PCT	15	BW6	-0.88
42	32	81	21	0.16	0	PCT	9	BW9	1.39
43	32	93	21	0.19	0	PCT	13	04H	0.83

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
44	32	82	22	0.13	0	PCT	7	BW9	-1.81
45	32	82	22	0.28	0	PCT	13	BW9	1.94
46	32	79	23	0.34	0	PCT	19	BW9	1.78
47	32	76	24	0.3	0	PCT	18	BW4	-0.81
48	32	76	24	0.41	0	PCT	22	BW5	-0.91
49	32	76	24	0.44	0	PCT	23	BW6	0.9
50	32	76	24	0.29	0	PCT	18	BW9	1.51
51	32	82	24	0.3	0	PCT	14	BW9	1.81
52	32	19	25	0.68	0	PCT	25	BW5	-0.72
53	32	19	25	0.43	0	PCT	19	BW5	1.1
54	32	69	25	0.54	0	PCT	25	BW6	0.95
55	32	71	25	0.28	0	PCT	17	BW9	1.31
56	32	77	25	0.22	0	PCT	11	BW9	1.86
57	32	79	25	0.42	0	PCT	22	BW6	0.86
58	32	79	25	0.76	0	PCT	30	BW9	1.68
59	32	81	25	0.32	0	PCT	15	BW4	-1.02
60	32	81	25	0.29	0	PCT	14	BW9	1.52
61	32	101	25	0.12	0	PCT	6	BW1	-1.72
62	32	101	25	1.24	0	PCT	32	BW1	2.58
63	32	20	26	0.28	0	PCT	13	BW5	-0.74
64	32	76	26	0.2	0	PCT	14	BW9	1.87
65	32	80	26	0.36	0	PCT	20	08C	-0.78
66	32	82	26	0.2	0	PCT	14	BW5	-0.99
67	32	82	26	0.18	0	PCT	13	BW5	0.86
68	32	82	26	0.32	0	PCT	18	BW6	-0.78
69	32	82	26	0.75	0	PCT	28	BW6	0.75
70	32	82	26	0.38	0	PCT	20	08C	0.96
71	32	1	27	0.45	0	PCT	18	06C	0.7
72	32	23	27	0.27	0	PCT	16	BW5	-1.05
73	32	79	27	0.63	0	PCT	26	BW9	1.92
74	32	81	27	0.25	0	PCT	15	BW4	-1.03
75	32	81	27	0.22	0	PCT	14	BW4	0.65
76	32	81	27	0.26	0	PCT	15	BW5	0.79
77	32	81	27	0.54	0	PCT	24	BW6	0.73
78	32	101	27	0.49	0	PCT	22	BW9	1.85
79	32	4	28	0.37	0	PCT	20	05C	-0.61
80	32	4	28	0.28	0	PCT	17	03C	-0.78
81	32	80	28	0.21	0	PCT	12	BW6	-0.8
82	32	80	28	0.42	0	PCT	19	BW6	0.98
83	32	82	28	0.22	0	PCT	13	BW4	-0.87
84	32	82	28	0.19	0	PCT	11	BW4	0.84
85	32	82	28	0.27	0	PCT	14	BW5	-0.93
86	32	82	28	1.12	0	PCT	33	BW6	0.91

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
87	32	1	29	0.29	0	PCT	13	04C	0.8
88	32	1	29	0.56	0	PCT	21	03C	0.77
89	32	77	29	0.22	0	PCT	13	BW6	-0.73
90	32	77	29	0.73	0	PCT	26	BW6	0.92
91	32	81	29	0.25	0	PCT	14	BW4	0.22
92	32	48	30	0.25	0	PCT	15	BW5	-0.74
93	32	48	30	0.16	0	PCT	12	BW5	0.99
94	32	94	30	0.59	0	PCT	24	09C	0.03
95	32	94	30	0.23	0	PCT	13	09C	0.78
96	32	1	31	0.22	0	PCT	11	05C	-0.36
97	32	1	31	0.28	0	PCT	13	03C	-1.03
98	32	1	31	0.21	0	PCT	10	03C	0.8
99	32	3	31	0.77	0	PCT	27	05C	0.77
100	32	43	31	0.2	0	PCT	13	BW5	-0.84
101	32	107	31	0.3	0	PCT	17	BW1	-1.79
102	32	107	31	0.48	0	PCT	22	BW9	1.85
103	32	109	31	0.31	0	PCT	14	BW1	-1.34
104	32	109	31	0.15	0	PCT	8	BW1	1.19
105	32	4	32	0.26	0	PCT	16	05C	-0.91
106	32	46	32	0.52	0	PCT	21	BW5	-0.67
107	32	46	32	0.14	0	PCT	9	BW5	0.35
108	32	46	32	0.19	0	PCT	11	BW5	0.76
109	32	68	32	0.22	0	PCT	11	BW9	-1.7
110	32	76	32	0.1	0	PCT	6	BW9	-1.98
111	32	33	33	0.4	0	PCT	18	BW5	-0.75
112	32	79	33	0.19	0	PCT	10	BW9	1.38
113	32	81	33	0.52	0	PCT	21	BW5	-0.74
114	32	81	33	0.62	0	PCT	23	BW5	0.9
115	32	81	33	0.25	0	PCT	13	BW9	1.58
116	32	83	33	0.24	0	PCT	12	BW5	0.94
117	32	111	33	0.54	0	PCT	24	BW9	1.74
118	32	46	34	0.37	0	PCT	20	BW5	-0.81
119	32	46	34	0.29	0	PCT	17	BW5	0.97
120	32	82	34	0.15	0	PCT	9	BW9	-1.91
121	32	59	35	0.17	0	PCT	11	BW6	0.16
122	32	59	35	0.94	0	PCT	30	BW6	0.81
123	32	69	35	0.35	0	PCT	19	BW5	0.88
124	32	77	35	0.26	0	PCT	16	BW5	1.02
125	32	83	35	0.16	0	PCT	11	BW3	0.79
126	32	83	35	0.76	0	PCT	28	BW5	0.9
127	32	83	35	0.48	0	PCT	22	BW7	-0.94
128	32	83	35	0.46	0	PCT	22	BW7	0.94
129	32	111	35	0.42	0	PCT	17	09H	-0.9

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
130	32	100	36	0.18	0	PCT	12	BW5	-0.75
131	32	108	36	0.64	0	PCT	26	BW1	1.49
132	32	43	37	0.59	0	PCT	23	BW5	-0.7
133	32	43	37	0.45	0	PCT	20	BW5	0.83
134	32	77	37	0.23	0	PCT	12	BW4	-0.78
135	32	77	37	0.38	0	PCT	17	BW4	0.96
136	32	77	37	0.25	0	PCT	13	BW5	-0.87
137	32	77	37	0.54	0	PCT	21	BW5	0.91
138	32	111	37	0.43	0	PCT	18	BW1	2.01
139	32	117	37	0.29	0	PCT	16	05H	-0.9
140	32	108	38	0.23	0	PCT	11	03H	1.04
141	32	118	38	0.29	0	PCT	16	02H	-0.9
142	32	41	39	0.37	0	PCT	19	BW5	0.93
143	32	115	39	0.17	0	PCT	12	BW9	1.89
144	32	117	39	0.34	0	PCT	15	BW5	-0.86
145	32	44	40	0.52	0	PCT	21	BW5	-0.96
146	32	44	40	0.07	0	PCT	5	BW5	0.54
147	32	44	40	0.25	0	PCT	13	BW5	0.93
148	32	46	40	0.26	0	PCT	13	BW5	0.87
149	32	94	40	0.85	0	PCT	27	BW3	-0.74
150	32	94	40	0.23	0	PCT	12	BW4	-0.96
151	32	94	40	0.22	0	PCT	11	BW5	-0.77
152	32	94	40	0.24	0	PCT	12	BW5	1.14
153	32	94	40	0.22	0	PCT	11	BW6	-0.72
154	32	94	40	0.85	0	PCT	27	BW6	0.97
155	32	81	41	1.33	0	PCT	34	BW5	-0.71
156	32	81	41	1.33	0	PCT	34	BW5	1
157	32	81	41	0.77	0	PCT	26	BW6	-0.85
158	32	81	41	0.16	0	PCT	9	BW6	0.58
159	32	83	41	0.3	0	PCT	14	BW3	0.99
160	32	2	42	0.43	0	PCT	18	05C	-0.97
161	32	76	42	0.28	0	PCT	15	BW6	0.99
162	32	82	42	0.53	0	PCT	23	08C	0.96
163	32	96	42	0.46	0	PCT	19	BW3	-0.76
164	32	96	42	0.23	0	PCT	11	BW3	0.85
165	32	96	42	0.66	0	PCT	23	BW5	-0.85
166	32	114	42	0.44	0	PCT	22	08C	0.74
167	32	113	43	0.22	0	PCT	11	BW9	1.29
168	32	119	43	0.18	0	PCT	13	08C	-0.4
169	32	119	43	0.29	0	PCT	18	08C	0.81
170	32	125	43	0.19	0	PCT	10	04C	0.19
171	32	125	43	0.58	0	PCT	22	03C	0.86
172	32	2	44	0.22	0	PCT	7	03H	0.76

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SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
173	32	22	44	0.2	0	PCT	11	BW5	-0.76
174	32	40	44	0.19	0	PCT	10	BW9	1.59
175	32	126	44	0.32	0	PCT	15	03C	-0.9
176	32	1	45	0.39	0	PCT	16	04C	-0.27
177	32	1	45	0.23	0	PCT	11	04C	0.7
178	32	43	45	0.21	0	PCT	13	BW5	0.74
179	32	67	45	0.52	0	PCT	21	BW5	1.03
180	32	109	45	0.38	0	PCT	19	BW6	-0.7
181	32	127	45	0.33	0	PCT	15	02H	0.92
182	32	127	45	0.3	0	PCT	14	05C	-0.97
183	32	127	45	0.51	0	PCT	20	02C	0.78
184	32	46	46	0.28	0	PCT	16	BW5	1.04
185	32	48	46	0.29	0	PCT	16	BW5	-0.84
186	32	48	46	0.16	0	PCT	11	BW5	0.91
187	32	80	46	0.75	0	PCT	28	08C	-0.94
188	32	1	47	0.29	0	PCT	13	05C	-0.87
189	32	1	47	1.56	0	PCT	36	05C	0.86
190	32	43	47	0.19	0	PCT	10	BW5	-0.88
191	32	77	47	0.24	0	PCT	15	BW4	-0.73
192	32	44	48	0.43	0	PCT	19	BW5	1
193	32	80	48	1.14	0	PCT	32	BW5	-0.74
194	32	126	48	0.3	0	PCT	18	09C	-0.96
195	32	3	49	0.3	0	PCT	18	05C	-0.98
196	32	77	49	0.29	0	PCT	14	BW5	0.98
197	32	79	49	0.24	0	PCT	12	BW6	-0.58
198	32	81	49	0.78	0	PCT	26	BW5	0.98
199	32	81	49	0.47	0	PCT	20	BW6	-0.64
200	32	81	49	0.15	0	PCT	8	BW6	0.43
201	32	81	49	0.27	0	PCT	13	BW6	1.07
202	32	81	49	0.64	0	PCT	23	08C	0.76
203	32	81	49	0.27	0	PCT	13	07C	-0.91
204	32	44	50	0.36	0	PCT	18	BW5	-0.54
205	32	56	50	0.26	0	PCT	15	05C	0.79
206	32	1	51	0.38	0	PCT	16	04C	0.75
207	32	47	51	0.34	0	PCT	16	BW5	0.95
208	32	77	51	0.76	0	PCT	28	BW4	-0.79
209	32	77	51	1.03	0	PCT	32	BW6	-0.77
210	32	77	51	0.3	0	PCT	16	BW6	-0.25
211	32	77	51	0.23	0	PCT	14	BW6	0.8
212	32	83	51	0.26	0	PCT	15	BW7	1.15
213	32	44	52	0.54	0	PCT	22	BW5	-0.77
214	32	44	52	0.38	0	PCT	17	BW5	0.96
215	32	46	52	0.53	0	PCT	21	BW5	-0.79

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
216	32	48	52	0.23	0	PCT	12	BW5	-0.83
217	32	134	52	0.17	0	PCT	12	05H	-1.02
218	32	134	52	0.29	0	PCT	17	BW1	1.58
219	32	134	52	0.27	0	PCT	17	BW2	0.83
220	32	134	52	0.33	0	PCT	19	BW9	1.64
221	32	134	52	0.24	0	PCT	15	08C	-0.93
222	32	1	53	0.28	0	PCT	13	04C	-0.91
223	32	35	53	0.2	0	PCT	13	BW5	-0.79
224	32	35	53	0.26	0	PCT	15	BW5	1.07
225	32	69	53	0.14	0	PCT	9	BW9	1.9
226	32	73	53	0.36	0	PCT	17	BW5	-0.86
227	32	73	53	0.62	0	PCT	24	BW5	0.92
228	32	73	53	1.2	0	PCT	33	BW6	-0.59
229	32	73	53	0.73	0	PCT	26	BW6	0.03
230	32	73	53	0.6	0	PCT	24	BW6	0.84
231	32	36	54	0.29	0	PCT	16	BW5	-0.83
232	32	82	54	0.68	0	PCT	26	BW4	0.64
233	32	114	54	0.54	0	PCT	22	BW7	0.92
234	32	81	55	0.37	0	PCT	18	BW5	0.98
235	32	107	55	0.59	0	PCT	23	BW5	0.09
236	32	107	55	0.56	0	PCT	22	BW5	0.89
237	32	107	55	0.42	0	PCT	19	BW6	-0.89
238	32	129	55	0.41	0	PCT	17	09C	-0.93
239	32	24	56	0.19	0	PCT	10	BW5	-0.96
240	32	52	56	0.55	0	PCT	25	BW6	2.71
241	32	94	56	0.23	0	PCT	13	BW3	-0.81
242	32	94	56	0.37	0	PCT	18	BW4	-0.78
243	32	94	56	0.44	0	PCT	20	BW5	0.85
244	32	51	57	0.28	0	PCT	17	BW6	0.59
245	32	73	57	0.2	0	PCT	13	BW5	-0.7
246	32	73	57	0.16	0	PCT	11	BW5	1.04
247	32	73	57	0.09	0	PCT	7	BW6	0.06
248	32	73	57	0.58	0	PCT	24	BW6	0.46
249	32	73	57	0.89	0	PCT	30	BW6	0.85
250	32	77	57	0.39	0	PCT	19	BW5	-0.76
251	32	77	57	0.24	0	PCT	14	BW6	-0.83
252	32	81	57	0.96	0	PCT	31	BW4	-0.72
253	32	81	57	0.3	0	PCT	17	BW4	0.06
254	32	81	57	0.3	0	PCT	16	BW4	0.82
255	32	81	57	0.36	0	PCT	19	BW5	-0.78
256	32	81	57	0.23	0	PCT	14	BW5	0.83
257	32	81	57	0.13	0	PCT	9	BW6	-0.7
258	32	81	57	0.17	0	PCT	11	BW6	0.46

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
259	32	81	57	0.31	0	PCT	17	BW6	0.95
260	32	83	57	0.66	0	PCT	26	BW3	-0.63
261	32	83	57	0.32	0	PCT	17	BW5	-0.75
262	32	83	57	0.1	0	PCT	8	BW5	0.81
263	32	37	59	0.3	0	PCT	18	BW5	0.6
264	32	43	59	0.32	0	PCT	19	BW5	-0.79
265	32	43	59	0.62	0	PCT	27	BW5	0.92
266	32	83	59	0.37	0	PCT	18	BW7	-0.98
267	32	41	61	0.22	0	PCT	15	BW5	1.09
268	32	77	61	1.01	0	PCT	32	BW4	-0.7
269	32	77	61	0.82	0	PCT	29	BW4	1.06
270	32	133	61	0.47	0	PCT	20	BW3	0.75
271	32	133	61	0.61	0	PCT	23	BW5	0.72
272	32	137	61	0.31	0	PCT	15	09C	-1.03
273	32	41	63	0.22	0	PCT	15	BW9	1.75
274	32	43	63	1.38	0	PCT	38	BW5	0.89
275	32	137	63	0.23	0	PCT	12	09C	-1.06
276	32	44	64	0.41	0	PCT	17	BW5	0.89
277	32	82	64	0.45	0	PCT	21	BW4	-0.67
278	32	82	64	1.16	0	PCT	34	BW4	0.18
279	32	82	64	1.73	0	PCT	40	BW4	1.03
280	32	82	64	0.76	0	PCT	28	BW6	-0.74
281	32	82	64	0.38	0	PCT	19	BW6	0
282	32	82	64	0.3	0	PCT	16	BW6	0.68
283	32	92	64	0.55	0	PCT	23	BW5	0.89
284	32	118	64	0.25	0	PCT	15	04H	0.93
285	32	37	65	0.28	0	PCT	17	BW5	-0.83
286	32	37	65	0.13	0	PCT	10	BW5	0.07
287	32	119	67	0.46	0	PCT	21	09C	0.15
288	32	141	69	0.39	0	PCT	16	BW5	-0.77
289	32	141	69	0.24	0	PCT	11	BW5	0.97
290	32	141	69	0.39	0	PCT	16	BW7	0.75
291	32	77	71	0.37	0	PCT	19	BW4	0.73
292	32	77	71	0.42	0	PCT	20	BW5	0.74
293	32	77	71	0.3	0	PCT	17	BW6	0.77
294	32	139	71	0.41	0	PCT	17	BW2	-0.81
295	32	92	72	0.26	0	PCT	14	BW3	0.78
296	32	92	72	0.37	0	PCT	17	BW5	-0.78
297	32	102	72	0.09	0	PCT	6	BW9	1.84
298	32	130	72	0.18	0	PCT	12	04H	0.86
299	32	141	73	0.2	0	PCT	10	05H	-0.12
300	32	141	73	0.18	0	PCT	9	BW1	-1.99
301	32	135	75	0.19	0	PCT	10	BW2	-0.68

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
302	32	141	75	0.4	0	PCT	17	BW1	1.77
303	32	67	77	0.26	0	PCT	17	BW9	-1.07
304	32	143	77	0.36	0	PCT	15	BW2	-0.72
305	32	110	78	0.38	0	PCT	18	BW6	-0.73
306	32	81	79	0.21	0	PCT	13	BW4	-0.63
307	32	81	79	0.44	0	PCT	20	BW4	0.91
308	32	112	80	0.23	0	PCT	14	BW3	-0.84
309	32	112	80	0.12	0	PCT	8	BW3	0.93
310	32	105	83	0.29	0	PCT	16	08C	0.83
311	32	143	83	0.16	0	PCT	8	BW8	0.87
312	32	108	86	0.28	0	PCT	16	09C	-0.82
313	32	128	86	0.21	0	PCT	13	09C	0.84
314	32	71	87	0.22	0	PCT	15	BW9	0.94
315	32	83	87	0.27	0	PCT	16	BW9	-1.57
316	32	143	87	0.17	0	PCT	9	09H	0.78
317	32	105	89	0.42	0	PCT	19	BW5	0.84
318	32	117	89	0.23	0	PCT	13	BW4	-0.8
319	32	143	89	0.28	0	PCT	17	09H	0.86
320	32	145	89	0.32	0	PCT	18	BW4	-0.83
321	32	145	89	0.47	0	PCT	23	BW7	-0.72
322	32	145	89	0.11	0	PCT	9	BW7	-0.03
323	32	145	89	0.86	0	PCT	31	BW8	-0.84
324	32	145	89	0.65	0	PCT	27	BW8	0.69
325	32	145	89	0.34	0	PCT	19	08C	-1.01
326	32	145	89	0.41	0	PCT	21	08C	0.79
327	32	67	91	0.05	0	PCT	5	BW9	3.43
328	32	81	91	0.29	0	PCT	17	BW4	0.78
329	32	81	91	0.2	0	PCT	13	BW5	0.84
330	32	81	91	0.3	0	PCT	17	BW6	-0.69
331	32	111	91	0.34	0	PCT	19	08C	0.69
332	32	119	91	0.54	0	PCT	24	08C	-0.99
333	32	66	92	0.1	0	PCT	6	BW9	-1.47
334	32	66	92	0.05	0	PCT	3	BW9	0.23
335	32	144	92	0.23	0	PCT	14	08C	0.71
336	32	65	93	0.06	0	PCT	5	BW9	3.77
337	32	69	93	0.09	0	PCT	6	BW9	-0.28
338	32	81	93	0.31	0	PCT	16	BW4	-0.73
339	32	81	93	0.31	0	PCT	16	BW4	0.88
340	32	83	93	0.27	0	PCT	14	04H	0.87
341	32	64	94	0.14	0	PCT	8	BW9	3.46
342	32	68	94	0.22	0	PCT	11	BW9	3.85
343	32	76	94	0.38	0	PCT	18	08C	-0.87
344	32	98	94	0.22	0	PCT	14	BW9	2.95

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
345	32	79	95	0.23	0	PCT	15	BW4	-0.64
346	32	79	95	0.22	0	PCT	14	BW4	0.92
347	32	145	95	0.7	0	PCT	24	BW8	-0.71
348	32	145	95	0.28	0	PCT	13	BW8	0.93
349	32	64	96	0.16	0	PCT	9	BW9	3.77
350	32	66	96	0.47	0	PCT	19	BW1	1.85
351	32	68	96	0.15	0	PCT	8	BW9	0.48
352	32	67	97	0.31	0	PCT	17	02H	-0.86
353	32	67	97	0.09	0	PCT	7	BW9	3.98
354	32	81	97	0.16	0	PCT	10	BW4	0.27
355	32	81	97	0.63	0	PCT	24	BW4	0.85
356	32	81	97	0.18	0	PCT	11	BW5	-0.76
357	32	81	97	0.84	0	PCT	28	BW5	0.95
358	32	81	97	0.25	0	PCT	14	BW6	-0.82
359	32	81	97	0.16	0	PCT	10	BW9	-0.34
360	32	68	98	0.04	0	PCT	3	BW9	-0.07
361	32	72	98	0.32	0	PCT	16	BW9	0.12
362	32	79	99	0.49	0	PCT	23	BW4	-0.71
363	32	79	99	0.2	0	PCT	13	BW5	-0.27
364	32	79	99	0.16	0	PCT	11	BW5	0.9
365	32	68	100	0.05	0	PCT	3	BW9	1.98
366	32	144	100	0.24	0	PCT	15	BW9	-1.96
367	32	125	101	0.11	0	PCT	8	02H	0.48
368	32	68	102	0.36	0	PCT	16	BW9	1.97
369	32	143	103	0.44	0	PCT	18	BW9	-1.81
370	32	114	106	0.34	0	PCT	17	BW4	-0.25
371	32	77	107	0.29	0	PCT	15	BW4	-0.86
372	32	77	107	0.52	0	PCT	22	BW5	-0.68
373	32	77	107	1.33	0	PCT	35	BW5	0.13
374	32	77	107	1.48	0	PCT	37	BW5	1
375	32	77	107	0.51	0	PCT	22	BW6	-0.75
376	32	77	107	0.72	0	PCT	26	BW6	-0.12
377	32	83	107	0.37	0	PCT	18	BW3	-1.06
378	32	119	107	0.33	0	PCT	17	08C	-1
379	32	92	108	0.28	0	PCT	16	06C	-0.77
380	32	77	109	0.61	0	PCT	26	BW6	0.84
381	32	113	109	0.7	0	PCT	27	BW3	0.9
382	32	115	109	0.15	0	PCT	10	BW8	-0.96
383	32	115	109	0.24	0	PCT	14	BW8	0.98
384	32	50	110	2.18	0	PCT	42	BW5	-0.93
385	32	50	110	0.27	0	PCT	13	BW5	0.96
386	32	82	110	0.25	0	PCT	14	BW5	-0.8
387	32	82	110	0.22	0	PCT	13	BW6	0.7

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
388	32	37	111	0.43	0	PCT	21	BW5	1.06
389	32	41	111	1.47	0	PCT	38	BW5	0.79
390	32	99	111	0.34	0	PCT	18	BW3	0.52
391	32	32	112	0.12	0	PCT	7	BW5	-0.75
392	32	32	112	0.41	0	PCT	17	BW5	0.89
393	32	36	112	0.19	0	PCT	10	BW5	-0.81
394	32	38	112	0.35	0	PCT	16	05C	-0.98
395	32	42	112	0.3	0	PCT	14	BW5	-0.74
396	32	42	112	0.31	0	PCT	14	BW5	0.03
397	32	42	112	0.25	0	PCT	12	BW5	0.66
398	32	76	112	0.2	0	PCT	13	03H	-0.77
399	32	82	112	0.18	0	PCT	12	BW6	0.86
400	32	100	112	0.33	0	PCT	17	08C	0.47
401	32	114	112	0.31	0	PCT	16	BW3	0.87
402	32	81	113	0.69	0	PCT	26	BW4	0.81
403	32	135	113	0.65	0	PCT	23	BW8	0.09
404	32	98	114	0.32	0	PCT	16	08C	0.61
405	32	25	115	0.16	0	PCT	9	BW5	-0.89
406	32	123	115	0.27	0	PCT	15	08C	-1.16
407	32	123	115	0.17	0	PCT	11	08C	0.73
408	32	127	115	0.29	0	PCT	13	08C	-0.31
409	32	40	116	0.41	0	PCT	17	BW5	1.04
410	32	46	116	0.77	0	PCT	26	BW5	1.07
411	32	106	116	0.32	0	PCT	16	BW7	-0.6
412	32	19	117	0.75	0	PCT	28	BW5	-0.96
413	32	29	117	0.38	0	PCT	20	06C	0.71
414	32	77	117	0.45	0	PCT	21	BW4	0.96
415	32	77	117	1.2	0	PCT	35	BW6	-0.49
416	32	77	117	0.69	0	PCT	26	BW6	0.83
417	32	133	117	0.46	0	PCT	18	BW3	1.02
418	32	135	117	0.37	0	PCT	16	01C	0.68
419	32	74	118	0.79	0	PCT	29	BW4	-0.89
420	32	74	118	1.14	0	PCT	34	BW5	-0.77
421	32	74	118	0.26	0	PCT	16	BW6	-0.82
422	32	74	118	0.39	0	PCT	20	BW6	0.7
423	32	2	122	0.24	0	PCT	10	01C	0.86
424	32	40	122	0.32	0	PCT	17	BW5	-0.79
425	32	40	122	0.27	0	PCT	15	BW5	0.89
426	32	104	122	0.37	0	PCT	22	BW3	-0.86
427	32	113	123	0.39	0	PCT	23	BW3	0.84
428	32	37	125	0.29	0	PCT	15	BW5	-0.9
429	32	81	125	0.23	0	PCT	13	BW4	0.83
430	32	127	125	0.27	0	PCT	13	06C	-0.83

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
431	32	133	125	0.5	0	PCT	23	04C	1.08
432	32	133	125	0.27	0	PCT	16	02C	1.08
433	32	2	126	0.4	0	PCT	14	05C	-0.88
434	32	41	127	0.43	0	PCT	20	BW5	0.94
435	32	131	127	0.34	0	PCT	19	BW1	1.65
436	32	22	128	0.23	0	PCT	12	02H	0.72
437	32	82	128	0.21	0	PCT	12	BW5	-0.7
438	32	82	128	0.8	0	PCT	27	BW5	0.74
439	32	82	128	0.47	0	PCT	20	BW6	0.85
440	32	43	129	0.25	0	PCT	13	BW5	-0.97
441	32	43	129	0.26	0	PCT	14	BW5	0.83
442	32	81	129	0.27	0	PCT	14	08H	-0.73
443	32	83	131	0.36	0	PCT	19	BW7	0.95
444	32	125	131	0.35	0	PCT	19	02C	0.79
445	32	126	132	0.22	0	PCT	14	10H	-1.04
446	32	126	132	0.32	0	PCT	18	02C	-0.8
447	32	111	133	0.3	0	PCT	14	BW3	0.75
448	32	123	133	0.27	0	PCT	13	03C	0.83
449	32	125	133	0.26	0	PCT	16	BW4	-0.89
450	32	100	134	0.22	0	PCT	11	07C	-0.06
451	32	1	135	0.29	0	PCT	17	04C	0.8
452	32	92	136	0.35	0	PCT	17	BW4	-0.8
453	32	92	136	0.38	0	PCT	18	07C	0.8
454	32	109	137	0.55	0	PCT	24	08C	0.8
455	32	41	139	0.47	0	PCT	22	BW5	0.9
456	32	79	139	0.44	0	PCT	21	08C	-0.25
457	32	79	139	0.13	0	PCT	10	08C	0.74
458	32	80	140	0.37	0	PCT	18	BW9	1.63
459	32	84	140	0.24	0	PCT	13	BW9	-1.99
460	32	23	141	0.26	0	PCT	15	03H	0.85
461	32	37	141	0.35	0	PCT	18	BW5	-0.82
462	32	81	141	0.3	0	PCT	16	08C	-0.28
463	32	109	141	0.34	0	PCT	18	BW5	0.96
464	32	50	142	0.43	0	PCT	20	BW5	-0.79
465	32	66	142	0.34	0	PCT	18	08C	0.85
466	32	106	142	0.25	0	PCT	15	09H	0.79
467	32	75	143	0.24	0	PCT	14	04C	-0.12
468	32	105	143	0.62	0	PCT	26	09H	-0.77
469	32	105	143	0.25	0	PCT	16	09H	0.13
470	32	105	143	0.45	0	PCT	22	BW3	0.89
471	32	105	143	0.33	0	PCT	18	BW6	-0.67
472	32	113	143	0.27	0	PCT	16	04C	-1.05
473	32	2	144	0.22	0	PCT	11	05C	-0.44

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
474	32	96	144	0.42	0	PCT	21	08C	-1.11
475	32	104	144	0.25	0	PCT	16	04H	0.66
476	32	45	145	1.05	0	PCT	32	BW5	-1.02
477	32	45	145	0.63	0	PCT	25	BW5	0.67
478	32	81	145	0.3	0	PCT	15	08H	-0.83
479	32	109	145	0.28	0	PCT	16	09H	0.89
480	32	84	146	0.22	0	PCT	14	BW9	-1.58
481	32	108	146	0.23	0	PCT	14	08C	-0.87
482	32	47	147	0.39	0	PCT	19	BW5	-0.87
483	32	47	147	0.53	0	PCT	25	BW5	1
484	32	91	147	0.34	0	PCT	18	09C	-0.87
485	32	103	147	0.36	0	PCT	20	09C	-1.1
486	32	82	148	0.35	0	PCT	17	BW4	-0.93
487	32	41	149	1.77	0	PCT	39	BW5	1
488	32	43	149	0.51	0	PCT	23	BW5	0.78
489	32	49	149	0.13	0	PCT	9	BW5	-0.45
490	32	49	149	0.9	0	PCT	30	BW5	0.96
491	32	101	149	0.54	0	PCT	24	09C	-1.13
492	32	101	149	0.62	0	PCT	23	09C	0.78
493	32	103	149	0.37	0	PCT	20	02H	0.74
494	32	103	149	0.93	0	PCT	32	09H	-0.18
495	32	103	149	0.27	0	PCT	17	09H	0.98
496	32	80	150	0.23	0	PCT	14	08H	0.92
497	32	82	150	0.42	0	PCT	20	BW9	1.71
498	32	41	151	0.28	0	PCT	15	BW5	0.22
499	32	43	151	0.42	0	PCT	19	BW5	0.71
500	32	75	151	0.24	0	PCT	12	05C	-0.28
501	32	84	152	0.19	0	PCT	14	BW9	-1.85
502	32	96	152	0.27	0	PCT	14	09H	-0.95
503	32	96	152	0.17	0	PCT	9	09H	-0.12
504	32	40	154	0.61	0	PCT	24	BW5	0.69
505	32	37	155	0.59	0	PCT	23	BW5	-0.82
506	32	41	155	0.2	0	PCT	12	BW5	0.98
507	32	66	156	0.34	0	PCT	16	08C	-0.31
508	32	37	157	0.47	0	PCT	21	BW5	-0.68
509	32	37	157	0.27	0	PCT	15	BW5	0.98
510	32	55	157	0.24	0	PCT	14	08C	0.86
511	32	85	157	0.34	0	PCT	19	09C	-1.06
512	32	38	158	0.34	0	PCT	17	BW5	0.98
513	32	86	158	0.54	0	PCT	21	BW9	1.57
514	32	86	158	0.13	0	PCT	7	09C	-0.15
515	32	86	158	0.25	0	PCT	12	09C	0.79
516	32	59	159	0.26	0	PCT	14	06C	0.92

Table D-4
SG32 Service Induced Indications
Wear at Supports – RF17

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1
517	32	79	159	0.46	0	PCT	22	BW9	1.79
518	32	83	159	1.22	0	PCT	35	BW9	1.94
519	32	24	160	0.32	0	PCT	17	03H	0.76
520	32	70	160	0.2	0	PCT	11	08C	-0.9
521	32	70	160	0.58	0	PCT	22	08C	0.76
522	32	78	160	0.58	0	PCT	22	BW9	1.42
523	32	80	160	0.88	0	PCT	31	BW9	1.81
524	32	1	161	0.22	0	PCT	11	07C	0.06
525	32	76	162	0.22	0	PCT	11	BW1	-1.69
526	32	76	162	0.45	0	PCT	19	BW9	1.42
527	32	14	164	0.41	0	PCT	17	04C	-0.41
528	32	61	165	0.26	0	PCT	13	06C	0.65
529	32	41	167	0.44	0	PCT	19	BW5	1
530	32	45	167	0.65	0	PCT	24	BW5	-0.65
531	32	14	168	0.16	0	PCT	9	03H	0.89
532	32	49	169	0.1	0	PCT	6	07H	-1.03
533	32	49	169	0.29	0	PCT	14	07H	0.82
534	32	53	169	0.35	0	PCT	16	01C	0.03
535	32	34	170	0.41	0	PCT	18	BW5	0.96
536	32	18	174	0.41	0	PCT	20	02C	-0.78
537	32	20	174	0.24	0	PCT	12	BW5	-0.9
538	32	1	175	0.41	0	PCT	12	01H	-0.03
539	32	3	175	0.2	0	PCT	6	01H	-0.88
540	32	11	175	0.76	0	PCT	28	BW1	1.89

Table D-5
SG31 Service Induced Indications
Historical Volumetric

Count	SG	ROW	COL	VOLTS	DEG	IND	PER	LOCN	INCH1	CRLEN	CRWID	CEG
1	31	2	156	0.23	115	VOL	27	TSC	0.68	0.19	0.47	72

Table E-2
SG31 Plugging List – RF17

Count	SG	Row	Col	Reason
1	31	64	10	Administrative - CUD
2	31	10	12	Egg-Crate SAI
3	31	27	19	Batwing SAI
4	31	31	31	Egg-Crate SAI
5	31	46	32	Egg-Crate SAI
6	31	88	32	Egg-Crate SAI
7	31	31	35	Egg-Crate SAI
8	31	42	36	Egg-Crate SAI
9	31	27	37	Egg-Crate SAI
10	31	119	37	Freespan Ding SAI
11	31	25	47	Freespan SAI
12	31	50	48	Egg-Crate SAI
13	31	50	50	Egg-Crate SAI
14	31	95	55	Freespan SAI
15	31	35	57	Egg-Crate SAI
16	31	30	58	Egg-Crate SAI
17	31	38	58	Egg-Crate SAI
18	31	40	58	Egg-Crate SAI
19	31	59	61	Egg-Crate SAI
20	31	44	64	Tubesheet SAI
21	31	40	66	Egg-Crate SAI
22	31	72	72	Egg-Crate SAI
23	31	71	73	Egg-Crate SAI
24	31	75	73	Egg-Crate SAI
25	31	59	77	Egg-Crate SAI
26	31	74	88	Batwing SAI
27	31	86	88	Egg-Crate SAI
28	31	58	94	Egg-Crate SAI
29	31	76	98	Tubesheet SCI
30	31	75	101	Egg-Crate SAI
31	31	68	102	Tubesheet SCI
32	31	82	104	Egg-Crate SAI
33	31	86	106	Tubesheet SCI
34	31	108	108	Egg-Crate SAI
35	31	47	113	Tubesheet SAI
36	31	49	113	Tubesheet SAI
37	31	18	114	Tubesheet SAI
38	31	14	116	Egg-Crate SAI
39	31	16	116	Tubesheet SAI
40	31	116	116	Freespan SAI
41	31	21	117	Egg-Crate SAI
42	31	26	118	Tubesheet SAI
43	31	19	119	Egg-Crate SAI
44	31	21	119	Egg-Crate SAI
45	31	24	120	Egg-Crate SAI
46	31	77	123	Egg-Crate SAI

Table E-2
SG31 Plugging List – RF17

Count	SG	Row	Col	Reason
47	31	2	124	Egg-Crate SAI
48	31	48	124	Egg-Crate SAI
49	31	9	125	Freespan SAI
50	31	51	131	Egg-Crate SAI
51	31	16	140	Egg-Crate SAI
52	31	9	143	Egg-Crate SAI
53	31	31	143	Egg-Crate SAI
54	31	34	144	Tubesheet SAI
55	31	21	147	Egg-Crate SAI
56	31	101	147	Egg-Crate SAI
57	31	36	152	Egg-Crate SAI
58	31	29	159	Egg-Crate SAI
59	31	8	160	Egg-Crate SAI
60	31	10	162	Egg-Crate SAI
61	31	54	164	Batwing SAI

Table E-3
SG32 Plugging List – RF17

Count	SG	Row	Col	Reason
1	32	7	35	Egg-Crate SAI
2	32	89	35	Egg-Crate SAI
3	32	92	36	Batwing SAI
4	32	27	37	Egg-Crate SAI
5	32	28	50	Egg-Crate SAI
6	32	93	57	Egg-Crate SAI
7	32	82	64	Support Wear
8	32	76	76	Egg-Crate SAI
9	32	68	94	Egg-Crate SAI
10	32	98	98	Freespan SAI
11	32	64	102	Egg-Crate SAI
12	32	50	110	Support Wear
13	32	39	111	Tubesheet SAI
14	32	71	111	Tubesheet SAI
15	32	54	114	Tubesheet SAI
16	32	39	115	Tubesheet SAI
17	32	12	116	Egg-Crate SAI
18	32	42	120	Tubesheet SCI
19	32	55	123	Egg-Crate SAI
20	32	101	127	Egg-Crate SAI
21	32	11	131	Egg-Crate SAI
22	32	92	132	Egg-Crate SAI
23	32	7	137	Egg-Crate SAI
24	32	20	152	Egg-Crate SAI
25	32	22	152	Egg-Crate SAI