



FEB 26 2002

LR-N02-0055

U. S. Nuclear Regulatory Commission
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Gentlemen:

**TECHNICAL SPECIFICATION 6.9.1.5 ANNUAL REPORTS
SALEM AND HOPE CREEK GENERATING STATIONS
DOCKET NOS. 50-272, 50-311, AND 50-354**

PSEG Nuclear LLC hereby submits the enclosed Annual Reports for the Salem and Hope Creek Generating Stations, in accordance with Technical Specifications 6.9.1.5.a and 6.9.1.5.b of Appendix A to Facility Operating Licenses Nos. DPR-70, DPR-75, and NPF-57.

Pursuant to Technical Specification 6.9.1.5.a, Enclosures 1, 2, and 3 are submitted for Salem Unit 1, Salem Unit 2, and Hope Creek, respectively. These enclosures contain 2001 data on the number of station, utility, and other personnel receiving exposures greater than 100 mrem/year and the collective exposures according to work and job function for each unit.

Enclosure 4 provides information pursuant to the requirements of Technical Specification 6.9.1.5.b of Appendix A to Facility Operating License No. DPR-75. The information pertains to the Salem Unit 1 steam generator tube inspection completed in 2001.

Pursuant to the requirements of Technical Specification 6.9.1.5.b of Appendix A to Facility Operating License No. NPR-57, the following information is provided concerning the Hope Creek Safety/Relief Valves (SRVs). During 2001, the SRVs were not challenged by any overpressurization events or transients that would have required the valves to respond. SRV testing was performed on installed SRVs during 2001 and the results were provided to the NRC in Hope Creek LER 01-007-00, sent via letter LRN-01-0415, dated, December 13, 2001.

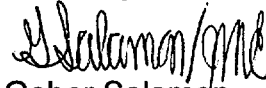
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Should you have any questions or comments regarding this submittal, please contact Mr. Michael G. Mosier at 856-339-5434.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Salamon/gmc".

Gabor Salamon
Manager – Nuclear Safety and Licensing

Enclosures (4)

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ENCLOSURE 1

ANNUAL REPORT

Salem 1 - Year of 2001

NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION

Work & Job Function	All Personnel (> 100 mrem)			Total Man-Rem		
	Station Employees	Utility Employees	Contractors and Others	Station Employees	Utility Employees	Contractors and Others
RX OPERATION & SURVEILL						
-MAINTENANCE	57	0	10	17.300	0.023	4.120
-OPERATIONS PERSONNEL	29	0	0	7.733	0.000	0.628
-HEALTH PHYSICS	41	0	30	12.611	0.000	10.871
-SUPERVISORY PERSONNEL	16	0	164	6.648	0.221	67.072
-ENGINEERING PERSONNEL	0	0	0	0.005	0.000	0.012
ROUTINE MAINTENANCE						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
INSERVICE INSPECTION						
-MAINTENANCE	0	0	3	0.117	0.000	0.913
-OPERATIONS PERSONNEL	5	0	0	0.888	0.000	0.001
-HEALTH PHYSICS	0	0	0	0.123	0.000	0.000
-SUPERVISORY PERSONNEL	3	0	34	1.140	0.086	10.722
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
SPECIAL MAINTENANCE						
-MAINTENANCE	0	0	0	0.349	0.000	0.005
-OPERATIONS PERSONNEL	0	0	0	0.007	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	12	0.215	0.011	7.121
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
WASTE PROCESSING						
-MAINTENANCE	0	0	0	0.304	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.090	0.000	0.002
-HEALTH PHYSICS	5	0	1	1.472	0.000	0.520
-SUPERVISORY PERSONNEL	0	0	0	0.005	0.000	0.002
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
REFUELING						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000

ANNUAL REPORT

Salem 1 - Year of 2001

NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION

Work & Job Function	All Personnel (> 100 mrem)			Total Man-Rem		
	Station Employees	Utility Employees	Contractors and Others	Station Employees	Utility Employees	Contractors and Others
TOTALS						
-MAINTENANCE	57	0	13	18.071	0.023	5.038
-OPERATIONS PERSONNEL	34	0	0	8.719	0.000	0.631
-HEALTH PHYSICS	46	0	31	14.206	0.000	11.390
-SUPERVISORY PERSONNEL	19	0	210	8.008	0.318	84.917
-ENGINEERING PERSONNEL	0	0	0	0.005	0.000	0.012
GRAND TOTALS	156	0	254	49.009	0.341	101.989
TOTAL DOSE						151.338

ENCLOSURE 2

ANNUAL REPORT
Salem 2 - Year of 2001
NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION

Work & Job Function	All Personnel (> 100 mrem)			Total Man-Rem		
	Station Employees	Utility Employees	Contractors and Others	Station Employees	Utility Employees	Contractors and Others
RX OPERATION & SURVEILL						
-MAINTENANCE	0	0	0	1.866	0.003	0.014
-OPERATIONS PERSONNEL	0	0	0	1.309	0.000	0.016
-HEALTH PHYSICS	1	0	0	0.779	0.000	0.026
-SUPERVISORY PERSONNEL	0	0	0	0.462	0.022	0.407
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.002
ROUTINE MAINTENANCE						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
INSERVICE INSPECTION						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.013	0.000	0.023
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
SPECIAL MAINTENANCE						
-MAINTENANCE	0	0	0	0.001	0.000	0.036
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.018	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.008	0.000	0.523
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
WASTE PROCESSING						
-MAINTENANCE	0	0	0	0.064	0.000	0.000
-OPERATIONS PERSONNEL	0	0	1	0.011	0.000	0.188
-HEALTH PHYSICS	1	0	1	0.461	0.000	0.238
-SUPERVISORY PERSONNEL	0	0	1	0.007	0.000	0.259
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
REFUELING						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000

ANNUAL REPORT

Salem 2 - Year of 2001

NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION

Work & Job Function	All Personnel (> 100 mrem)			Total Man-Rem		
	Station Employees	Utility Employees	Contractors and Others	Station Employees	Utility Employees	Contractors and Others
TOTALS						
-MAINTENANCE	0	0	0	1.931	0.003	0.050
-OPERATIONS PERSONNEL	0	0	1	1.320	0.000	0.204
-HEALTH PHYSICS	2	0	1	1.258	0.000	0.263
-SUPERVISORY PERSONNEL	0	0	1	0.490	0.022	1.213
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.002
GRAND TOTALS	2	0	3	4.999	0.025	1.732
TOTAL DOSE						6.756

ENCLOSURE 3

ANNUAL REPORT
 Hope Creek - Year of 2001
 NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION

Work & Job Function	All Personnel (> 100 mrem)			Total Man-Rem		
	Station Employees	Utility Employees	Contractors and Others	Station Employees	Utility Employees	Contractors and Others
RX OPERATION & SURVEILL						
-MAINTENANCE	105	2	9	29.402	0.949	3.300
-OPERATIONS PERSONNEL	54	0	2	16.808	0.000	0.678
-HEALTH PHYSICS	40	0	31	16.721	0.000	9.767
-SUPERVISORY PERSONNEL	50	9	197	13.982	2.588	67.107
-ENGINEERING PERSONNEL	0	0	0	0.010	0.000	0.036
ROUTINE MAINTENANCE						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
INSERVICE INSPECTION						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
SPECIAL MAINTENANCE						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
WASTE PROCESSING						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
REFUELING						
-MAINTENANCE	0	0	0	0.000	0.000	0.000
-OPERATIONS PERSONNEL	0	0	0	0.000	0.000	0.000
-HEALTH PHYSICS	0	0	0	0.000	0.000	0.000
-SUPERVISORY PERSONNEL	0	0	0	0.000	0.000	0.000
-ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000

ANNUAL REPORT

Hope Creek - Year of 2001

NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION

Work & Job Function	All Personnel (> 100 mrem)			Total Man-Rem		
	Station Employees	Utility Employees	Contractors and Others	Station Employees	Utility Employees	Contractors and Others
TOTALS						
-MAINTENANCE	105	2	9	29.402	0.949	3.300
-OPERATIONS PERSONNEL	54	0	2	16.808	0.000	0.678
-HEALTH PHYSICS	40	0	31	16.721	0.000	9.767
-SUPERVISORY PERSONNEL	50	9	197	13.982	2.588	67.107
-ENGINEERING PERSONNEL	0	0	0	0.010	0.000	0.036
GRAND TOTALS	249	11	239	76.923	3.537	80.887
TOTAL DOSE						161.347

ENCLOSURE 4

Salem Unit 1 and Unit 2 2001 Steam Generator Tube In-Service Inspection Report

In Spring 2001, Framatome Advanced Nuclear Products (F ANP) conducted eddy current examinations and performed primary production/resolution data analysis on the Salem Unit 1 steam generators (SG) during the 14th Refueling Outage (1R14). No inspections were performed on Unit 2 during 2001. The next scheduled outage for Unit 2 is in April 2002; therefore, this report only addresses Salem Unit 1. All inspections were performed under the supervision of the station's Steam Generator Group. Zetec Inc. performed secondary production/resolution data analysis. Moretech Inc., provided Independent Qualified Data Analysis and Station Level III oversight.

OVERVIEW

Eddy current data acquisition was performed with the ROGER Manipulator using a dual guide tube tool head. Inspection data was transmitted to F ANP's Lynchburg, VA, and Benicia, CA, data room facility for primary production analysis and to Zetec's Issaquah, WA, data room facility for secondary production analysis. Resolution analysis was performed at the station's off-site data room facility. Primary production analysis of the bobbin coil data was performed manually by F ANP. Secondary production analysis of bobbin coil data was performed using Zetec's automated data analysis system. Both parties (primary and secondary) performed manual analysis of all rotating coil data.

The inspection scope was delineated in the 1R14 Steam Generator Tubing Degradation Assessment. This document identified the degradation mechanisms that have affected or could affect the tubing in the unit's steam generators, identified the inspection scopes and techniques to be used, documented the review of Electric Power Research Institute (EPRI) qualified techniques against site-specific steam generator conditions, and provided structural limits that were used to assess tube integrity requirements. The base eddy current examination scope met Salem Unit 1 Technical Specification requirements. A summary of the base scope follows:

- Full-length bobbin coil inspection of 100% of the in-service tubes in each steam generator.
- Rotating Coil (+ PointTM) exam of 100% of the Row 1 and Row 2 short radius U-bends in each steam generator.
- Rotating Coil (+ PointTM) exam of 50% of the Hot Leg (HL) Top of Tubesheet (TTS) transition regions in 12 and 14 steam generators.
- Rotating Coil (+ PointTM) exam of 100% of the ≥ 5 volt dented HL Tube Support Plate (TSP) intersections, based on 1R13 bobbin coil data.
- Rotating Coil (+ PointTM) exam of 100% of the ≥ 5 volt HL free span dings based on 1R13 bobbin coil data.
- Rotating Coil (+ PointTM) examination of previous tubesheet expansion anomalies.
- Special Interest Rotating Coil (+ PointTM) examinations as delineated in the 1R14 Steam Generator Tubing Degradation Assessment or as required based on the results of the outage's bobbin coil data analysis.

Attachment 6 of the Degradation Assessment provides a summary of the Non Destructive Examination (NDE) techniques utilized during 1R14 for detection (and sizing as applicable) of each degradation mechanism.

In accordance with Revision 5 of the EPRI Pressurized Water Reactor (PWR) Steam Generator Examination Guidelines, the station contracted Independent Qualified Data Analysts (QDA) from Moretech Inc., to verify the resolution process was properly performed and that field calls were properly reported.

Revision 5 of the EPRI PWR Steam Generator Examination Guidelines allows utilities to deviate from specific requirements through a documented technical justification for each deviation. Six technical deviations were implemented for 1R14. All deviations were reviewed and approved by station management. A summary of the deviations is provided below:

- 1R14-01-001 deviated from the voltage normalization requirements specified in Rev. 5 for sizing Anti-Vibration Bar (AVB) wear indications. Revision 5 requires all bobbin examinations to be normalized off of the prime frequency on the four 20% through-wall holes and the voltage normalized to 4.00 volts. The station has historically deviated from this requirement and reports and sizes AVB wear by setting the 50% AVB wear scar to 5.0 volts. Raising the voltage on the AVB reporting channel offers greater consistency for sizing deeper wear scar indications than the lower voltage settings. For the purposes of comparing current data to historical data, the station continues to deviate from the Revision 5 voltage normalization requirement.
- 1R14-01-002 deviated from the calibration requirements for the rotating coil inspections. EPRI Examination Technique Specification Sheet (ETSS) 20511.1, 20510.1, 20409.1, and 96511.2 require calibration on the 40% Inside Diameter (ID) axial and/or circumferential notches. The station calibration standards do not contain a 40% ID axial or circumferential notch therefore calibration is performed utilizing the 20% ID axial and/or circumferential notches. Calibrating on the 20% notches rather than the 40% notches is a deviation in the conservative direction and offers following benefits:
 - Heightens the analysts awareness of the smallest flaw in the calibration standard;
 - Ensures that the 20% ID notch is not set horizontal and as such provides for better detection of smaller ID and OD flaws.
- 1R14-01-003 deviated from requiring all data analysts to pass the Site Specific Performance Demonstration (SSPD). Salem's contracted Level III Data Analyst assisted in the development of the training program and SSPD and, as such, is thoroughly familiar with plant specific data and steam generator tubing conditions. This individual was exempt from taking the SSPD.
- 1R14-01-004 deviated from requiring that production data analysts review overcalls. The station does not feel this requirement adds value to the analysis process. The station would rather have production analysts err on the conservative side and let the more experienced resolution analysts make the final determination.
- 1R14-01-005 deviated from the requirement to perform a 20% eddy current inspection of installed F ANP Inconel-690 rolled plugs based on material properties and industry inspection data.
- 1R14-01-006 deviated from the minimum required Electro-discharge machining (EDM) notches in the rotating coil calibration standards. Revision 5 requires a 100% axial and circumferential notch with a minimum length of 0.375" and a width of 0.003" to 0.006". The stations calibration standards do not contain the 100% circumferential notch that is required for calibration purposes by Revision 5 section 6.2.7.1 and EPRI ETSS's 20510.1, 20511.1 and 20409.1. For the scheduled 1R14 examinations utilizing these techniques, calibrations were performed utilizing the 100% axial notch. This was considered to be acceptable based on the operating experience of second-generation steam generators. Steam generators with thermally treated Alloy 600 tubing are considered second-generation steam generators that

exhibit greater resistance to Primary Water Stress Corrosion Cracking (PWSCC) and Outside Diameter (OD) corrosion mechanisms. Per the EPRI Steam Generator Progress Report, 1000805-R15, no reported circumferential cracking has occurred in thermally treated Alloy 600 tubing therefore for the Rotating Pancake Coil (RPC) examinations performed during 1R14, voltage calibration on the 100% axial notch was evaluated to be acceptable.

Assessment of Examination Results

Consistent with the requirements specified in Nuclear Energy Institute (NEI) 97-06, Steam Generator Program Guidelines, the Unit 1 steam generators met the structural integrity, accident induced leakage and operational leakage performance criteria specified in site procedure SC.SA-AP.ZZ-0042(Q), Steam Generator Program for 1R14. The following table summarizes the number of tubes removed from service in each steam generator by degradation mechanism. In addition, cumulative tube plugging levels are provided.

Modes of Degradation	11 SG	12 SG	13 SG	14 SG	TOTAL
Anti-Vibration Bar Wear	4	11	10	4	29
Loose Part Indications	1	0	0	1	2
Unacceptable Data Quality – Permeability Variation (PVN)	1	0	0	0	1
Unacceptable Data Quality - Low Row U-bend Obstructions	0	1	0	1	2
Unacceptable Data Quality - Preventative Tube Plug	0	0	1	0	1
TOTAL TUBES PLUGGED	6	12	11	6	35
TOTAL TUBES PLUGGED CUMULATIVE	9	15	24	10	58
CUMULATIVE TUBE PLUGGING %	0.160	0.267	0.427	0.178	0.258

Anti-vibration Bar (AVB) Wear

Tube wear at the tube/anti-vibration bar intersections has been occurring for many years in essentially all types of Westinghouse design recirculating steam generators. The mechanism is generally seen in peripheral tube regions but is also periodically observed elsewhere in the tube bundle. AVB wear has typically been the most significant cause of tube plugging to date in Westinghouse design Model F type steam generators. As identified in the 1R14 Degradation Assessment, AVB wear was considered the only active degradation mechanism for the cycle.

AVB wear indications were detected by bobbin probes as part of the 100% full-length inspection. The bobbin coil is qualified to size AVB wear indications per EPRI ETSS 96004.3. AVB wear indications are plugged in accordance with technical specification requirements if bobbin indicates a depth \geq 40% through wall (TW). For Operational Assessment (OA) purposes, tubes with degradation less than 40% TW may be left in service or removed from service depending on the observed growth rate of the AVB wear degradation in each steam generator.

The criterion for calling AVB wear was based on a minimum percent TW depth of 10%. In 1R14, 952 AVB wear indications were reported during the bobbin coil inspection. This compares to a total of 298 indications reported during 1R13 (655 new indications). The table below shows a history of AVB wear indications:

	11 SG	12 SG	13 SG	14 SG
1R13 AVB Wear Indications	65	60	107	66
1R13 Total Tubes with AVB Wear	36	37	64	34
1R14 AVB Wear Indications	176	229	366	181
1R14 Total Tubes with AVB Wear	81	98	144	82

A total of 29 tubes were plugged for this damage mechanism. The table below lists the tubes plugged for AVB wear during 1R14:

S/G	Row	Column	Indication	Location
11	40	17	42%	AVB #5
11	41	52	43%	AVB #3
11	44	21	46%	AVB #2
11	44	78	40%	AVB #4
12	39	67	39%	AVB #3
12	39	105	38%	AVB #5
12	39	106	38%	AVB #4
12	40	102	43%	AVB #3
12	40	103	40%	AVB #4
12	42	99	43%	AVB #3
12	42	102	40%	AVB #3
12	42	103	64%	AVB #4
12	46	82	39%	AVB #4
12	47	99	40%	AVB #5
12	50	28	38%	AVB #5
13	43	58	51%	AVB #3
13	43	84	43%	AVB #3
13	43	100	40%	AVB #3
13	46	61	50%	AVB #4
13	50	83	54%	AVB #3
13	50	95	59%	AVB #3
13	50	95	46%	AVB #5
13	52	90	41%	AVB #4
13	53	90	53%	AVB #4
13	54	70	42%	AVB #3
13	54	70	54%	AVB #4
13	54	74	41%	AVB #4
14	40	18	43%	AVB #5
14	57	25	49%	AVB #2
14	57	25	49%	AVB #3
14	47	60	48%	AVB #5
14	47	72	42%	AVB #3
14	47	72	43%	AVB #4

Based on these results, AVB wear is considered to be active during Cycle 15 in accordance with Section 3.3.2 of the EPRI PWR Steam Generator Examination Guidelines, Revision 5.

Intergranular Attack / Stress Corrosion Cracking (IGA/SCC)

Detection of axial IGA/SCC in freespan dings, non-dented tube support locations and in the sludge pile was accomplished via the 100% full-length bobbin probe examination in each SG. The following bobbin techniques were site qualified for detection of IGA/SCC at these locations:

- ⇒ EPRI ETSS 96007.1 Rev 8, Detection of IGA/Outside Diameter Stress Corrosion Cracking (ODSCC) at non-dented drilled tube support plates.
- ⇒ EPRI ETSS 96008.1 Rev 9, Detection of axial ODSCC at non-dented eggcrate supports and/or sludge pile region.

Potential IGA/SCC bobbin indications received a supplemental rotating probe inspection.

IGA/SCC at expansion transitions, above the tubesheet, at dented locations and within Row 1 and Row 2 U-bends cannot be reliably detected using bobbin probe techniques. Rotating probe techniques were used for detection of IGA/SCC at these locations.

In addition, IGA/SCC at tubesheet expansion anomalies is an area where degradation is likely to occur. For Unit 1, expansion anomalies include under expansions or Expansion Transition Locations (ETL's) and Over Expansions (OXP). An ETL is an area where the tubesheet expansion occurs below the secondary face resulting in an open crevice region where sludge deposits can accumulate. An OXP is an anomaly where the tube was expanded above the tube to tubesheet secondary face, which results in an area of higher stress. All identified expansion anomalies were inspected using a rotating coil technique.

The rotating coil inspections performed during 1R14 for detection of IGA/SCC are summarized below:

- HL TTS - 50% of the tubes in 12 and 14 steam generators. The inspection extent was +2" above to -3" below the top of tubesheet interface.
- 100% inspection of the Row 1 and Row 2 U-bends in each steam generator. These inspections were performed under the Critical Area (C-A) inspection program described in Rev. 5 of the EPRI PWR Steam Generator Examination Guidelines with Row 1 considered the defined C-A and Row 2 the buffer zone. The basis for defining the C-A was industry experience.
- 100% of the ≥ 5 -volt dented HL tube support plate intersections in each steam generator.
- 100% of the ≥ 5 -volt HL freespan dings in each steam generator (HL TTS +0.5" to +2" beyond the 7th HL TSP).
- 100% inspection of tubesheet expansion anomalies.

The following rotating coil techniques were site qualified for detection of IGA/SCC:

- EPRI ETSS 20510.1, Rev 1, + Point™, Circumferential Primary Water Stress Corrosion Cracking (PWSCC)
- EPRI ETSS 20511.1, Rev 1, + Point™, Circumferential PWSCC
- EPRI ETSS 20409.1, Rev 3, + Point™, Axial and Circumferential ODSCC
- EPRI ETSS 96511.2, Rev 10, + Point™, PWSCC (U-bend only)

There was no IGA/SCC reported during the inspections; therefore, this damage mechanism is considered **NON**-active for Cycle 15. These findings are consistent with that seen in the industry for similar design steam generators with low operating time.

Freespan Indications

Both Manufacturers Burnish Marks (MBMs) and Free Span Differential (FSD) signals are the result of a light buffing of the tubes to remove small imperfections on the tubing outside diameter (OD). The two are analogous, with the exception that the FSDs are readily discernable in the differential channels, whereas MBMs are called in the absolute channel. During 1R14, the station used the Free Span Bobbin Coil Indication flowchart in ETSS #1A – 1R14 Bobbin Analysis for reporting MBMs and FSDs. Resolution analysts performed historical reviews of MBMs and FSDs to determine if the signals had “changed” by more than 15 degrees or more than 0.5 volts since the first In-Service post steam generator replacement (1R13). Confirmation of “change” required supplemental rotating coil testing. A total of three locations were inspected with rotating coil during 1R14 and anomalies were found.

Loose Parts

All bobbin coil data was analyzed for loose part wear. There were no tubes identified as having bobbin coil loose part indications.

Two indications of loose part wear were detected during the low row U-bend + Point™ inspections. The details of each are described below:

- R1C3 in 11 SG had indication of wear that was believed to be associated with a loose part located above the 7th Cold Leg (CL) tube support that was aligned with one of the tube support plate broach contacts. For structural integrity purposes, this indication was sized with + Point™ in accordance with EPRI ETSS 96910.1, Revision 4. The estimated depth of the wear indication was 2% TW. This anomaly was evaluated per F ANP Condition Report 6009106 and station Order 80027745. This tube was removed from service and no stabilization was required.
- R2C23 in 14 SG had indication of wear that was believed to be associated with a loose part located below the 7th cold leg tube support that was aligned between two of the tube support broach contacts coincident with an opening. For structural integrity purposes, this indication was sized with + Point™ in accordance with EPRI ETSS EPRI ETSS 96910.1, Revision 4. The estimated depth of the wear indication was 12% TW. This anomaly was evaluated per F ANP Condition Report 6009095 and station Order 70016253. This tube was removed from service and no stabilization was required.

Two tubes in 14 SG, R42C62 and R42C63, had possible loose part calls reported during the HL TTS inspections. No detectable wear was present in the area of the loose part calls. A secondary side visual inspection was not performed. This condition was evaluated per F ANP Condition Report 6009100 and station Order 80028087. These were not removed from service and will be monitored for wear during subsequent inspections.

In summary, a total of two tubes were repaired (plugged) due to loose part indications.

Data Quality

Data quality is an important parameter influencing the overall performance of a steam generator tube examination system as it has an effect on probability of detection of degradation, sizing uncertainties, axial and azimuthal location uncertainties and orientation uncertainties. Through these uncertainties, data quality also becomes a key factor in data repeatability from one inspection to another. Greater emphasis was placed on data quality during 1R14 in light of the Indian Point-2 tube rupture event. Four tubes were removed from service due to data quality concerns as summarized below:

- 1 tube was removed from service due to unacceptable noise caused by tubing characteristics. This type of noise is typically referred to as permeability variations or PVN.
- 2 tubes removed from service for being obstructed (OBS) to a 0.520" single coil diameter + Point™ probe. Both of these tubes were able to be inspected with a bobbin coil probe; however, they could not be successfully inspected with a surface riding + Point™ probe.
- One tube was removed from service due to the 0.520" diameter single coil + Point™ probe skipping or stalling in the low row U-bend region. Acceptable data could not be obtained in the area of interest. This tube was preventatively plugged (PTP).

The table below summarizes the tubes plugged for data quality concerns:

SG	Tube ID	Indication	Location
11	R58C48	PVN	05H +6.69" to +32.09"
12	R1C43	OBS	07H +2.17"
13	R1C4	PTP	07H +5.81"
14	R1C79	OBS	07H +5.74"

Tube Plug Inspections

During 1R14, F ANP and station steam generator personnel performed a visual inspection of installed steam generator tube plugs to identify any abnormalities that may require further actions. In accordance with station procedures, steam generator tube plugs were visually examined for signs of leakage such as boron rings or moisture and to verify they were installed in their proper location. There were no anomalies noted during these inspections.

Technical Deviation 1R14-01-005 provided the justification for not performing a 20% volumetric (eddy current) inspection of installed F ANP Inconel 690 rolled plugs based on material properties and industry inspection data.

FINAL ECT SCOPE

The table below summarizes the final (base scope + special interest and/or expansions) scope performed during 1R14.

	Area	Probe	Inspection Criteria	# of Exams	Expansion Criteria
1	Full Length (tube end to tube end)	Bobbin	100% of all in-service tubes	22,481	N/A
2	Short Radius U-Bends	+ Point™	100% of all in-service Row 1 & 2 tubes	974	If PWSCC is found in Row 2 inspect 20% of Row 3 in the affected SG. No expansions required during 1R14.
3	HL TTS area @ an extent of +2", -3" in each SG	+ Point™	50% of the tubes in 12 and 14 SGs	5626	<ol style="list-style-type: none"> 1. Confirmation of PWSCC or ODSKC (Axial or Circ.) in the 50% sample of the HL tubesheet region in 12 and 14 SGs will require an expansion to 100% in the affected SG AND inspect a minimum of 20% of the TTS in 11 and 13 SGs. 2. If C-3 condition is identified in any of the SGs HL TTS program, inspect 20% of Cl. TTS in affected SG. No expansions required during 1R14.
4	Dented TSP Intersections (≥ 5 volts) and Free Span Bobbin Indications (Dings, ≥ 5 volts)	+ Point™	100% of ≥ 5 volt dented TSPs and 100% of ≥ 5 volts dings up to +2" beyond the 7 th HL TSP in each SG	168	Dents & Dings. If C-3 condition is identified in any of the SGs inspect 20% of CL ≥ 5 volt dents and dings in affected SG. No expansions required during 1R14.
5	Tubesheet anomalies	+ Point™	Inspect all history ETLs and OXPs in the area of interest.	10	Any new ETLs or PTEs will be inspected in the area of interest. All new tubesheet anomalies inspected with + Point™ probe.
6	Distorted Tubesheet signals (DTI)	+ Point™	100% of all bobbin signals	1	NA
7	Distorted Support Signals (DSI)	+ Point™	100% of all bobbin signals	20	N/A
8	Free Span Bobbin Indications (MBMs & FSDs)	+ Point™	MBMs or FSDs with bobbin voltage greater than 2 volts that exhibit growth or change from the baseline and/or 1R13 data will be inspected using + Point™ probes.	3	N/A

Technical Specification Classification

The categorization of each steam generator is listed in the table below and takes into consideration both the bobbin coil and rotating coil inspection results.

	11	12	13	14
	SG	SG	SG	SG
Technical Specification Category	C-2	C-2	C-2	C-2

Tube Mis-encode

Part of the station's analysis process requires historical indications to be addressed on a tube-by-tube basis. During 1R14, this process identified one tube in 13 SG, R52C74, which did not receive a bobbin probe inspection during 1R13. Tube R54C74 was mis-encoded as R52C74. This mis-encode followed a wrist rotation whereby the guidetube carrying the encode of R52C74 was rotated to the R54C74 position. The other guidetube remained stationary under tube R53C74. This condition was documented under F ANP non-conformance report 6009096 and station notification 20063746.

Per Letter LRN-00-0050 dated February 28, 2000, the station submitted the Technical Specification 6.9.1.5 Annual Reports for the Salem Unit 1 and Unit 2 steam generator inspections completed during 1999. The report stated that a 100% bobbin coil inspection was performed in 11 through 14 steam generators.

This report makes a correction to the referenced submittal for 13 steam generator. Since tube R52C74 in 13 SG was identified as not being inspected during 1R13, the 100% bobbin coil inspection, as previously reported, was not performed. The station has determined there were no changes to the overall C-1 inspection results classification for 13 steam generator, as this tube had no degradation reported during 1R14. In addition, the station has determined there were no Technical Specification Violations due to this tube not being inspected during 1R13.

Attachments

The following data management summary reports are grouped as attachments, which provide the in-service inspection results per Technical Specification 4.4.5.5.b (Unit 1):

- Attachment 1 – 11SG - 1R14 Location and Percent Through Wall Indications
- Attachment 2 – 12SG - 1R14 Location and Percent Through Wall Indications
- Attachment 3 – 13SG - 1R14 Location and Percent Through Wall Indications
- Attachment 4 – 14SG - 1R14 Location and Percent Through Wall Indications
- Attachment 5 – Identification of Tubes Plugged During 1R14
- Attachment 6 – NDE Techniques Utilized for 1R14

Attachment 1

11 SG

1R14 Location and Percent Through Wall
Indications

SG	Row	Column	%TW	Location
11	26	91	13	AV1 -0.02
11	26	91	11	AV6 +0.00
11	29	112	11	AV5 -0.04
11	29	112	16	AV2 +0.21
11	31	10	10	AV6 +0.00
11	31	10	24	AV5 +0.00
11	31	10	16	AV2 +0.00
11	32	12	19	AV4 -0.03
11	32	31	14	AV2 +0.00
11	34	109	11	AV2 +0.00
11	35	44	10	AV6 +0.00
11	35	44	15	AV5 +0.11
11	37	79	12	AV4 +0.15
11	38	47	17	AV3 +0.00
11	38	47	11	AV5 +0.00
11	38	51	10	AV4 +0.00
11	38	78	25	AV5 +0.19
11	38	78	12	AV3 -0.13
11	38	105	10	AV2 +0.08
11	38	107	16	AV2 +0.00
11	38	107	19	AV5 +0.11
11	38	107	13	AV4 +0.13
11	38	107	33	AV3 +0.06
11	39	59	13	AV4 +0.00
11	39	59	28	AV3 +0.06
11	39	59	36	AV2 -0.08
11	39	59	10	AV1 +0.00
11	39	66	30	AV3 +0.00
11	39	66	18	AV6 +0.13
11	39	66	23	AV4 -0.09
11	39	99	12	AV2 +0.06
11	40	17	41	AV5 -0.13
11	40	17	22	AV2 +0.08
11	40	18	29	AV5 +0.15
11	40	18	19	AV4 +0.15
11	40	18	21	AV3 +0.17
11	40	43	10	AV6 +0.00
11	40	43	15	AV4 +0.00
11	40	43	25	AV3 +0.00
11	40	43	28	AV2 +0.00
11	40	47	30	AV5 +0.00
11	40	47	13	AV3 +0.00
11	40	47	14	AV2 +0.00
11	40	50	10	AV5 +0.00
11	40	50	11	AV4 +0.00
11	40	50	10	AV1 +0.00
11	40	54	11	AV6 +0.00

SG	Row	Column	%TW	Location
11	40	54	18	AV4 +0.00
11	40	54	37	AV3 +0.00
11	40	58	11	AV3 +0.00
11	40	60	25	AV5 +0.00
11	40	60	18	AV4 +0.00
11	40	60	34	AV3 +0.00
11	40	60	15	AV2 +0.00
11	40	62	25	AV5 +0.02
11	40	62	19	AV4 +0.00
11	40	62	29	AV2 -0.23
11	40	62	24	AV1 -0.02
11	40	78	17	AV3 -0.11
11	40	78	19	AV5 +0.13
11	40	79	17	AV3 +0.00
11	40	81	11	AV5 -0.73
11	40	81	24	AV3 +0.00
11	40	81	24	AV2 +0.00
11	40	84	12	AV4 +0.00
11	40	85	11	AV2 +0.00
11	40	104	14	AV5 +0.00
11	40	105	11	AV6 +0.00
11	40	105	12	AV5 +0.02
11	40	105	10	AV4 +0.00
11	41	19	13	AV6 +0.00
11	41	52	13	AV6 +0.04
11	41	52	15	AV4 +0.15
11	41	52	43	AV3 +0.10
11	41	52	22	AV2 +0.15
11	41	53	14	AV3 -0.15
11	41	53	14	AV2 -0.04
11	41	61	13	AV6 -0.08
11	41	61	27	AV5 +0.04
11	41	61	26	AV4 -0.17
11	41	61	25	AV3 +0.21
11	41	61	17	AV2 -0.08
11	41	61	15	AV1 +0.02
11	41	87	12	AV6 -0.08
11	41	90	13	AV5 -0.17
11	41	90	13	AV4 +0.23
11	41	103	11	AV1 +0.08
11	41	103	19	AV5 -0.02
11	42	19	26	AV6 +0.13
11	42	20	19	AV5 +0.00
11	42	20	20	AV4 +0.00
11	42	20	14	AV3 +0.00
11	42	20	12	AV2 +0.00
11	42	33	21	AV2 +0.09

SG	Row	Column	%TW	Location
11	42	33	14	AV3 +0.09
11	42	59	23	AV4 -0.36
11	43	23	10	AV5 +0.00
11	43	23	23	AV4 +0.00
11	43	23	12	AV3 +0.00
11	43	23	12	AV2 +0.00
11	43	25	14	AV5 +0.00
11	43	25	15	AV4 +0.00
11	43	25	10	AV3 +0.00
11	43	34	30	AV4 +0.13
11	43	34	13	AV5 +0.02
11	43	38	16	AV3 +0.00
11	43	38	15	AV2 +0.02
11	43	41	12	AV2 -0.10
11	43	41	21	AV3 +0.02
11	43	41	21	AV4 -0.10
11	43	43	17	AV3 -0.08
11	43	43	17	AV5 -0.08
11	43	44	15	AV3 -0.02
11	43	44	21	AV2 -0.06
11	43	46	26	AV6 +0.36
11	43	46	12	AV4 +0.00
11	43	49	11	AV4 -0.12
11	43	61	10	AV4 -0.25
11	43	61	27	AV3 -0.15
11	43	61	22	AV2 -0.13
11	43	64	31	AV3 +0.08
11	43	64	14	AV4 +0.08
11	43	75	12	AV1 +0.06
11	43	100	12	AV2 +0.00
11	43	100	17	AV3 +0.06
11	44	21	47	AV2 +0.13
11	44	21	30	AV3 +0.06
11	44	21	22	AV4 +0.15
11	44	21	22	AV5 +0.09
11	44	22	20	AV5 +0.00
11	44	23	15	AV2 +0.11
11	44	57	30	AV4 +0.02
11	44	57	18	AV3 +0.04
11	44	57	12	AV2 -0.02
11	44	67	11	AV2 -0.04
11	44	67	10	AV6 -0.13
11	44	67	18	AV4 -0.06
11	44	67	12	AV3 +0.02
11	44	68	12	AV5 -0.08
11	44	73	16	AV6 +0.04
11	44	74	11	AV6 -0.21

SG	Row	Column	%TW	Location
11	44	74	24	AV3 +0.00
11	44	77	20	AV6 +0.08
11	44	77	13	AV5 +0.15
11	44	77	18	AV4 +0.04
11	44	77	34	AV3 +0.08
11	44	78	27	AV6 +0.00
11	44	78	28	AV5 +0.17
11	44	78	40	AV4 +0.19
11	44	78	19	AV2 +0.04
11	44	78	19	AV1 -0.27
11	44	100	16	AV5 +0.00
11	44	102	10	AV6 +0.00
11	47	99	10	AV3 +0.06
11	48	47	17	AV5 +0.28
11	49	29	10	AV5 +0.00
11	49	39	13	AV2 +0.00
11	49	43	16	AV4 +0.02
11	49	85	16	AV4 +0.08
11	49	85	10	AV3 +0.13
11	49	93	19	AV5 +0.15
11	50	82	14	AV6 +0.10
11	50	82	17	AV5 +0.08
11	50	82	20	AV4 +0.08
11	50	82	23	AV3 +0.06
11	50	82	34	AV2 +0.06
11	50	93	11	AV6 +0.00
11	53	33	33	AV5 +0.09
11	53	33	24	AV3 +0.17
11	53	35	13	AV6 +0.15
11	53	35	33	AV5 +0.00
11	53	35	21	AV4 +0.00
11	53	90	25	AV5 -0.04
11	53	90	16	AV4 -0.02
11	53	90	14	AV2 -0.15
11	54	86	13	AV3 +0.00

Attachment 2

12 SG

1R14 Location and Percent Through Wall
Indications

SG	Row	Column	%TW	Location
12	23	89	17	AV6 +0.00
12	23	91	12	AV1 +0.00
12	26	74	13	AV2 +0.00
12	26	103	11	AV3 +0.02
12	27	8	13	AV1 +0.00
12	27	115	13	AV1 +0.27
12	29	13	10	AV6 +0.00
12	29	39	16	AV2 -0.02
12	29	39	15	AV5 +0.11
12	29	86	12	AV2 +0.00
12	29	108	17	AV5 +0.14
12	29	112	17	AV5 -0.17
12	30	12	11	AV2 +0.00
12	30	13	15	AV2 +0.00
12	30	111	15	AV6 +0.00
12	32	109	21	AV4 +0.00
12	32	111	16	AV2 -0.02
12	36	15	15	AV4 +0.00
12	36	107	35	AV4 -0.04
12	36	107	34	AV5 +0.02
12	36	108	34	AV1 +0.11
12	36	108	28	AV5 +0.02
12	36	110	15	AV3 +0.13
12	38	104	12	AV2 +0.10
12	38	105	21	AV1 +0.10
12	38	105	22	AV2 -0.02
12	38	105	36	AV3 +0.00
12	38	106	21	AV1 +0.00
12	38	106	26	AV4 +0.00
12	38	106	36	AV5 +0.00
12	38	107	24	AV2 +0.00
12	38	107	20	AV3 +0.19
12	39	54	24	AV6 +0.00
12	39	63	31	AV2 +0.29
12	39	63	14	AV3 +0.02
12	39	65	25	AV3 -0.04
12	39	65	18	AV4 +0.02
12	39	67	24	AV1 -0.02
12	39	67	19	AV2 +0.00
12	39	67	39	AV3 +0.21
12	39	67	25	AV4 +0.08
12	39	70	35	AV3 +0.19
12	39	70	18	AV4 +0.02
12	39	70	13	AV5 -0.04
12	39	103	37	AV2 +0.00

SG	Row	Column	%TW	Location
12	39	103	32	AV4 +0.00
12	39	103	31	AV5 +0.00
12	39	104	17	AV2 +0.17
12	39	104	27	AV4 -0.02
12	39	105	15	AV2 -0.06
12	39	105	21	AV4 -0.02
12	39	105	38	AV5 +0.04
12	39	105	19	AV6 +0.00
12	39	106	15	AV1 -0.02
12	39	106	36	AV3 -0.06
12	39	106	38	AV4 -0.06
12	39	106	17	AV5 +0.00
12	40	24	15	AV4 +0.09
12	40	24	13	AV5 +0.00
12	40	45	11	AV3 +0.24
12	40	45	16	AV5 +0.22
12	40	45	16	AV6 -0.09
12	40	47	27	AV2 +0.00
12	40	47	15	AV4 +0.00
12	40	47	21	AV5 +0.00
12	40	62	24	AV3 +0.42
12	40	62	15	AV4 +0.13
12	40	78	11	AV4 +0.00
12	40	80	23	AV2 -0.06
12	40	80	27	AV3 +0.00
12	40	80	22	AV4 +0.00
12	40	80	14	AV5 +0.00
12	40	82	15	AV5 +0.00
12	40	82	11	AV4 +0.00
12	40	82	21	AV3 +0.00
12	40	83	21	AV6 +0.00
12	40	83	30	AV5 +0.00
12	40	83	17	AV4 -0.02
12	40	83	19	AV3 +0.00
12	40	83	15	AV2 +0.00
12	40	83	12	AV1 +0.00
12	40	87	19	AV2 +0.10
12	40	87	18	AV3 -0.15
12	40	87	16	AV4 -0.02
12	40	87	18	AV5 +0.02
12	40	88	21	AV1 +0.00
12	40	88	18	AV2 -0.04
12	40	88	25	AV3 +0.00
12	40	88	16	AV5 +0.00
12	40	91	27	AV2 -0.19

SG	Row	Column	%TW	Location
12	40	91	18	AV3 -0.02
12	40	91	25	AV4 -0.21
12	40	91	28	AV5 -0.17
12	40	91	19	AV6 -0.10
12	40	94	10	AV2 -0.13
12	40	94	16	AV3 -0.19
12	40	94	12	AV4 -0.27
12	40	95	19	AV2 -0.15
12	40	95	14	AV3 -0.27
12	40	95	17	AV5 -0.29
12	40	96	16	AV2 -0.15
12	40	100	13	AV1 -0.15
12	40	100	24	AV2 -0.19
12	40	100	24	AV3 -0.02
12	40	100	18	AV5 +0.04
12	40	102	19	AV1 +0.00
12	40	102	24	AV2 -0.12
12	40	102	43	AV3 -0.02
12	40	102	23	AV4 +0.02
12	40	102	19	AV6 +0.06
12	40	103	21	AV1 +0.00
12	40	103	34	AV2 +0.02
12	40	103	40	AV4 +0.10
12	40	103	21	AV5 +0.02
12	40	105	18	AV1 +0.00
12	40	105	28	AV4 +0.00
12	40	105	21	AV5 +0.00
12	40	106	13	AV1 +0.02
12	40	106	28	AV3 +0.00
12	40	106	26	AV4 -0.04
12	40	106	27	AV5 +0.04
12	41	86	16	AV2 +0.09
12	41	86	16	AV3 +0.00
12	41	86	36	AV4 +0.00
12	41	86	19	AV5 +0.00
12	41	86	16	AV6 +0.00
12	41	87	19	AV3 -0.02
12	41	87	27	AV4 -0.06
12	41	87	21	AV5 -0.02
12	41	90	12	AV1 +0.30
12	41	90	19	AV2 -0.06
12	41	90	15	AV5 +0.04
12	41	92	15	AV2 -0.11
12	41	92	16	AV3 +0.00
12	41	92	21	AV4 +0.00

SG	Row	Column	%TW	Location
12	41	92	23	AV5 +0.00
12	41	94	12	AV5 -0.06
12	41	97	15	AV4 +0.13
12	41	98	17	AV6 -0.04
12	41	98	23	AV2 +0.06
12	41	101	15	AV1 +0.02
12	41	101	17	AV2 +0.08
12	41	101	21	AV5 +0.27
12	41	101	19	AV6 +0.21
12	41	102	15	AV5 +0.06
12	41	103	35	AV4 +0.08
12	41	103	29	AV5 -0.02
12	42	24	20	AV1 +0.28
12	42	46	23	AV5 +0.02
12	42	47	13	AV1 +0.00
12	42	47	12	AV2 +0.00
12	42	47	22	AV3 +0.00
12	42	47	17	AV4 +0.00
12	42	47	21	AV6 +0.00
12	42	55	18	AV2 +0.00
12	42	55	19	AV3 +0.07
12	42	55	17	AV4 +0.09
12	42	55	28	AV5 +0.00
12	42	62	31	AV3 +0.04
12	42	62	36	AV4 -0.08
12	42	62	18	AV5 -0.02
12	42	62	16	AV6 -0.04
12	42	64	23	AV5 +0.00
12	42	64	11	AV3 -0.02
12	42	64	18	AV2 +0.21
12	42	99	17	AV1 +0.00
12	42	99	28	AV2 +0.00
12	42	99	43	AV3 +0.00
12	42	99	27	AV4 +0.00
12	42	102	13	AV2 +0.00
12	42	102	18	AV4 +0.04
12	42	102	24	AV5 +0.04
12	42	102	40	AV3 -0.04
12	42	103	64	AV4 +0.06
12	42	103	23	AV5 +0.04
12	43	27	18	AV2 +0.00
12	43	45	20	AV4 -0.19
12	43	45	13	AV5 +0.41
12	43	87	12	AV2 +0.11
12	43	87	26	AV3 -0.09

SG	Row	Column	%TW	Location
12	43	87	20	AV5 +0.04
12	43	102	23	AV1 -0.02
12	43	102	37	AV3 -0.04
12	43	102	30	AV5 +0.00
12	44	26	15	AV6 +0.00
12	45	101	14	AV3 -0.04
12	45	101	22	AV4 +0.00
12	45	101	12	AV5 -0.08
12	45	101	26	AV6 -0.04
12	46	82	15	AV1 -0.04
12	46	82	22	AV2 +0.02
12	46	82	27	AV3 +0.00
12	46	82	39	AV4 -0.04
12	46	94	21	AV5 +0.02
12	46	97	22	AV5 +0.08
12	46	99	30	AV5 -0.13
12	46	99	19	AV6 -0.04
12	47	24	13	AV6 +0.04
12	47	95	16	AV4 -0.06
12	47	97	36	AV4 +0.02
12	47	97	25	AV5 +0.00
12	47	98	17	AV5 +0.02
12	47	99	22	AV3 -0.04
12	47	99	40	AV5 +0.04
12	47	99	11	AV2 -0.06
12	48	25	20	AV4 +0.00
12	48	25	25	AV5 +0.00
12	48	25	35	AV6 -0.02
12	48	79	11	AV2 +0.04
12	49	78	21	AV5 +0.04
12	49	78	20	AV4 +0.02
12	49	95	14	AV5 +0.06
12	49	95	14	AV6 +0.04
12	49	96	10	AV5 -0.06
12	50	28	32	AV4 +0.00
12	50	28	13	AV6 +0.02
12	50	28	16	AV2 +0.06
12	50	28	38	AV5 +0.00
12	50	67	20	AV2 +0.08
12	50	67	19	AV3 +0.34
12	50	67	13	AV4 +0.17
12	51	91	30	AV3 -0.06
12	51	91	25	AV4 +0.06
12	51	91	16	AV5 +0.02
12	52	80	15	AV3 +0.11

SG	Row	Column	%TW	Location
12	52	80	20	AV2 +0.00
12	53	33	12	AV3 +0.09
12	56	77	14	AV4 -0.17
12	57	44	13	AV4 +0.06

Attachment 3

13 SG

1R14 Location and Percent Through Wall
Indications

SG	Row	Column	%TW	Location
13	19	80	13	AV6 +0.00
13	20	81	13	AV2 +0.37
13	23	117	14	AV1 +0.74
13	25	38	13	AV2 +0.09
13	26	43	14	AV1 +0.13
13	26	80	12	AV2 -0.04
13	27	115	10	AV6 +0.15
13	27	115	29	AV1 +0.22
13	30	114	32	AV5 +0.00
13	30	114	30	AV2 +0.00
13	31	32	10	AV5 +0.00
13	32	15	16	AV2 -0.09
13	32	16	13	AV2 +0.00
13	32	48	14	AV2 -0.06
13	32	108	16	AV5 +0.09
13	32	111	14	AV6 +0.02
13	32	111	24	AV5 +0.00
13	32	111	14	AV3 -0.07
13	34	48	22	AV4 +0.00
13	34	48	18	AV1 +0.00
13	34	111	10	AV5 +0.18
13	34	111	11	AV1 +0.13
13	36	80	14	AV5 +0.15
13	36	80	16	AV4 -0.17
13	36	80	25	AV3 -0.07
13	36	87	11	AV3 -0.15
13	36	87	14	AV2 +0.04
13	36	88	11	AV6 -0.04
13	36	88	20	AV4 +0.11
13	36	88	12	AV3 +0.04
13	36	88	12	AV1 +0.13
13	36	97	21	AV3 +0.00
13	36	97	15	AV2 -0.09
13	36	109	13	AV2 -0.11
13	36	110	16	AV6 -0.04
13	37	58	20	AV2 +0.09
13	37	58	23	AV3 -0.04
13	37	100	21	AV5 -0.13
13	37	100	30	AV3 +0.04
13	37	100	12	AV2 +0.22
13	38	18	24	AV5 -0.02
13	38	18	20	AV4 -0.04
13	38	18	11	AV3 -0.07
13	38	18	10	AV2 +0.00
13	38	19	17	AV4 +0.00

SG	Row	Column	%TW	Location
13	38	19	13	AV5 +0.15
13	38	19	18	AV3 +0.00
13	38	28	12	AV4 +0.17
13	38	28	14	AV3 +0.11
13	38	39	13	AV5 +0.00
13	38	39	12	AV3 +0.15
13	38	53	11	AV2 -0.24
13	38	58	15	AV6 +0.00
13	38	58	20	AV5 +0.00
13	38	60	34	AV2 +0.19
13	38	60	30	AV3 -0.02
13	38	60	21	AV4 +0.00
13	38	60	17	AV5 +0.13
13	38	60	14	AV6 +0.09
13	38	66	17	AV5 +0.04
13	38	66	26	AV4 +0.04
13	38	66	11	AV3 +0.04
13	38	68	17	AV5 +0.00
13	38	70	17	AV5 +0.00
13	38	70	14	AV4 -0.09
13	38	72	28	AV4 +0.33
13	38	72	20	AV3 +0.26
13	38	72	22	AV2 +0.22
13	38	83	16	AV5 -0.11
13	38	83	20	AV3 -0.24
13	38	85	14	AV3 +0.00
13	38	86	16	AV6 -0.33
13	38	86	19	AV5 -0.15
13	38	86	20	AV4 -0.04
13	38	86	14	AV2 +0.04
13	38	86	13	AV1 +0.04
13	38	91	18	AV5 -0.15
13	38	91	15	AV2 -0.02
13	38	93	34	AV5 -0.02
13	38	93	23	AV4 +0.00
13	38	93	19	AV2 +0.02
13	38	94	24	AV2 +0.15
13	38	94	26	AV3 +0.07
13	38	94	11	AV4 +0.04
13	38	98	24	AV3 -0.07
13	38	98	19	AV2 +0.15
13	38	106	25	AV6 +0.00
13	38	106	18	AV5 +0.04
13	38	106	22	AV4 +0.00
13	38	106	28	AV2 +0.04

SG	Row	Column	%TW	Location
13	39	33	22	AV5 -0.04
13	39	33	10	AV2 -0.02
13	39	38	16	AV2 +0.09
13	39	38	12	AV3 -0.26
13	39	38	16	AV5 -0.06
13	39	47	16	AV6 +0.00
13	39	47	27	AV5 +0.00
13	39	47	20	AV4 +0.00
13	39	47	17	AV3 +0.00
13	39	47	27	AV2 +0.00
13	39	51	25	AV2 +0.19
13	39	51	26	AV3 +0.11
13	39	51	13	AV4 +0.09
13	39	51	11	AV5 +0.32
13	39	51	32	AV6 +0.09
13	39	54	23	AV3 +0.13
13	39	56	28	AV1 +0.06
13	39	56	11	AV2 +0.13
13	39	56	26	AV3 +0.19
13	39	56	33	AV4 +0.13
13	39	56	27	AV5 +0.09
13	39	58	21	AV1 -0.28
13	39	58	27	AV3 +0.04
13	39	58	18	AV4 +0.02
13	39	58	26	AV5 +0.24
13	39	58	19	AV6 +0.00
13	39	58	17	AV2 +0.15
13	39	65	10	AV4 +0.00
13	39	65	15	AV3 -0.09
13	39	65	16	AV2 -0.09
13	39	65	12	AV1 +0.07
13	39	66	11	AV3 +0.00
13	39	66	31	AV2 +0.00
13	39	66	13	AV6 -0.09
13	39	66	16	AV4 +0.00
13	39	70	20	AV5 +0.00
13	39	70	27	AV4 +0.26
13	39	70	13	AV2 -0.26
13	39	76	28	AV6 +0.00
13	39	76	18	AV5 +0.00
13	39	76	18	AV3 +0.37
13	39	76	30	AV2 -0.11
13	39	76	16	AV1 -0.09
13	39	80	15	AV2 +0.04
13	40	19	19	AV3 +0.00

SG	Row	Column	%TW	Location
13	40	62	18	AV2 +0.00
13	40	62	21	AV3 +0.00
13	40	62	28	AV4 +0.00
13	40	62	30	AV5 +0.00
13	40	82	10	AV6 -0.13
13	40	82	16	AV5 -0.07
13	40	82	25	AV4 -0.02
13	40	82	23	AV3 +0.26
13	40	82	30	AV2 +0.04
13	40	82	13	AV1 +0.02
13	40	84	28	AV2 -0.22
13	40	84	14	AV5 +0.00
13	41	20	24	AV4 +0.15
13	41	20	14	AV3 +0.17
13	41	31	19	AV4 +0.00
13	41	31	18	AV5 -0.15
13	41	85	21	AV2 +0.07
13	41	85	18	AV5 -0.07
13	41	85	14	AV3 -0.09
13	41	92	16	AV3 +0.04
13	41	96	20	AV3 -0.02
13	41	96	10	AV2 -0.09
13	41	103	17	AV6 +0.04
13	41	103	29	AV5 +0.00
13	41	103	17	AV4 +0.09
13	41	103	19	AV2 +0.02
13	41	104	16	AV3 -0.07
13	41	104	18	AV2 -0.04
13	42	33	18	AV4 +0.11
13	42	41	23	AV4 +0.00
13	42	41	19	AV2 +0.00
13	42	42	22	AV5 +0.11
13	42	42	22	AV4 -0.02
13	42	42	18	AV2 -0.11
13	42	44	28	AV6 +0.00
13	42	44	29	AV4 +0.00
13	42	44	35	AV3 +0.00
13	43	41	23	AV6 +0.13
13	43	41	23	AV5 +0.00
13	43	41	17	AV4 +0.00
13	43	41	20	AV3 +0.00
13	43	41	32	AV2 +0.00
13	43	41	18	AV1 +0.00
13	43	58	15	AV6 +0.26
13	43	58	34	AV5 +0.22

SG	Row	Column	%TW	Location
13	43	58	27	AV4 +0.13
13	43	58	51	AV3 +0.35
13	43	58	34	AV2 +0.13
13	43	62	14	AV5 +0.16
13	43	64	19	AV4 +0.07
13	43	66	17	AV5 +0.18
13	43	66	35	AV4 +0.11
13	43	66	20	AV2 +0.00
13	43	68	18	AV5 +0.00
13	43	68	24	AV4 +0.15
13	43	68	27	AV3 +0.07
13	43	68	33	AV2 +0.00
13	43	71	13	AV5 +0.09
13	43	72	17	AV6 +0.11
13	43	75	13	AV5 +0.09
13	43	80	10	AV1 +0.00
13	43	84	15	AV6 -0.09
13	43	84	13	AV4 +0.18
13	43	84	30	AV2 -0.24
13	43	84	42	AV3 +0.13
13	43	84	17	AV5 -0.13
13	43	85	15	AV2 +0.13
13	43	86	20	AV6 +0.15
13	43	86	22	AV4 -0.04
13	43	86	15	AV3 -0.02
13	43	86	17	AV2 -0.09
13	43	87	22	AV6 -0.22
13	43	93	15	AV2 -0.13
13	43	97	15	AV5 -0.02
13	43	97	13	AV6 -0.02
13	43	97	16	AV4 -0.04
13	43	97	23	AV3 -0.07
13	43	97	18	AV2 -0.09
13	43	99	20	AV5 +0.04
13	43	99	33	AV4 +0.07
13	43	100	21	AV6 -0.02
13	43	100	34	AV4 -0.02
13	43	100	40	AV3 +0.00
13	43	100	30	AV2 -0.11
13	44	25	11	AV2 +0.00
13	44	61	26	AV6 +0.11
13	44	61	11	AV5 -0.27
13	44	61	24	AV4 +0.24
13	44	61	37	AV3 +0.11
13	44	61	13	AV2 -0.04

SG	Row	Column	%TW	Location
13	44	61	13	AV1 +0.31
13	44	65	24	AV6 +0.33
13	44	65	10	AV5 -0.09
13	44	65	16	AV4 +0.00
13	44	65	35	AV3 +0.38
13	44	65	21	AV2 -0.04
13	44	65	11	AV1 -0.07
13	44	68	16	AV5 +0.15
13	44	68	15	AV4 +0.13
13	44	68	18	AV3 +0.00
13	44	68	19	AV2 +0.00
13	44	68	19	AV1 +0.00
13	44	77	14	AV4 -0.11
13	44	77	15	AV3 +0.00
13	44	77	11	AV2 +0.00
13	44	102	24	AV5 +0.00
13	44	102	33	AV6 +0.07
13	45	65	30	AV4 +0.09
13	45	65	15	AV5 +0.18
13	45	65	18	AV3 +0.13
13	45	65	18	AV2 +0.07
13	45	96	20	AV4 -0.04
13	45	96	26	AV6 +0.04
13	45	101	13	AV4 +0.00
13	45	101	37	AV5 +0.02
13	45	101	21	AV6 -0.04
13	46	24	20	AV5 +0.00
13	46	46	32	AV4 +0.00
13	46	46	21	AV3 +0.00
13	46	46	17	AV2 +0.00
13	46	61	37	AV5 +0.09
13	46	61	50	AV4 +0.07
13	46	61	27	AV3 -0.22
13	46	61	22	AV2 +0.13
13	46	61	15	AV1 +0.09
13	46	62	16	AV3 -0.02
13	46	62	19	AV2 +0.04
13	46	65	12	AV4 +0.02
13	46	65	17	AV3 -0.09
13	46	73	23	AV2 +0.00
13	46	75	18	AV6 +0.00
13	46	75	19	AV5 +0.00
13	46	75	17	AV4 +0.40
13	46	75	25	AV3 -0.26
13	46	75	39	AV2 +0.26

SG	Row	Column	%TW	Location
13	46	75	16	AV1 +0.00
13	47	24	28	AV5 -0.11
13	47	25	21	AV5 +0.00
13	47	26	13	AV6 +0.00
13	47	83	20	AV2 +0.11
13	47	83	35	AV3 +0.02
13	47	83	29	AV4 +0.07
13	47	83	20	AV5 +0.13
13	47	83	17	AV6 +0.13
13	47	96	15	AV4 +0.02
13	47	96	13	AV2 -0.09
13	47	98	14	AV6 -0.07
13	47	98	26	AV5 +0.00
13	47	98	32	AV4 +0.04
13	47	99	19	AV5 -0.04
13	47	99	34	AV6 +0.04
13	48	95	16	AV3 +0.00
13	48	97	22	AV6 -0.09
13	49	31	17	AV5 +0.06
13	49	94	18	AV6 +0.00
13	49	95	15	AV4 +0.13
13	49	96	22	AV3 +0.00
13	49	96	20	AV4 +0.00
13	49	96	28	AV5 -0.07
13	50	28	16	AV4 +0.00
13	50	79	12	AV4 +0.04
13	50	79	33	AV3 +0.15
13	50	79	28	AV2 +0.09
13	50	79	10	AV1 +0.00
13	50	83	13	AV1 +0.00
13	50	83	24	AV2 +0.00
13	50	83	54	AV3 +0.00
13	50	83	39	AV4 +0.00
13	50	83	22	AV5 +0.00
13	50	83	25	AV6 +0.00
13	50	84	32	AV3 +0.20
13	50	84	14	AV2 -0.09
13	50	92	25	AV4 +0.00
13	50	92	26	AV5 -0.02
13	50	92	26	AV6 -0.04
13	50	94	15	AV2 -0.04
13	50	94	15	AV1 +0.02
13	50	95	24	AV1 +0.04
13	50	95	10	AV2 +0.04
13	50	95	59	AV3 +0.02

SG	Row	Column	%TW	Location
13	50	95	20	AV4 +0.04
13	50	95	47	AV5 -0.13
13	50	95	27	AV6 +0.02
13	52	33	29	AV6 +0.00
13	52	33	21	AV5 +0.00
13	52	33	25	AV4 +0.00
13	52	33	19	AV3 +0.00
13	52	34	21	AV6 +0.11
13	52	89	15	AV2 +0.11
13	52	90	27	AV2 -0.02
13	52	90	31	AV3 +0.02
13	52	90	42	AV4 +0.02
13	52	90	16	AV5 -0.02
13	52	90	29	AV6 -0.02
13	53	33	23	AV6 +0.13
13	53	33	25	AV5 +0.13
13	53	57	13	AV2 +0.02
13	53	72	21	AV4 +0.13
13	53	88	12	AV4 +0.02
13	53	88	11	AV5 -0.09
13	53	90	33	AV3 -0.04
13	53	90	54	AV4 +0.07
13	53	90	29	AV6 +0.02
13	54	55	19	AV6 +0.19
13	54	55	24	AV5 +0.15
13	54	55	26	AV4 +0.04
13	54	55	11	AV3 +0.09
13	54	65	16	AV4 +0.00
13	54	65	20	AV5 +0.22
13	54	65	18	AV6 +0.18
13	54	70	30	AV5 +0.11
13	54	70	55	AV4 +0.22
13	54	70	43	AV3 +0.35
13	54	70	27	AV2 +0.00
13	54	70	20	AV1 +0.07
13	54	71	17	AV5 -0.09
13	54	72	12	AV5 -0.04
13	54	74	17	AV5 +0.02
13	54	74	28	AV3 +0.00
13	54	74	40	AV4 +0.00
13	56	66	10	AV3 +0.00
13	56	82	33	AV6 +0.09
13	56	82	39	AV5 +0.09
13	56	82	25	AV4 +0.09
13	57	77	22	AV5 -0.09

SG	Row	Column	%TW	Location
13	57	77	19	AV4 -0.18
13	57	77	35	AV3 +0.00
13	58	47	21	AV5 +0.00
13	58	47	25	AV4 +0.00
13	58	76	13	AV5 +0.11
13	58	76	18	AV3 +0.00

Attachment 4

14 SG

1R14 Location and Percent Through Wall
Indications

SG	Row	Column	%TW	Location
14	23	6	13	AV1 +0.31
14	24	6	19	AV1 -0.11
14	24	7	13	AV6 -0.20
14	24	116	19	AV1 +0.00
14	24	116	11	AV6 +0.03
14	25	7	11	AV6 -0.11
14	25	8	20	AV1 -0.13
14	25	36	17	AV6 +0.05
14	25	44	14	AV5 +0.00
14	25	115	15	AV6 +0.00
14	26	7	20	AV1 +0.02
14	26	8	13	AV1 +0.02
14	26	8	11	AV6 -0.22
14	26	114	12	AV3 -0.12
14	26	115	21	AV1 +0.07
14	27	8	13	AV1 -0.22
14	27	8	14	AV1 +0.20
14	27	8	12	AV6 -0.26
14	27	79	12	AV2 +0.09
14	27	79	16	AV5 +0.61
14	27	114	14	AV2 +0.00
14	28	8	36	AV1 -0.07
14	28	8	12	AV6 -0.26
14	28	9	13	AV2 +0.28
14	28	12	11	AV6 +0.16
14	28	81	14	AV5 +0.17
14	28	111	13	AV2 +0.00
14	28	113	12	AV2 +0.00
14	28	113	16	AV5 +0.00
14	29	109	11	AV6 -0.15
14	29	110	14	AV5 +0.00
14	30	9	28	AV2 +0.07
14	30	9	12	AV6 +0.33
14	30	10	23	AV2 -0.11
14	30	63	13	AV1 -0.07
14	30	72	17	AV2 +0.08
14	30	76	10	AV5 -0.38
14	30	107	13	AV5 +0.19
14	31	10	17	AV2 +0.00
14	31	10	17	AV5 -0.83
14	32	12	15	AV5 +0.00
14	32	84	21	AV2 +0.02
14	32	109	14	AV2 +0.00
14	32	111	11	AV1 +0.00
14	32	111	10	AV2 +0.00

SG	Row	Column	%TW	Location
14	32	111	20	AV5 +0.00
14	32	111	11	AV6 +0.00
14	33	12	14	AV2 +0.07
14	33	12	12	AV5 +0.09
14	33	12	12	AV6 +0.11
14	34	109	17	AV3 +0.00
14	34	109	14	AV4 +0.00
14	37	83	34	AV5 -0.09
14	37	83	18	AV1 +0.22
14	38	16	32	AV4 -0.06
14	38	16	21	AV5 -0.02
14	38	16	21	AV6 -0.13
14	38	32	14	AV3 -0.09
14	38	40	22	AV2 +0.41
14	38	40	18	AV3 +0.13
14	38	40	29	AV4 +0.24
14	38	99	15	AV5 +0.00
14	38	101	19	AV2 +0.11
14	38	101	24	AV3 +0.04
14	38	101	20	AV4 -0.02
14	39	37	22	AV2 +0.00
14	39	37	21	AV3 +0.00
14	39	37	21	AV4 +0.00
14	39	37	32	AV5 +0.00
14	39	37	13	AV6 -0.22
14	39	56	15	AV3 +0.00
14	39	56	14	AV4 +0.00
14	39	56	13	AV5 +0.00
14	39	77	12	AV3 +0.00
14	39	77	15	AV4 -0.04
14	39	79	14	AV3 -0.26
14	39	96	17	AV4 -0.17
14	39	96	22	AV3 -0.20
14	39	96	19	AV2 -0.15
14	39	96	12	AV1 -0.20
14	39	97	20	AV3 -0.09
14	39	98	12	AV3 -0.13
14	39	100	22	AV3 +0.00
14	40	18	31	AV4 -0.09
14	40	18	43	AV5 -0.06
14	40	18	11	AV2 +0.04
14	40	48	14	AV1 +0.00
14	40	48	20	AV5 +0.00
14	40	48	14	AV6 +0.00
14	40	51	31	AV3 +0.24

SG	Row	Column	%TW	Location
14	40	51	21	AV4 +0.09
14	40	51	15	AV6 -0.04
14	40	52	12	AV1 +0.00
14	40	52	16	AV3 +0.00
14	40	52	10	AV4 +0.00
14	40	52	26	AV5 +0.00
14	40	52	15	AV6 +0.00
14	40	56	11	AV3 +0.00
14	40	56	10	AV5 +0.00
14	40	60	15	AV3 +0.00
14	40	76	24	AV4 +0.00
14	40	76	21	AV3 -0.02
14	40	76	13	AV2 -0.15
14	40	80	16	AV3 +0.00
14	40	80	15	AV4 -0.24
14	40	80	12	AV5 +0.19
14	40	81	21	AV1 +0.04
14	40	81	20	AV2 +0.24
14	40	81	12	AV3 +0.37
14	40	81	20	AV4 +0.35
14	40	81	15	AV5 +0.33
14	40	81	10	AV6 -0.09
14	40	85	12	AV3 -0.30
14	40	85	13	AV3 +0.37
14	40	85	23	AV4 +0.32
14	40	85	16	AV5 +0.04
14	40	85	19	AV2 -0.17
14	40	87	12	AV2 +0.13
14	40	87	12	AV3 -0.04
14	40	87	12	AV4 -0.02
14	40	87	18	AV5 -0.02
14	40	106	10	AV3 -0.09
14	40	106	11	AV5 +0.00
14	40	106	11	AV6 +0.63
14	42	30	20	AV3 -0.24
14	42	30	24	AV4 -0.13
14	42	30	12	AV5 -0.02
14	43	54	26	AV2 -0.22
14	43	54	11	AV5 +0.00
14	43	55	29	AV3 +0.00
14	43	55	13	AV1 -0.04
14	43	55	31	AV2 +0.02
14	43	55	20	AV5 +0.13
14	43	55	26	AV6 +0.11
14	43	55	13	AV4 +0.28

SG	Row	Column	%TW	Location
14	46	24	18	AV6 -0.19
14	47	25	22	AV1 -0.06
14	47	25	49	AV2 -0.11
14	47	25	51	AV3 -0.11
14	47	25	31	AV4 -0.04
14	47	25	32	AV5 +0.26
14	47	25	18	AV6 +0.00
14	47	43	17	AV3 +0.04
14	47	48	22	AV2 +0.09
14	47	48	33	AV3 +0.06
14	47	48	23	AV4 -0.48
14	47	48	28	AV5 -0.11
14	47	48	18	AV1 +0.06
14	47	60	24	AV2 +0.02
14	47	60	12	AV3 +0.06
14	47	60	33	AV4 +0.62
14	47	60	48	AV5 +0.00
14	47	60	16	AV6 +0.02
14	47	72	44	AV3 +0.00
14	47	72	42	AV4 +0.00
14	47	81	20	AV1 +0.09
14	47	81	32	AV2 -0.02
14	47	81	36	AV3 +0.48
14	47	81	31	AV4 +0.48
14	47	81	17	AV5 +0.00
14	47	81	34	AV6 +0.00
14	47	83	19	AV1 +0.00
14	47	83	36	AV3 +0.00
14	47	83	22	AV4 -0.19
14	47	83	28	AV5 +0.00
14	47	83	12	AV6 +0.00
14	50	28	21	AV5 -0.13
14	50	28	25	AV6 -0.15
14	51	31	15	AV5 +0.00
14	51	31	12	AV6 -0.13
14	53	38	15	AV6 -0.11
14	54	87	20	AV3 +0.06
14	54	87	27	AV4 +0.00
14	54	87	26	AV5 +0.00
14	54	87	21	AV6 +0.00
14	55	83	22	AV6 -0.13
14	56	41	16	AV4 +0.00
14	56	41	26	AV5 +0.00
14	56	41	21	AV6 +0.00
14	57	44	13	AV2 -0.11

SG	Row	Column	%TW	Location
14	58	76	16	AV2 +0.04

Attachment 5

11 – 14 SG

Identification of Tubes Plugged During
1R14

SG	Row	Column
11	1	3
11	40	17
11	41	52
11	44	21
11	44	78
11	58	48
12	1	43
12	39	67
12	39	105
12	39	106
12	40	102
12	40	103
12	42	99
12	42	102
12	42	103
12	46	82
12	47	99
12	50	28
13	1	4
13	43	58
13	43	84
13	43	100
13	46	61
13	50	83
13	50	95
13	52	90
13	53	90
13	54	70
13	54	74
14	1	79
14	2	23
14	40	18
14	47	25
14	47	60
14	47	72

Attachment 6

NDE Techniques Utilized for
1R14

Attachment 6
1R14 NDE TECHNIQUES

Degradation Mechanism, Orientation and Location	Probe	Detection Technique ETSS #	Sizing Technique ETSS #
Axial PWSCC Tubesheet Region	+ Point™	20511.1 Rev 1	96703.1 Rev 10
Circumferential PWSCC Tubesheet Region	+ Point™	20510.1 Rev 1	96701.1 Rev 7 & 20510.1 Rev 1
Axial ODSCC Tubesheet Region	+ Point™	20409.1 Rev 3	96703.1 Rev 10
Circumferential ODSCC Tubesheet Region	+ Point™	20409.1 Rev 3	96701.1 Rev 7 & 20510.1 Rev 1
IGA/ODSCC Sludge Pile region	Bobbin	96008.1 Rev 9	96703.1 Rev 10
Axial PWSCC in Freespan dings	+ Point™	20511.1 Rev 1	96703.1 Rev 10
Circ PWSCC in Freespan dings	+ Point™	20510.1 Rev 1	96701.1 Rev 7 & 20510.1 Rev 1
Axial PWSCC @ Dented TSP	+ Point™	20511.1 Rev 1	96703.1 Rev 10
Circ PWSCC @ Dented TSP	+ Point™	20510.1 Rev 1	96701.1 Rev 7 & 20510.1 Rev 1
Axial ODSCC @ Dented and non-dented TSP	+ Point™	20409.1 Rev 3	96703.1 Rev 10
Circ ODSCC @ Dented and non-dented TSP	+ Point™	20409.1 Rev 3	96701.1 Rev 7 & 20510.1 Rev 1
IGA/ODSCC @ non-dented TSP	Bobbin	96007.1 Rev 8	96703.1 Rev 10
AVB Wear in U-bend Region	Bobbin	96004.3 Rev 7	96004.3 Rev 7
Axial PWSCC in Low Row U-bends	+ Point™	96511.2 Rev 10	96703.1 Rev 10
Circ PWSCC in Low Row U-bends	+ Point™	96511.2 Rev 10	96701.1 Rev 7 & 20510.1 Rev 1
Flow Distribution Baffle (FDB) Wear	Bobbin	96004.3 Rev 7	N/A
Loose Parts - Anywhere	Bobbin	N/A	N/A
	+ Point™	N/A	ETSS 96910.1, Rev 4