Exelon Generation Company, LLC
Byron Station
4450 North German Church Road
Byron, IL 61010-9794

www.exeloncorp.com

Exelon Nuclear

ASME Section XI, IWA 6000

July 12, 2001

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United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Byron Station, Unit 2
Facility Operating License No. NPF-66
NRC Docket No. 50-455

Subject: Steam Generator Inservice Inspection Summary Report

Pursuant to Item b. of Technical specification, 5.6.9, "Steam Generator (SG) Tube Inspection Reports," we are reporting the steam generator inspections results which were completed during the Byron Station Unit 2, Cycle 9 Refueling Outage (i.e., B2R09). This report is also being submitted in accordance with the requirements of Article IWA-6000, "Records and Reports", and Article IV-7000, "Report of Examination," of Mandatory Appendix IV, "Eddy Current Examination of Non-Ferromagnetic Steam Generator Heat Exchanger Tubing," of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1989 Edition.

Attached is the report containing the results of the Byron Station, Unit 2 steam generator examination performed during the B2R09 refueling outage.

If there are any questions regarding this matter, please contact P. Reister, Regulatory Assurance Manager, at (815) 234-5441, extension 2280.

Respectfully,

Richard P. Lopriore
Site Vice President
Byron Nuclear Generating Station

Attachment: Steam Generator Inservice Inspection Summary Report (B2R09)

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Byron Station
NRC Project Manager – NRR – Byron Station
Office of Nuclear Facility Safety – Illinois Dept. of Nuclear Safety

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Exelon Generation Company, LLC

BYRON STATION UNIT 2
4450 North German Church Road
Byron, Illinois 61010

COMMERCIAL OPERATION: 08/21/87

STEAM GENERATOR EDDY CURRENT INSPECTION REPORT

CYCLE 9 REFUELING OUTAGE (B2R09)

April 2001

Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, Illinois 60555

Documentation Completed Date: June 22, 2001

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1.0 INTRODUCTION

Byron Station Unit 2 operates with four Westinghouse Model D-5 recirculating steam generators (SGs) in the four loop pressurized water reactor system. The steam generators contain thermally treated Inconel-600 U-tubes that have a nominal outside diameter of 0.750 inches and a nominal thickness of 0.043 inches. The tubes are hydraulically expanded into the full depth of the tubesheet. The tubes are supported by stainless steel quatrefoil support plates and chrome plated Inconel-600 anti-vibration bars. See Figure A.1 for a diagram of the D-5 steam generator configuration.

In compliance with Byron Station Technical Specification 5.5.9, "Steam Generator Tube Surveillance Program," and American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code Section XI 1989 Edition, IWB 2500-1, Examination Category B-Q, Item B16.20, SG eddy current examinations were performed during the Byron Station Unit 2 Cycle 9 refueling outage (i.e., B2R09). In addition, the inspections were performed consistent with the Electric Power Research Institute (EPRI) "PWR Steam Generator Examination Guidelines: Revision 5: and Nuclear Energy Institute (NEI) 97-06, "Steam Generator Program Guidelines." The field inspection activities were conducted April 10 through April 13, 2001, by Westinghouse Electric Company, Ltd. The following inspections were performed during this outage.

- 100% Full Length Bobbin Coil in SG B
- Diagnostic Plus-Point inspections based on Bobbin Coil Results
- 100% Visual Inspection of Previously Installed Welded Tube Plugs
- 100% Visual Inspection of Previously Installed Mechanical Tube Plugs
- 100% Visual Inspection of Newly Installed Tube Plugs

2.0 SUMMARY

The guidance in Revision 5 of the EPRI "PWR Steam Generator Examination Guidelines" (i.e., EPRI Guidelines) was used during this inspection. A degradation assessment was performed prior to the inspection to ensure the proper EPRI Appendix H, "Performance Demonstration for Eddy Current Examination," qualified inspection techniques were used to detect any existing and potential modes of degradation. Each technique was evaluated to ensure that the detection and sizing capabilities are applicable to the Byron Station Unit 2 site specific condition in accordance with Section 6.2.4 of the EPRI Guidelines. All data analysts were qualified to Appendix G, "Qualification of Nondestructive Examination Personnel for Analysis of NDE Data," of the EPRI Guidelines (i.e., Qualified Data Analyst (QDA)). All data analyst and acquisition personnel satisfactorily completed site specific training and testing. An independent QDA process control review was employed to randomly sample the data to ensure that the analysis resolution process was properly performed and that the field calls were properly reported. An analysis feedback process was implemented that required the data analyst to review their missed calls and overcalls on a daily basis.

The modes of tube degradation found during this inspection were anti-vibration bar wear, foreign object wear, pre-heater wear, and an outer diameter volumetric freespan indication. The results of the inspection were classified as inspection category C-1 pursuant to Technical Specification 5.5.9.c, "Inspection Results Classification." There were no scanning limitations during the examinations.

As a result of the eddy current inspections, a total of four (4) tubes were repaired by tube plugging. Table 2.1 provides the tube plugging levels for each SG. Table 2.2 provides the total number of tubes plugged by degradation mode. All tubes associated with foreign objects were stabilized and plugged.

TABLE 2.1
Equivalent Tube Plugging Level

	SG A	SG B	SG C	SG D	TOTAL
Tubes Previously Plugged	50	109	41	19	**219**
Tubes Plugged in B2R09	0	4	0	0	**4**
Total Tubes Plugged	**50**	**113**	**41**	**19**	**223**
Total Tubes Plugged (%)	**1.09%**	**2.47%**	**0.90%**	**0.42%**	**1.22%**

TABLE 2.2
Tubes Repaired During B2R09

Mode of Degradation	SG A	SG B	SG C	SG D	TOTAL
Foreign Object Wear	0	3	0	0	**3**
Volumetric Indication (Outer Diameter)	0	1	0	0	**1**
B2R09 Plugging Totals	**0**	**4**	**0**	**0**	**4**

3.0 CERTIFICATIONS

3.1 Procedures/Examinations/Equipment

3.1.1 The examination and evaluation procedures used during the eddy current inspection were approved by personnel qualified to Level III in accordance with the 1984 Edition of the American Society for Nondestructive Testing Recommended Practice SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing." Exelon Special Process Procedures Manual procedure NDT-E-2, "Multifrequency Eddy Current Data Acquisition of Steam generator Tubing at Braidwood and Byron Nuclear Stations," Revision 4 and procedure NDT-E-3, "Evaluation of Eddy Current Data for Steam Generator Tubing at Braidwood and Byron Nuclear Stations," Revision 2, were used for the data acquisition and analysis.

3.1.2 The examinations, equipment, and personnel were in compliance with the requirements of the Exelon and Westinghouse Quality Assurance Programs for Inservice Inspection, Byron Station Technical Specification 5.5.9, 1989 Edition of the ASME B&PV Code Sections XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," and V, "Nondestructive Examination," Revision 5 of the EPRI PWR SG Examination Guidelines, and NEI 97-06, "Steam Generator Program Guidelines," Revision 1.

3.1.3 Certification packages for examiners, data analysts, and equipment are available at Byron Station. Table A.1 and Table A.2 lists all personnel who performed, supervised, or evaluated the data during this inspection.

3.1.4 R/D Tech Incorporated Model TC6700 Remote Data Acquisition Units (RDAUs) with ANSER Version 00.2.1 software was used to acquire the eddy current data. Analysis was performed with Westinghouse ANSER Version 01.1.1 computer software.

3.1.5 The bobbin coil examinations of SG B were performed with a 0.610 inch diameter bobbin coil eddy current probe. For U-Bend and cold leg tubing in rows 1 through 4, a 0.590 inch diameter bobbin probe was utilized to achieve the complete full tube inspection.

3.1.6 The rotating coil examinations were performed with a three coil rotating plus-point probe that contains a plus-point coil, a 0.115 inch unshielded diameter pancake coil and a 0.080 inch diameter shielded high frequency pancake coil.

3.2 Personnel

3.2.1 The personnel who performed the eddy current inspections were qualified to Level I and Level II in accordance with the 1984 Edition of SNT-TC-1A. The Level I personnel performed the inspections under the direct supervision of Level II personnel.

3.2.2 The personnel who performed the SG eddy current data analysis were qualified to a minimum of Level II, with special analysis training (i.e., Level IIA) in accordance with the 1984 Edition of SNT-TC-1A and Article IV-2000 of ASME Section XI, 1989 Edition.

3.2.3 All SG eddy current data analysts were qualified in accordance with EPRI Appendix G for Qualified Data Analysts (QDAs). In addition, all data analysts were trained and tested in accordance with a site specific performance demonstration program in both the bobbin coil and plus-point inspection data analysis. Resolution analysts were also trained and tested specifically for the performance of data resolution. All analysts were required to achieve a score of 80% or greater on both the written and practical examinations prior to analyzing data.

3.2.4 All SG eddy current data acquisition personnel were trained and tested in accordance with a site specific performance demonstration program. The data acquisition operators were required to achieve a written test score of 80% or greater prior to acquiring data.

3.2.5 The SG eddy current analysis was subject to two independent analyses. Primary analysis of all data was performed by Westinghouse and NDE Technology. An independent company, Anatec International, performed the secondary analysis. Discrepancies between the two parties required Level III concurrence between both parties for the final resolution.

3.2.6 An independent SG eddy current Level III QDA was employed to serve as a process control reviewer, in accordance with EPRI Guidelines, Section 6.3.3.4, to randomly sample the data to ensure the resolution process was properly performed and that the field calls were properly reported. The Independent Level III QDA also provided data acquisition oversight to ensure that the data collection process was in compliance with appropriate procedures, that all essential variables were set in accordance with the applicable Examination Technique Specification Sheet (ETSS) and to provide a data quality check of acquired data. The Independent Level III QDA reported directly to the Exelon Level III inspector.

4.0 EXAMINATION TECHNIQUE AND EXAMINATION SCOPE

All eddy current examination techniques used are qualified in accordance with Appendix H of the EPRI PWR SG Examination Guidelines. Each examination technique was evaluated to be applicable to the tubing and conditions of the Byron Unit 2 SGs.

4.1 Examination Techniques

4.1.1 All inservice tubes in SG B were inspected full length utilizing a 0.610 inch diameter bobbin coil eddy current probe. For U-Bend and cold leg tubing in rows 1 through 4, a 0.590 inch diameter bobbin probe was utilized to achieve the complete full tube inspection. Nominal probe inspection speed was 40 inches per second for rows 5 through 49 and 24 inches per second for rows 1 through 4. Sufficient sampling rates were used to maintain a minimum of 30 samples per inch. The bobbin coil probes were operated at frequencies of 550 kHz, 300 kHz, 130 kHz, and 20 kHz operating in the differential and absolute test modes. In addition, suppression mixes were used to enhance the inspection. These mixes were as follows: 550/130 kHz differential mix, and a 300/130 kHz absolute mix for flat wear and a 300/130 kHz absolute mix for tapered wear.

4.1.2 Non-quantifiable bobbin coil indications identified by an "I-Code" were examined with a three coil rotating plus-point probe that contains a plus-point coil, a 0.115 inch unshielded diameter pancake coil and a 0.080 inch diameter shielded high frequency pancake coil. Nominal probe speed was 0.5 inches per second with a sampling rate to maintain a minimum of 30 samples per inch. The probe was operated at frequencies of 300 kHz, 200 kHz, 100 kHz and 20 kHz. Three process channels were created to display axial indications in a positive trace.

4.1.3 The eddy current calibration standards used for the bobbin coil and plus-point inspections met the requirements of Section 6.2.7 of the EPRI PWR Steam Generator Examination Guidelines, Revision 5 and Sections V and XI of the ASME B&PV Code, 1989 Edition.

4.1.4 The SG eddy current examination techniques used during this inspection were equivalent to the EPRI Appendix H techniques listed in Table 4.1. Each Examination Technique Specification Sheet (ETSS) was evaluated and determined to be applicable to the site conditions.

TABLE 4.1
EPRI Appendix H Techniques

EPRI Technique ETSS	Probe	Description
96004.3	Bobbin	AVB/Pre-Heater/TSP/Foreign Object Wear, Freespan Flaws
96910.1	Plus-Point	Foreign Object Wear/Freespan Flaw Sizing

AVB – Anti-vibration Bar

4.2 Steam Generator Inspection Scope

4.2.1 100% of the tubes in SG B were inspected full length, tube end to tube end, with a bobbin coil probe described in Section 4.1.1 above.

4.2.2 Diagnostic examinations were planned for non-quantifiable indications that were detected by the bobbin coil examination. These examinations were performed with the three coil plus-point probe described in Section 4.1.2 above. A total of 5 indications were inspected due to non-quantifiable signals detected during the bobbin coil inspection. An additional 25 tubes were inspected in the vicinity of a foreign object in order to determine the extent of tubes affected by the object.

4.2.3 Figures A.2 through A.5 contain tube sheet maps indicating the tube inspections that were performed during B2R09.

4.3 Recording of Examination Data

The raw eddy current data and analysis results were recorded on optical disks. The data was then loaded into the Westinghouse Eddy Current Data Management System, "ST2000," version 1.05.00. This system was used to track the proper examination of all tubes and it was also used to generate the final eddy current report summaries.

4.4 Witness and Verification of Examination

Eddy current inspections were witnessed and/or verified by the Authorized Nuclear Inservice Inspectors, Mr. Jeff Hendricks and Mr. Robert Ward, of the Hartford Steam Boiler Inspection and Insurance Company of Hartford Connecticut, Chicago Branch, 2443 Warrenville Road, Suite 500, Lisle, Illinois 60532-9871.

ASME Form NIS-1, "Owners Report for Inservice Inspections," is contained in Attachment A.2.

5.0 EXAMINATION RESULTS

5.1 Indications Found

5.1.1 Anti-Vibration Bar (AVB) Wear – Tube degradation was found by the 100% bobbin coil examination in the U-bend region due to fretting of the Anti-Vibration Bars on the tube. A total of 148 tubes contained 251 indications of AVB wear in SG B. The EPRI Appendix H bobbin coil examination technique 96004.3 was utilized in this inspection for the depth sizing of AVB wear. The largest indication found was 39% through wall (TW). No tubes were removed from service as a result of AVB wear exceeding the 40% TW repair limit. The table below provides a summary of AVB wear degradation.

TABLE 5.1.1

	SG B	
	Tubes	**Ind.**
<20% TW	84	104
20-39% TW	94	147
>=40% TW	0	0
TOTAL	148	251

*Tubes may contain indications in more than one category.

5.1.2 Foreign Object Wear – Tube degradation was found in two tubes (i.e., SG B14-7 and 15-7) that was attributable to fretting from a foreign object located on the 5th tube support plate in the 2B steam generator. Another tube (i.e., SG B20-56) was found with an indication due to a foreign object previously identified and removed in a previous outage. The EPRI Appendix H plus-point qualified examination technique 96910.1 was applied to size the indications at a depth of 9% and 10% through wall. Both tubes were stabilized and removed from service. No indications of foreign object wear were left inservice. Table 5.1.2 provides a summary of the tubes that were affected by foreign objects.

TABLE 5.1.2

SG	Row	Column	Indication	Location	Comment
2B	14	7	7%	5H+0.84"	Stabilized/Plugged
2B	15	7	14%	5H+0.76"	Stabilized/Plugged
2B	20	56	9%	2C+0.68"	Plugged

5.1.3 Pre-Heater Wear – Eight tubes were found that contained signals of pre-heater wear that were less than the 15% TW reporting criteria. The depth of the pre-heater wear ranged from 7% TW to 13% TW as measured by the EPRI Appendix H qualified bobbin coil examination technique 96004.3. All tubes were left in service. Table 5.1.3 below provides a summary of tubes that contain Pre-Heater wear.

TABLE 5.1.3

SG	Row	Column	Depth	Location
2B	48	50	12%	07C+0.55
2B	49	50	13%	07C-0.33
2B	48	53	11%	07C+0.55
2B	49	53	13%	07C-0.33
2B	48	55	10%	07C+0.55
2B	48	59	10%	07C+0.33
2B	49	63	8%	07C+0.55
2B	47	75	7%	02C+0.46

5.1.4 Other Indications – One tube, Row 37, Column 67, in the 2B steam generator contained a volumetric indication on the outer diameter at tube support plate 02C+3.38 inches. The indication was initially detected by the bobbin coil examination and confirmed and sized by a subsequent plus-point probe examination. The indication was sized at a depth of 11% through wall with the Appendix H qualified examination technique 96910.1. The tube was removed from service.

5.2 Other Results

5.2.1 Visual Inspection of Installed Tube Plugs – All previously installed welded plugs and previously installed mechanical plugs were visually inspected for signs of degradation and leakage. A total of 7 welded plugs and 227 mechanical plugs were visually inspected. In addition, all plugs installed during this outage (i.e., eight) were also visually inspected and the installation parameters were reviewed for acceptable installation. No anomalies were found.

5.2.2 Attachment A.1 contains a tube list with axial elevations of all imperfections that contain measurable through wall depth that were found during this eddy current inspection.

6.0 REPAIR SUMMARY

Repairs were conducted in accordance with ASME Section XI, 1989 Edition. All tube plugging was performed by Westinghouse using Inconel-690 mechanical tube plugs. All repairs were performed in accordance with Westinghouse approved procedures. Table 6.1 depicts the repairs conducted during B2R09. Table 6.2 lists the tube locations that were repaired in B2R09.

TABLE 6.1
Summary of B2R09 Tube Plugging

Repairs Performed	SG A	SG B	SG C	SG D	TOTAL
Tubes Plugged*	0	4	0	0	4
Tubes Stabilized	0	2	0	0	2

* Includes number of tubes stabilized and plugged.

TABLE 6.2
SG Tubes Repaired During B2R09

SG	Row	Col.	Repair	Stabilizer	Indication	Volts	Channel	Phase	Location
2B	14	7	Plug	Hot Leg	7%	0.08	P4	0	5H+0.84
2B	15	7	Plug	Hot Leg	14%	0.19	P4	0	5H+0.76
2B	20	56	Plug	-	9%	0.17	P4	0	2C+0.68
2B	37	67	Plug	-	11%	0.22	P4	0	2C+3.38

xH – Tube Support Plate on Hot Led Side
xC – Tube Support Plate on Cold Leg Side
P4 – Suppression Mix 300/100 kHz

7.0 DOCUMENTATION

All original optical disks have been provided to Exelon and are maintained at Byron Station. The final data sheets and pertinent tube sheet plots are contained in the Westinghouse Final Outage Report for Byron Station Unit 2, B2R09, and are also maintained at Byron Station.

8.0 FIGURES/TABLES/ATTACHMENTS

TABLE A.1
Data Acquisition Personnel Certifications

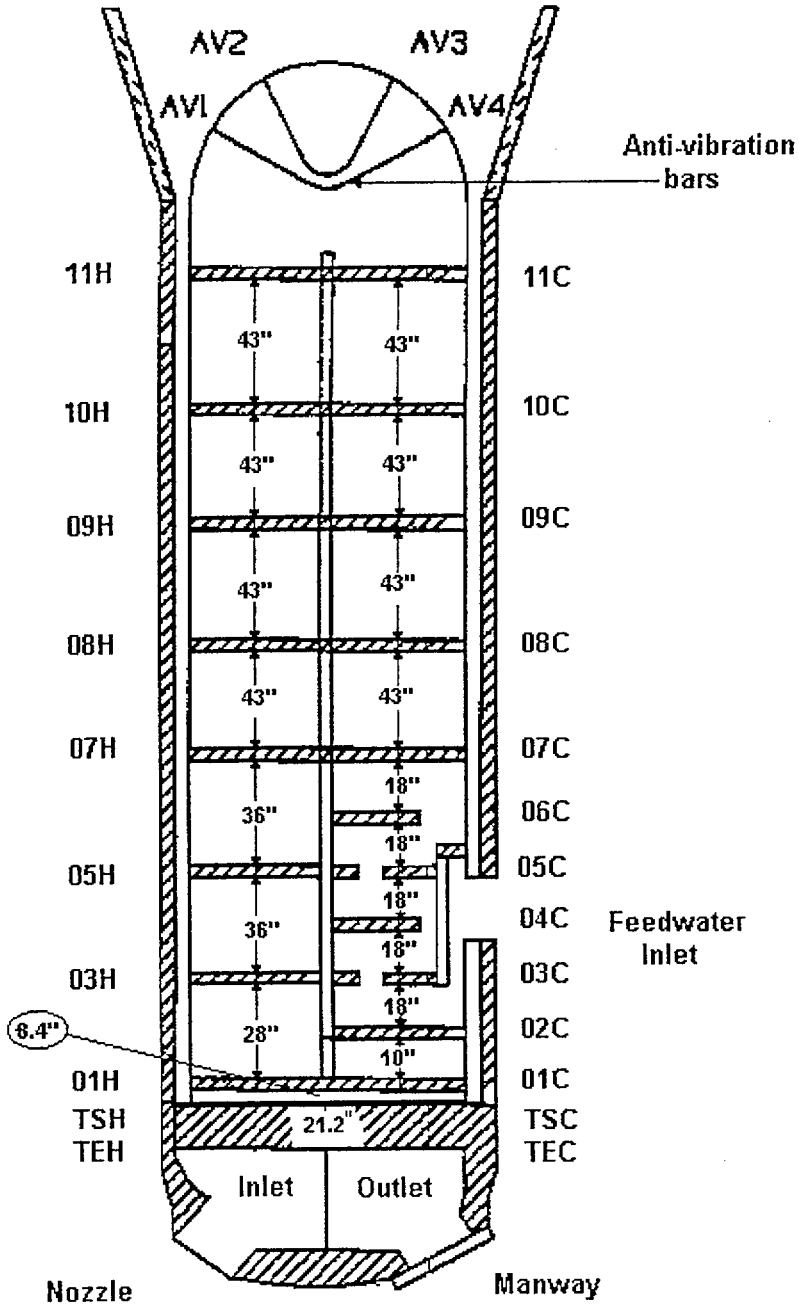
No.	Name	Company	Level	QDA (Y/N)
1	Bolt, W	W	I	N
2	Evering, DP	W	II	N
3	Fore, SK	W	II	N
4	Koeser, SL	W	II	N
5	Mains, PJ	W	II	N
6	Parris, TB	W	II	N
7	Shipley, EB	W	II	N
8	Hill, WW	W	I	N

TABLE A.2
Data Analysis Personnel Certifications

No.	Name	Company	Level	QDA (Y/N)
1	Barnes, RM	Anatec	III	Y
2	Caperello, MM	Anatec	IIA	Y
3	Chizmar, DA	Anatec	IIA	Y
4	DeLapintiere, LM	Anatec	III	Y
5	Dye, JE	Westinghouse	IIA	Y
6	Lewis, DA	NDE Tech.	IIIA	Y
7	Majoros, TP	Anatec	IIA	Y
8	Mast, MS	NDE Tech.	IIIA	Y
9	Nelson, DL	NDE Tech.	IIIA	Y
10	Pierini, GP	Westinghouse	III	Y
11	Popovich, RA	Westinghouse	III	Y
12	Rogers, SD	Anatec	IIA	Y
13	Ruscitti, SF	NDE Tech.	IIA	Y
14	Seiwald, MW	Anatec	IIA	Y
15	Siegel, RA	NDE Tech.	IIIA	Y
16	Stanger, DA	Anatec	III	Y
17	Stock, WF	Westinghouse	III	Y
18	Thompson, VA	NDE Tech.	IIIA	Y
19	Wheeler, CK	NDE Tech.	IIIA	Y
20	Williamson, JC	Anatec	IIA	Y

* **Process Control Reviewer**

FIGURE A.1
Westinghouse Model D-5 Tube Support Configuration



Note: Tube Support Plate dimensions are from centerline to centerline.

FIGURE A.2
SG B COLD LEG BOBBIN COIL INSPECTION SCOPE

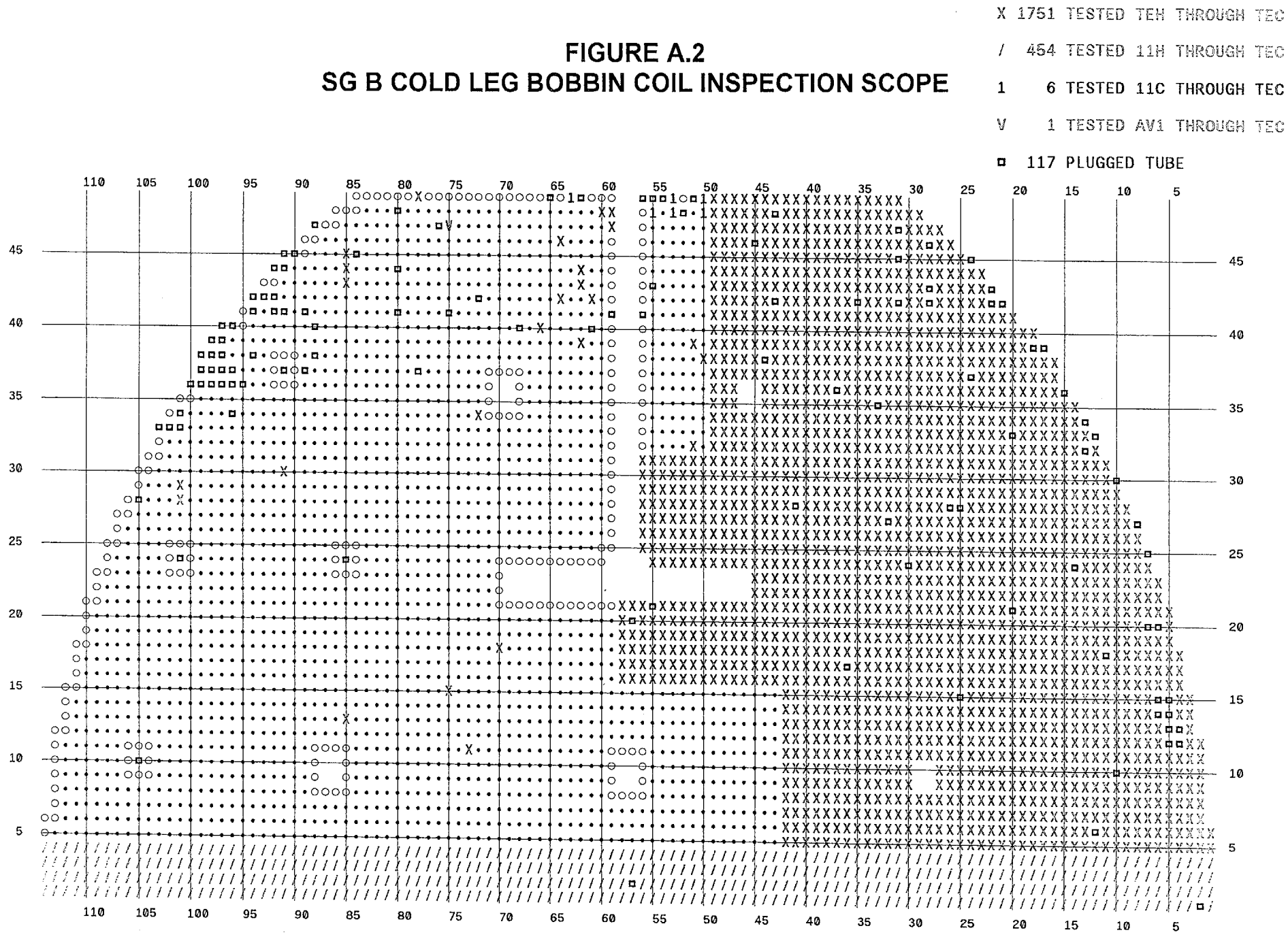


FIGURE A.3
SG B HOT LEG BOBBIN COIL INSPECTION SCOPE

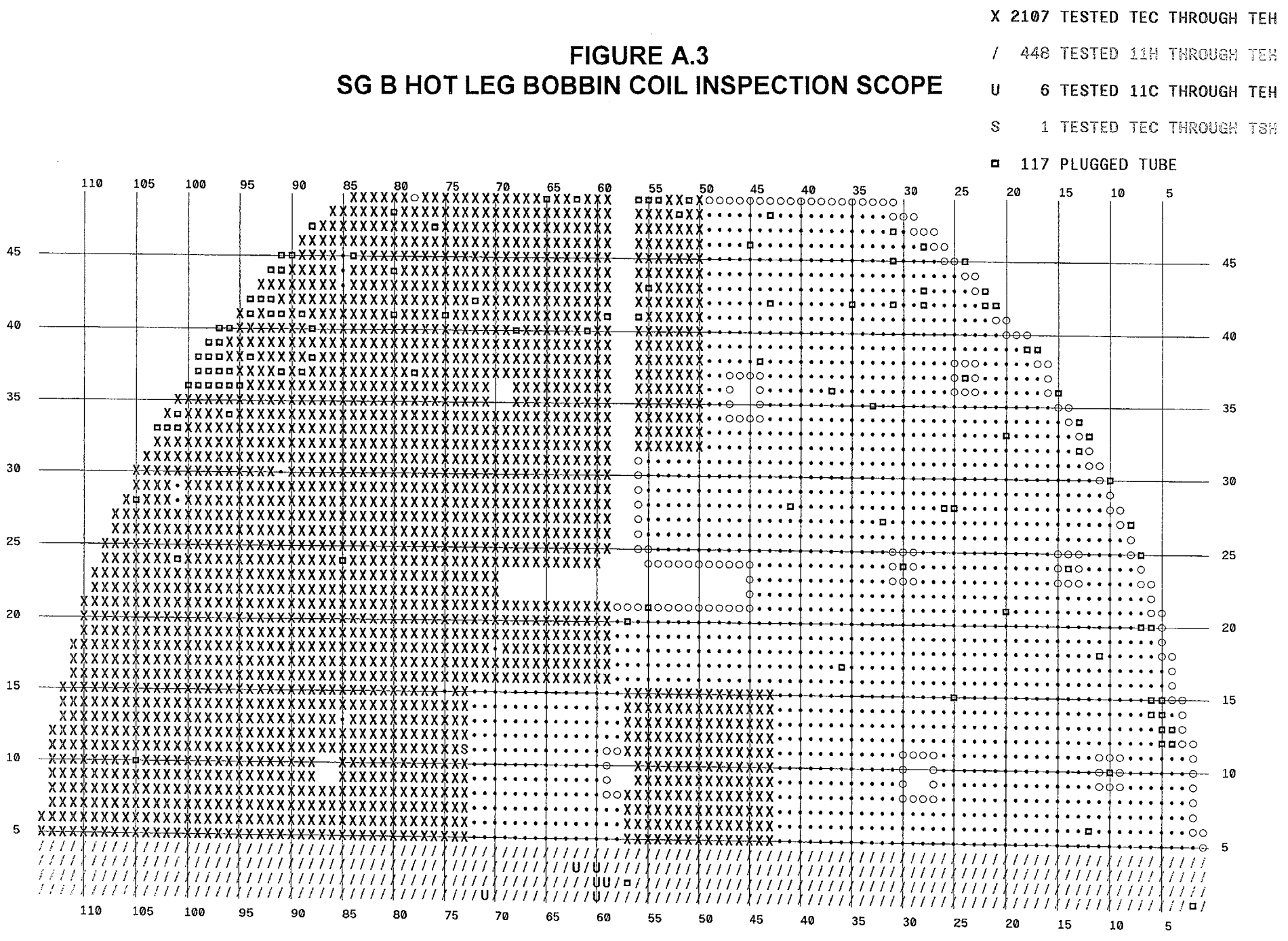
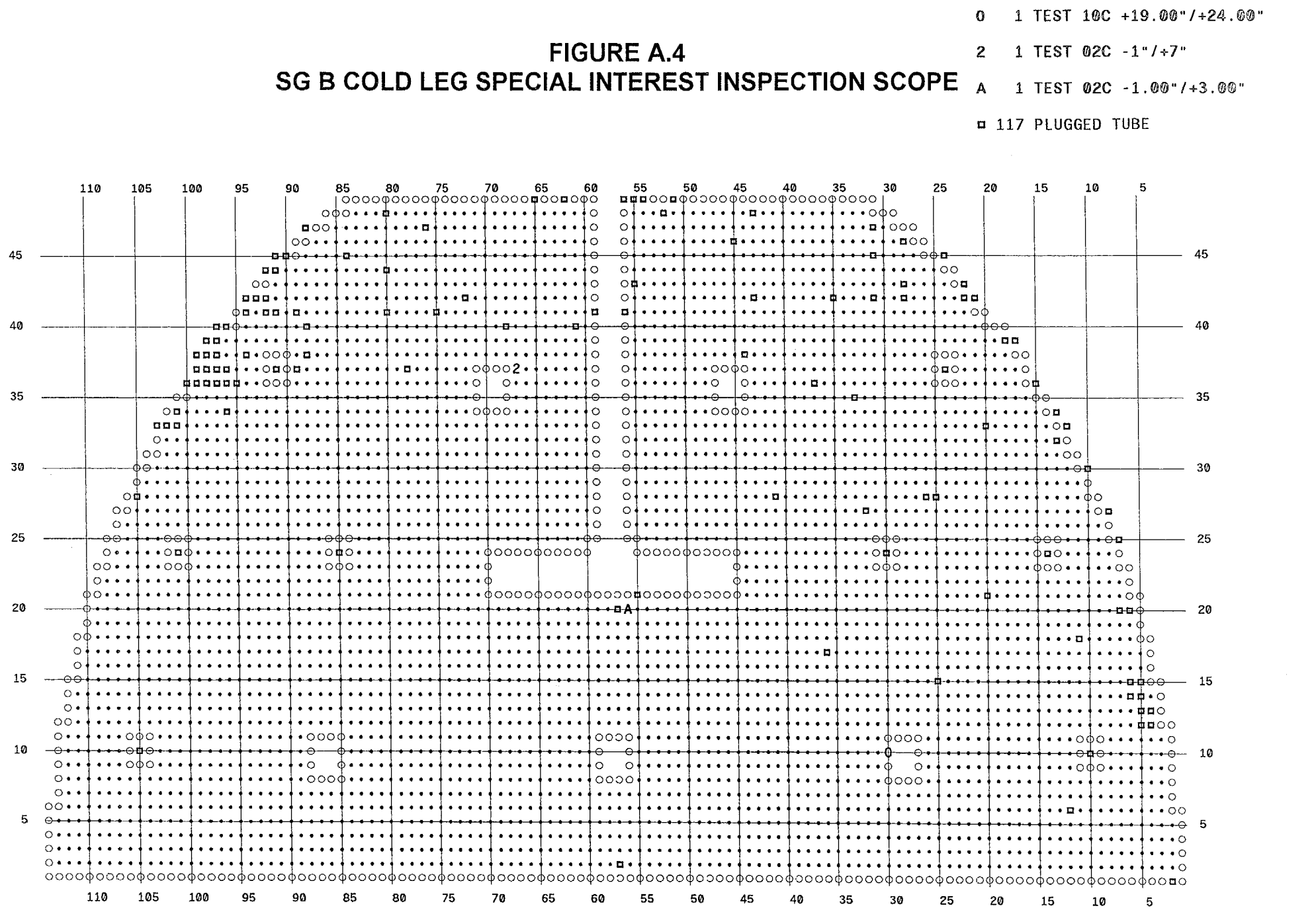


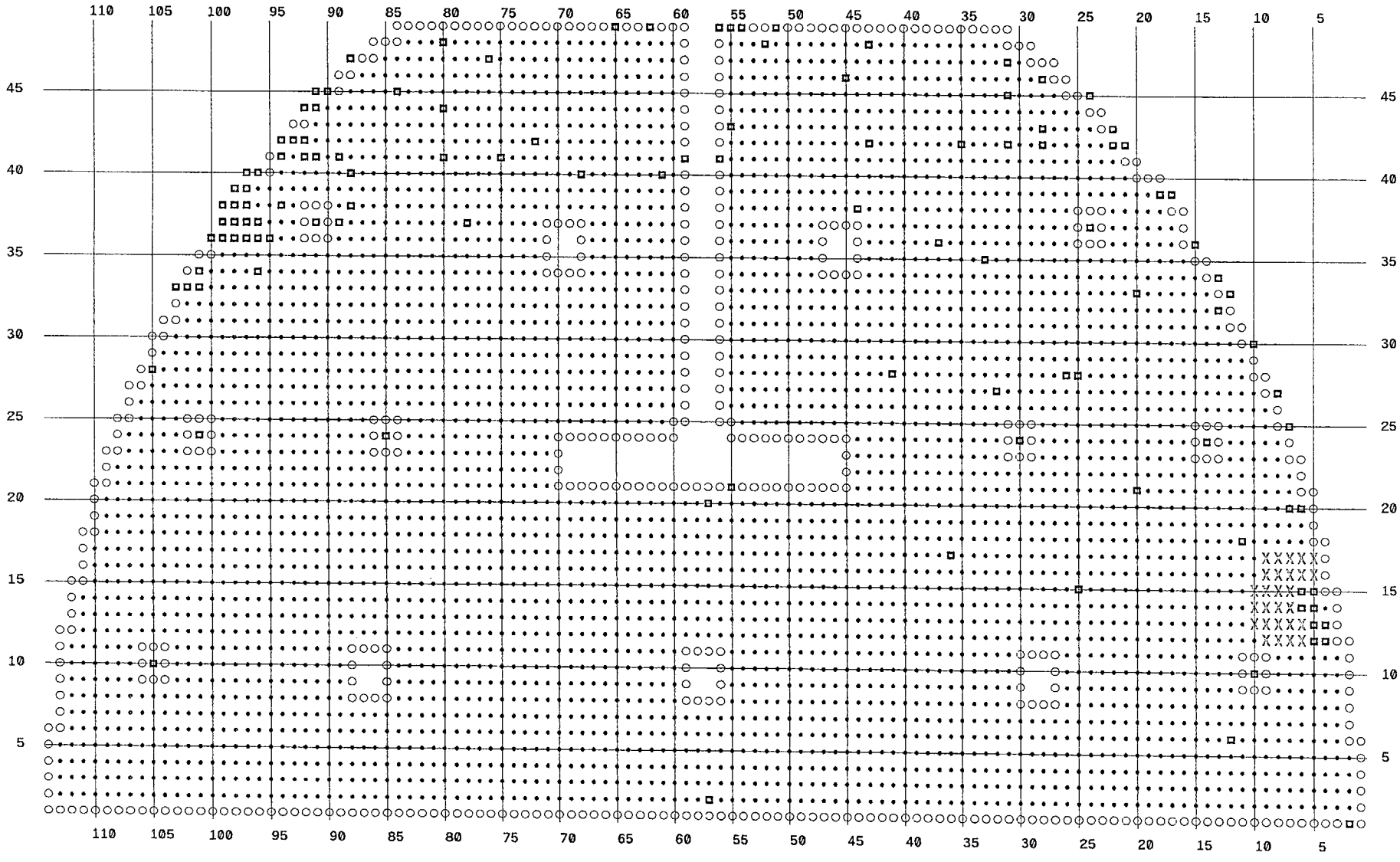
FIGURE A.4
SG B COLD LEG SPECIAL INTEREST INSPECTION SCOPE



X 27 TEST 05H -1"/+4"

▫ 117 PLUGGED TUBE

FIGURE A.5
SG B HOT LEG SPECIAL INTEREST INSPECTION SCOPE



ATTACHMENT A.1
ASME SECTION XI FORM NIS-BB
2B Steam Generator

FORM NIS-BB TUBE EXAMINATION REPORT

EDDY CURRENT EXAMINATION RESULTS

Site: Byron Station, Unit 2 **Steam Generator: 2RC01BB**

Test Frequency: 20, 130, 300, 500 kHz **Date: 05/31/2001**

Row	Column	% Tube Wall Penetration	Origin	Location	Inch
18	48	32	ODI	AV1	+ 0.0"
23	108	30	ODI	AV2	+ 0.0"
24	107	16	ODI	AV2	+ 0.0"
24	107	15	ODI	AV3	+ 0.0"
24	108	24	ODI	AV4	+ 0.0"
25	103	23	ODI	AV2	+ 0.0"
25	104	19	ODI	AV2	+ 0.0"
25	107	20	ODI	AV2	+ 0.0"
25	107	22	ODI	AV3	+ 0.0"
25	108	26	ODI	AV4	+ 0.0"
26	11	15	ODI	AV3	+ 0.0"
26	105	27	ODI	AV3	+ 0.0"
26	107	17	ODI	AV2	+ 0.0"
27	10	20	ODI	AV2	+ 0.0"
27	31	23	ODI	AV4	+ 0.0"
27	105	17	ODI	AV1	+ 0.0"
27	105	28	ODI	AV2	+ 0.0"
27	105	15	ODI	AV3	+ 0.0"
27	105	17	ODI	AV4	+ 0.0"
28	11	23	ODI	AV2	+ 0.0"
28	11	30	ODI	AV3	+ 0.0"
28	11	24	ODI	AV4	+ 0.0"
28	12	20	ODI	AV2	+ 0.0"
28	27	15	ODI	AV2	+ 0.0"
28	27	19	ODI	AV3	+ 0.0"
28	29	18	ODI	AV2	+ 0.0"
28	29	19	ODI	AV3	+ 0.0"
28	32	19	ODI	AV2	+ 0.0"
28	37	18	ODI	AV3	+ 0.0"
28	79	18	ODI	AV3	+ 0.0"
28	99	18	ODI	AV2	+ 0.0"
28	99	15	ODI	AV4	+ 0.0"
28	102	19	ODI	AV3	+ 0.0"
28	103	15	ODI	AV1	+ 0.0"
28	103	15	ODI	AV2	+ 0.0"
28	103	22	ODI	AV3	+ 0.0"
28	104	20	ODI	AV2	+ 0.0"
29	15	15	ODI	AV2	+ 0.0"
29	15	16	ODI	AV4	+ 0.0"
29	98	16	ODI	AV2	+ 0.0"
29	99	16	ODI	AV4	+ 0.0"

ATTACHMENT A.1
ASME SECTION XI FORM NIS-BB
2B Steam Generator

FORM NIS-BB TUBE EXAMINATION REPORT

EDDY CURRENT EXAMINATION RESULTS

Site: Byron Station, Unit 2 **Steam Generator: 2RC01BB**

Test Frequency: 20, 130, 300, 500 kHz **Date: 05/31/2001**

Row	Column	% Tube Wall Penetration	Origin	Location	Inch
29	105	22	ODI	AV2	+ 0.0"
29	105	26	ODI	AV3	+ 0.0"
29	105	25	ODI	AV4	+ 0.0"
30	13	19	ODI	AV3	+ 0.0"
30	14	15	ODI	AV3	+ 0.0"
30	99	18	ODI	AV3	+ 0.0"
30	101	17	ODI	AV1	+ 0.0"
30	102	23	ODI	AV2	+ 0.0"
30	105	28	ODI	AV4	+ 0.0"
31	12	25	ODI	AV1	+ 0.0"
31	12	26	ODI	AV2	+ 0.0"
31	12	31	ODI	AV3	+ 0.0"
31	12	29	ODI	AV4	+ 0.0"
31	13	22	ODI	AV1	+ 0.0"
31	13	16	ODI	AV2	+ 0.0"
31	13	17	ODI	AV3	+ 0.0"
31	13	22	ODI	AV4	+ 0.0"
31	15	26	ODI	AV2	+ 0.0"
31	17	19	ODI	AV2	+ 0.0"
31	17	15	ODI	AV3	+ 0.0"
31	34	17	ODI	AV3	+ 0.0"
31	102	15	ODI	AV3	+ 0.0"
32	12	26	ODI	AV2	+ 0.0"
32	28	26	ODI	AV2	+ 0.0"
32	28	22	ODI	AV3	+ 0.0"
32	28	16	ODI	AV4	+ 0.0"
32	32	19	ODI	AV2	+ 0.0"
32	32	29	ODI	AV3	+ 0.0"
32	32	18	ODI	AV4	+ 0.0"
32	36	19	ODI	AV3	+ 0.0"
32	40	16	ODI	AV2	+ 0.0"
32	40	20	ODI	AV3	+ 0.0"
32	40	17	ODI	AV4	+ 0.0"
32	98	15	ODI	AV3	+ 0.0"
32	99	15	ODI	AV3	+ 0.0"
33	13	22	ODI	AV1	+ 0.0"
33	14	29	ODI	AV1	+ 0.0"
33	14	26	ODI	AV2	+ 0.0"
33	14	15	ODI	AV4	+ 0.0"
33	72	16	ODI	AV3	+ 0.0"
33	97	29	ODI	AV3	+ 0.0"

ATTACHMENT A.1
ASME SECTION XI FORM NIS-BB
2B Steam Generator

FORM NIS-BB TUBE EXAMINATION REPORT

EDDY CURRENT EXAMINATION RESULTS

Site: Byron Station, Unit 2 **Steam Generator: 2RC01BB**

Test Frequency: 20, 130, 300, 500 kHz **Date: 05/31/2001**

Row	Column	% Tube Wall Penetration	Origin	Location	Inch
33	98	17	ODI	AV3	+ 0.0"
33	99	21	ODI	AV1	+ 0.0"
33	99	25	ODI	AV2	+ 0.0"
33	99	22	ODI	AV3	+ 0.0"
33	99	16	ODI	AV4	+ 0.0"
34	14	26	ODI	AV3	+ 0.0"
34	14	15	ODI	AV4	+ 0.0"
34	17	19	ODI	AV3	+ 0.0"
34	19	18	ODI	AV3	+ 0.0"
34	26	21	ODI	AV3	+ 0.0"
34	30	17	ODI	AV1	+ 0.0"
34	30	23	ODI	AV3	+ 0.0"
34	33	24	ODI	AV2	+ 0.0"
34	36	18	ODI	AV2	+ 0.0"
34	39	20	ODI	AV2	+ 0.0"
34	95	16	ODI	AV3	+ 0.0"
34	99	17	ODI	AV3	+ 0.0"
35	14	17	ODI	AV2	+ 0.0"
35	14	18	ODI	AV3	+ 0.0"
35	15	31	ODI	AV2	+ 0.0"
35	16	16	ODI	AV1	+ 0.0"
35	16	21	ODI	AV3	+ 0.0"
35	96	23	ODI	AV3	+ 0.0"
35	97	33	ODI	AV3	+ 0.0"
35	98	16	ODI	AV1	+ 0.0"
35	98	21	ODI	AV4	+ 0.0"
35	99	18	ODI	AV3	+ 0.0"
35	99	21	ODI	AV4	+ 0.0"
35	100	22	ODI	AV2	+ 0.0"
35	100	21	ODI	AV4	+ 0.0"
35	101	35	ODI	AV3	+ 0.0"
35	101	28	ODI	AV4	+ 0.0"
36	16	17	ODI	AV2	+ 0.0"
36	16	25	ODI	AV3	+ 0.0"
36	16	16	ODI	AV4	+ 0.0"
36	17	21	ODI	AV2	+ 0.0"
36	17	17	ODI	AV3	+ 0.0"
36	18	17	ODI	AV2	+ 0.0"
36	20	21	ODI	AV2	+ 0.0"
36	23	28	ODI	AV2	+ 0.0"
36	29	19	ODI	AV2	+ 0.0"

ATTACHMENT A.1
ASME SECTION XI FORM NIS-BB
2B Steam Generator

FORM NIS-BB TUBE EXAMINATION REPORT

EDDY CURRENT EXAMINATION RESULTS

Site: Byron Station, Unit 2 **Steam Generator: 2RC01BB**

Test Frequency: 20, 130, 300, 500 kHz **Date: 05/31/2001**

Row	Column	% Tube Wall Penetration	Origin	Location	Inch
36	78	18	ODI	AV3	+ 0.0"
36	88	19	ODI	AV3	+ 0.0"
36	94	21	ODI	AV2	+ 0.0"
37	17	17	ODI	AV3	+ 0.0"
37	83	16	ODI	AV2	+ 0.0"
37	90	15	ODI	AV2	+ 0.0"
37	92	29	ODI	AV2	+ 0.0"
37	93	15	ODI	AV2	+ 0.0"
37	93	29	ODI	AV3	+ 0.0"
37	95	20	ODI	AV3	+ 0.0"
37	95	16	ODI	AV4	+ 0.0"
38	71	15	ODI	AV1	+ 0.0"
38	71	24	ODI	AV2	+ 0.0"
38	71	31	ODI	AV3	+ 0.0"
38	93	18	ODI	AV3	+ 0.0"
38	93	17	ODI	AV4	+ 0.0"
38	95	32	ODI	AV1	+ 0.0"
38	95	22	ODI	AV2	+ 0.0"
38	95	23	ODI	AV3	+ 0.0"
38	95	25	ODI	AV4	+ 0.0"
38	96	27	ODI	AV1	+ 0.0"
38	96	25	ODI	AV2	+ 0.0"
38	96	15	ODI	AV3	+ 0.0"
38	96	30	ODI	AV4	+ 0.0"
39	19	33	ODI	AV2	+ 0.0"
39	19	30	ODI	AV3	+ 0.0"
39	19	15	ODI	AV4	+ 0.0"
39	20	16	ODI	AV2	+ 0.0"
39	21	19	ODI	AV2	+ 0.0"
39	21	19	ODI	AV3	+ 0.0"
39	26	24	ODI	AV2	+ 0.0"
39	33	20	ODI	AV4	+ 0.0"
39	39	24	ODI	AV2	+ 0.0"
39	92	19	ODI	AV4	+ 0.0"
39	93	23	ODI	AV3	+ 0.0"
39	93	15	ODI	AV4	+ 0.0"
39	94	16	ODI	AV2	+ 0.0"
39	94	32	ODI	AV3	+ 0.0"
39	95	23	ODI	AV2	+ 0.0"
39	95	23	ODI	AV3	+ 0.0"
39	95	20	ODI	AV4	+ 0.0"

ATTACHMENT A.1
ASME SECTION XI FORM NIS-BB
2B Steam Generator

FORM NIS-BB TUBE EXAMINATION REPORT

EDDY CURRENT EXAMINATION RESULTS

Site: Byron Station, Unit 2 **Steam Generator: 2RC01BB**

Test Frequency: 20, 130, 300, 500 kHz **Date: 05/31/2001**

Row	Column	% Tube Wall Penetration	Origin	Location	Inch
39	96	19	ODI	AV1	+ 0.0"
39	96	39	ODI	AV2	+ 0.0"
39	96	17	ODI	AV4	+ 0.0"
40	18	22	ODI	AV1	+ 0.0"
40	18	39	ODI	AV2	+ 0.0"
40	18	39	ODI	AV3	+ 0.0"
40	20	21	ODI	AV2	+ 0.0"
40	20	24	ODI	AV3	+ 0.0"
40	24	19	ODI	AV2	+ 0.0"
40	26	18	ODI	AV2	+ 0.0"
40	27	24	ODI	AV3	+ 0.0"
40	34	23	ODI	AV2	+ 0.0"
40	54	17	ODI	AV3	+ 0.0"
40	59	20	ODI	AV3	+ 0.0"
40	91	22	ODI	AV2	+ 0.0"
40	92	27	ODI	AV3	+ 0.0"
40	94	34	ODI	AV2	+ 0.0"
40	95	15	ODI	AV3	+ 0.0"
40	95	18	ODI	AV4	+ 0.0"
41	43	26	ODI	AV1	+ 0.0"
41	43	29	ODI	AV2	+ 0.0"
41	43	36	ODI	AV3	+ 0.0"
41	79	15	ODI	AV3	+ 0.0"
41	85	18	ODI	AV2	+ 0.0"
41	87	23	ODI	AV1	+ 0.0"
41	87	25	ODI	AV2	+ 0.0"
41	87	23	ODI	AV3	+ 0.0"
41	87	15	ODI	AV4	+ 0.0"
41	93	23	ODI	AV2	+ 0.0"
41	93	27	ODI	AV3	+ 0.0"
41	93	24	ODI	AV4	+ 0.0"
41	95	21	ODI	AV1	+ 0.0"
41	95	33	ODI	AV2	+ 0.0"
41	95	28	ODI	AV3	+ 0.0"
42	30	26	ODI	AV1	+ 0.0"
42	30	21	ODI	AV2	+ 0.0"
42	30	34	ODI	AV3	+ 0.0"
42	34	19	ODI	AV2	+ 0.0"
42	36	22	ODI	AV2	+ 0.0"
42	37	17	ODI	AV1	+ 0.0"
42	37	28	ODI	AV2	+ 0.0"

ATTACHMENT A.1
ASME SECTION XI FORM NIS-BB
2B Steam Generator

FORM NIS-BB TUBE EXAMINATION REPORT

EDDY CURRENT EXAMINATION RESULTS

Site: Byron Station, Unit 2 **Steam Generator: 2RC01BB**

Test Frequency: 20, 130, 300, 500 kHz **Date: 05/31/2001**

Row	Column	% Tube Wall Penetration	Origin	Location	Inch
42	37	30	ODI	AV3	+ 0.0"
42	44	16	ODI	AV2	+ 0.0"
42	44	31	ODI	AV3	+ 0.0"
42	44	19	ODI	AV4	+ 0.0"
42	68	19	ODI	AV2	+ 0.0"
42	68	18	ODI	AV3	+ 0.0"
42	86	19	ODI	AV2	+ 0.0"
42	89	34	ODI	AV1	+ 0.0"
42	89	33	ODI	AV2	+ 0.0"
42	89	25	ODI	AV3	+ 0.0"
43	25	24	ODI	AV2	+ 0.0"
43	25	21	ODI	AV3	+ 0.0"
43	25	18	ODI	AV4	+ 0.0"
43	29	20	ODI	AV1	+ 0.0"
43	29	37	ODI	AV2	+ 0.0"
43	29	15	ODI	AV3	+ 0.0"
43	91	25	ODI	AV3	+ 0.0"
43	92	22	ODI	AV3	+ 0.0"
43	93	16	ODI	AV4	+ 0.0"
44	26	30	ODI	AV2	+ 0.0"
44	26	18	ODI	AV3	+ 0.0"
44	45	25	ODI	AV3	+ 0.0"
44	76	24	ODI	AV2	+ 0.0"
44	85	24	ODI	AV2	+ 0.0"
44	85	32	ODI	AV3	+ 0.0"
44	85	24	ODI	AV4	+ 0.0"
44	90	28	ODI	AV3	+ 0.0"
45	26	28	ODI	AV2	+ 0.0"
45	26	33	ODI	AV3	+ 0.0"
45	26	23	ODI	AV4	+ 0.0"
45	32	21	ODI	AV2	+ 0.0"
45	32	26	ODI	AV3	+ 0.0"
45	36	24	ODI	AV3	+ 0.0"
45	36	30	ODI	AV4	+ 0.0"
45	83	25	ODI	AV2	+ 0.0"
45	83	23	ODI	AV3	+ 0.0"
45	83	20	ODI	AV4	+ 0.0"
45	86	23	ODI	AV2	+ 0.0"
45	86	17	ODI	AV3	+ 0.0"
45	89	31	ODI	AV2	+ 0.0"
45	89	21	ODI	AV3	+ 0.0"

ATTACHMENT A.1
ASME SECTION XI FORM NIS-BB
2B Steam Generator

FORM NIS-BB TUBE EXAMINATION REPORT

EDDY CURRENT EXAMINATION RESULTS

Site: Byron Station, Unit 2 **Steam Generator: 2RC01BB**

Test Frequency: 20, 130, 300, 500 kHz **Date: 05/31/2001**

Row	Column	% Tube Wall Penetration	Origin	Location	Inch
47	27	33	ODI	AV2	+ 0.0"
47	27	29	ODI	AV3	+ 0.0"
47	27	29	ODI	AV4	+ 0.0"
47	56	23	ODI	AV2	+ 0.0"
48	36	16	ODI	AV3	+ 0.0"
14	7	7	ODI	05H	+ 0.84"
15	7	14	ODI	05H	+ 0.76"
20	56	9	ODI	02C	+ 0.68"
37	67	11	ODI	02C	+ 3.38"
47	75	7	ODI	02C	+ 0.46"
48	50	12	ODI	07C	+ 0.55"
48	53	11	ODI	07C	+ 0.55"
48	55	10	ODI	07C	+ 0.55"
48	59	10	ODI	07C	+ 0.33"
49	50	13	ODI	07C	- 0.33"
49	53	13	ODI	07C	- 0.33"
49	63	8	ODI	07C	+ 0.55"

ATTACHMENT A.2
FORM NIS-1 OWNER'S REPORT FOR INSERVICE INSPECTIONS
As Required by the Provisions of the ASME Code Rules

1. Owner: Exelon Generation Company, LLC, 4300 Winfield Road, Warrenville, Illinois, 60555
(Name and Address of Owner)

2. Plant: Byron Station, 4450 North German Church Road, Byron, Illinois, 61010
(Name and Address of Plant)

3. Plant Unit: Two (2)

4. Owner Certificate of Authorization (if required): N/A

5. Commercial Service Date: 08/21/87

6. National Board Number for Unit: N-200

7. Components Inspected: Steam Generator Eddy Current Inspection

Component or Appurtenance	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
2RC01BB	Westinghouse	2096	U-201436	16

FORM NIS-1 (Back)

8. Examination Dates 4/10/01 to 4/13/01 9. Inspection Interval from 08/21/98 (extended) to 08/21/07

10. Abstract of Examinations. Include a list of examinations and a statement concerning status of work required for current interval.

Refer to the Attached Report

11. Abstract of Conditions Noted

Refer to the Attached Report

12. Abstract of Corrective Measures Recommended and Taken

Refer to the Attached Report

We certify that the statements made in this report are correct and the examinations and corrective measures taken conform to the rules of the ASME Code, Section XI.

Certificate of Authorization No. (if applicable) Not Applicable Expiration Date Not Applicable

Date 6/21/01 Signed For Exelon Generating Company, LLC By

Owner

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Illinois and employed by HSB I&I Co of Hartford Connecticut have inspected the components described in this Owner's Report during the period 4/10/01 to 4/13/01, and state that to the best of my knowledge and belief, the Owner has performed examinations and taken corrective measures described in this Owner's Report in accordance with the requirements of the ASME Code, Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the examinations and corrective measures described in this Owner's Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or loss of any kind arising from or connected with this inspection.

Commissions IL-1054

Inspector's Signature

National Board, State, Province, and Endorsements

Date June 22, 2001