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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

ATTENTION: Document Control Desk

SUBJECT: **R.E. Ginna Nuclear Power Plant**
Docket No. 50-244

Response to Request for Additional Information RE: The 2011 Steam Generator Tube Inspections – R.E. Ginna Nuclear Power Plant

REFERENCES:
(a) Letter from Mr. T. G. Mogren (Ginna LLC) to Document Control Desk (NRC) dated November 15, 2011, Subject: 2011 Steam Generator Tube Inspection Report (ML11325A118)

(b) Letter from Mr. D. V. Pickett (NRC) to Mr. J. E. Pacher (Ginna LLC) dated January 23, 2012, Subject: Request for Additional Information RE: The 2011 Steam Generator Tube Inspections – R.E. Ginna Nuclear Power Plant (TAC No. ME7597)

By Reference (a), R.E. Ginna Nuclear Plant, LLC (Ginna LLC) submitted the report of the 2011 Steam Generator Tube Inspections performed during the End of Cycle 35 Refueling Outage in May 2011. On January 23, 2012 the NRC responded to that submittal with a request for additional information Reference (b). Attached please find the response to the staff's questions.

Should you have any questions regarding this matter, please contact Mr. Thomas Harding at (585) 771-5219 or Thomas.HardingJr@cengllc.com.

Very truly yours,

Thomas Mogren

Attachment 1: Response to Request for Additional Information Regarding the 2011 Steam Generator Tube Inspection Report
Attachment 2: Ginna Steam Generator A and B Bobbin Coil Dents Detected During the 2011 Refueling Outage (RFO)
Attachment 3: Ginna Steam Generator A Tubesheet Map

cc: W. M. Dean, NRC
D. V. Pickett, NRC
Resident Inspector, NRC

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NRR

<u>ATTACHMENT 1</u>

Response to Request for Additional Information Regarding the 2011 Steam Generator Inspection Report

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R.E. Ginna Nuclear Power Plant, LLC
February 15, 2012

Question 1:

During the 2011 inspection, 237 dents were observed in the tubes at the top of the tubesheet on the cold-leg side of the steam generator. During the 2008 inspection, 80 tubes were identified with dents at the top of the tubesheet on the cold-leg side of the steam generator. It was then indicated that there were 156 newly reported dents in the tubes at the top of the tubesheet on the cold-leg side of the steam generator. Please confirm these numbers (e.g., were there 81 dents in the 80 tubes with dents during the 2008 inspection?).

Response:

To clarify the 2008 and 2011 cold leg (CL) and hot leg (HL) top of tubesheet (TTS) dents and the number of tubes affected with dents in the Ginna A and B Steam Generators (SGs), Table 1 is provided below. No more than one dent was identified in any one tube.

Table 1

Number of Reported 2008 TTS CL dents (# of tubes) in SG-A	Number of Reported 2008 TTS CL dents (# of tubes) in SG-B	Number of Reported 2011 TTS CL dents (# of tubes) in SG-A	Number of Reported 2011 TTS CL dents (# of tubes) in SG-B	Number of Reported 2011 TTS HL dents (# of tubes) in SG-B
2 (2)	80 (80)	4 (4)	236 (236)	1 (1)

Question 2:

Regarding the denting at the top of the tubesheet, what is the voltage associated with these dents, what corrective action, (if any), was taken to address the denting, and what insights, (if any), were obtained from profiling the dents?

Response:

The bobbin coil voltages range from a minimum of 2.07 Volts to a maximum of 40.46 Volts. See Attachment 2 for a full listing of top of tubesheet dents detected during the 2011 refueling outage (RFO) with the bobbin coil. There is a separate listing for SG-A cold leg bobbin coil detected dents, SG-B cold leg bobbin coil detected dents, and the one SG-B hot leg bobbin coil detected dent.

The steam generator denting was entered into the Ginna corrective action program in 2008 when top of tubesheet denting was first detected and again in 2011. The corrective actions that have been taken to date include more frequent sludge lancing to remove sludge material from the tubesheet secondary face. Ginna and vendor personnel worked to improve the sludge lance process at Ginna. The Sludge lance system was redesigned for the Ginna 2011 RFO, and sludge lance process enhancements were made to improve sludge removal.

While Ginna has generally met industry corrosion product transport requirements, Ginna has further reduced corrosion product transport to the steam generators to minimize deposit accumulation. Ginna implemented a relaxation of main steam cation conductivity limit from 0.3 µs/cm to 0.5 µs/cm. This allows higher feedwater ethanolamine concentration which minimizes corrosion product creation in the heater drain system. The heater drain system accounts for approximately 1/3 of the contribution to the feedwater iron transport.

Ginna has implemented a fleet Chemical Control Program to further reduce the impurity ingress into plant systems. From an equipment perspective, the program operates from a prevention standpoint. Implementation also includes a chemical foreign material reduction briefing to all plant personnel as well as chemistry review of potentially impactful Ginna plant work orders.

Ginna SG sludge sampling has been performed periodically since SG replacement. The Ginna SG sludge was again analyzed in 2011 with additional insight from the 2008 RFO. Sludge binding agents and impurity identification was improved which is an important input for future potential corrective actions that are being evaluated.

During the 2011 RFO, dents were examined for cracking and were profiled by eddy current testing using a "D" probe. The first important insight with the "D" probe was associated with the +Point coil which is qualified for the detection of axial and circumferential outside diameter stress corrosion cracking, as well as the detection of axial and circumferential inside diameter primary water stress corrosion cracking. The entire top of tubesheet dent population was tested with the "D" probe (+Point coil) and there was no detected degradation.

The "D" probe also has a 0.080" high frequency nonsurface riding pancake coil that is designed for profilometry type of applications which also provided important insights. The 0.080" coil provided improved dent axial elevation resolution over the bobbin coil. While the bobbin coil is very good for dent detection, its ability to resolve the dent axial elevation was not as accurate as the 0.080" coil. With this improved resolution, the dents were shown to be slightly below the tubesheet secondary face in the small crevice where the tube is not expanded into the tubesheet. The average dent axial location was centered 0.07" below the tubesheet. The crevice depth is 0.0" – 0.165".

The additional 0.080" coil also provided insight on the circumferential extent of the denting, which ranged from less than 45 degrees to 360 degrees, with a mean circumferential extent of 160 degrees. This circumferential extent corresponded well with the bobbin coil voltage. The larger bobbin coil dent voltages had the larger circumferential extents.

Further data analyses work is in progress that will provide dent radial dimensioning. Recent vendor software upgrades have given us the ability to perform dent radial dimensioning utilizing the data taken during the 2011 RFO. The dent radial information will support further evaluation.

Question 3:

In Table 3.1.1, please clarify what constitutes the "central box area."

Response:

The tubesheet map, Attachment 3, shows the examination area. The central box area is a large portion of the examination area, and was selected to bound the denting extent of condition.

Question 4:

It was indicated that the divider plate in both SGs was inspected. Please clarify the materials of construction of the divider plate, the stub runner, (if any), and the associated welds. Please discuss the results of these inspections.

Response:

The Ginna divider plate material is fabricated from SB-168 N06690 (Alloy 690) material and the weld material used to weld the divider plate to the seat bar is Incoloy 152, which is an Alloy 690 compatible weld material. The seat bar, which is manufactured by weld buildup, is made of Incoloy 82 (I-82) material. It should be mentioned that the I-82 weld overlay on the tubesheet, on which the weld buildup is deposited, has been subjected to postweld heat treatment process to a minimum temperature of 1100°F. After the closing seam between the primary head and the tubesheet was completed, the weld was postweld heat treated. During this process the weld between the divider plate and the tubesheet was heated to the postweld heat treating temperature as well. The design of the Ginna divider plate uses a weld buildup bar and not a rolled bar for the stub runner. The I-82 weld buildup has slightly higher chromium content than Alloy 600 and has better resistance to stress corrosion cracking (SCC). In addition, the weld between the divider plate and the seat bar was postweld heat treated, which reduced the weld hardness. This has proven to be beneficial against SCC.

Ginna has performed visual inspections of the divider plate weld areas during the last two steam generator outages, 2008 and 2011, with no detectable degradation. The visual acuity was a VT-1 examination. While performing this examination, fine machining marks were detectable along surfaces indicating good examination detectability and resolution. The Ginna divider plate and associated welds were found to have maintained an as-manufactured appearance and no service induced defects were detected.

Question 5:

Please discuss the nature of the restriction of the tube in SG A. For example, is the restriction service-induced, is it located in a low row tube, or has this tube been previously inspected successfully with a 0.610-inch bobbin probe?

Response:

The restricted tube is row 9, column 121, and has been determined to have been caused by a manufacturing dent. This tube was thermally stress relieved during manufacture and has been discussed in previous Ginna steam generator reports. The tube dent is not service induced. As a clarification for the 2011 refueling outage (RFO) examination, row 9, column 121, was examined full length with a combination of bobbin probe from each tube end and +Point coil through the dent area. No degradation was detected.

Row 9, column 121, has been examined full length during refueling outages in 1997, 1999, 2002, and 2005 with a 0.610" bobbin coil. There has been no increase in dent voltage from these repeated examinations, so the dent is not experiencing any in-service growth. Row 9, column 121, was also examined through the dent location during refueling outages in 1997, 1999, 2002, and 2005 with a +Point coil. No indications of degradation were detected.

During previous examinations, the probe was positioned at the dent location with the probe pusher and the manipulator elevator, which was then used to assist the probe through the dent location. The present manipulator is a lower torque version that does not have an elevator assist function. We now inspect the tube full-length from both ends.

Question 6:

Besides the flow accelerated corrosion in three of the secondary steam separators, was there any other degradation/anomalous conditions identified during the secondary side internals and upper bundle inspections?

Response:

There were other secondary separators that exhibited areas of removed oxide from steam flow, but no degradation. The comprehensive secondary side examinations exhibited no additional degradation or anomalous conditions.

Question 7:

Four indications of wear were identified and attributed to loose parts. Please discuss whether the parts that caused these wear indications were removed from the SGs. In addition, please discuss how these indications have changed with time. Please discuss the number of known loose parts or possible loose parts in the SGs and the source of these loose parts.

Response:

The loose parts that caused the wear are no longer at the wear locations in all four cases. These indications were verified with no loose parts present during the 2008 refueling outage (RFO), and again confirmed during the 2011 RFO. Since indication #2 was first detected during the 2011 RFO, the no loose part verification was performed during the 2011 RFO. These parts were not removed from the SGs, but it was verified that the part is no longer there. Based upon the tolerance of the tube-to-tube support grid, it is most likely that the parts have diminished in size and moved on. It would be normal Ginna practice to remove the tube from service due to tube wear and if the loose part associated with the tube wear is still present.

The following insights are provided when comparing the 2008 RFO detected loose part wear location to the 2011 RFO detected loose part wear indications. The intent is to apply the most appropriate loose part sizing examination technique specification sheet (ETSS) for each wear shape. See Table 2 for a summary.

Indication #1 was sized with ETSS 21998.1 and has not changed in maximum depth. Because 2008 length and width dimensioning used an overly conservative estimate using indication baseline as a threshold vs. using a flaw peak, a reduced and more appropriate length and width dimensioning was performed during the 2011 RFO.

Indication #2 was sized with ETSS 27901.2 and was initially detected during the 2011 RFO. A flaw peak length and width dimensioning was performed during the 2011 RFO.

Indication #3 was sized with ETSS 21998.1 and has changed slightly in maximum depth from 2008, but within eddy current tolerance. Because 2008 length and width dimensioning used an overly conservative estimate using indication baseline as a threshold vs. using a flaw peak, a reduced and more appropriate length and width dimensioning was performed during the 2011 RFO.

Indication #4 was sized with ETSS 21998.1 and has changed slightly in maximum depth from 2008, but within eddy current tolerance. Because 2008 length and width dimensioning used an overly conservative estimate using indication baseline as a threshold vs. using a flaw peak, a reduced and more appropriate length and width dimensioning was performed during the 2011 RFO.

Table 2

Indication	SG	Row	Column	Location	Degradation Type	ETSS	NDE Measurement Parameter(s)*
1	A	91	51	05H +0.34"	Volumetric	21998.1 + Point	29% through wall (TW), 0.10" length x 0.16" (25°) width using flaw peaks
2	A	53	85	02H+36.93" (0.5" below 03H)	Volumetric	27901.2 + Point	19% TW, 0.12" length x 0.16" (25°) width using flaw peaks
3	B	78	24	01H +0.91"	Volumetric	21998.1 + Point	25% TW, 0.14" length x 0.19" (29°) width using flaw peaks
4	B	78	24	01H +1.20"	Volumetric	21998.1 + Point	22% TW, 1.11" length x 0.19" (29°) width using flaw peaks

Table 3 shows the confirmed loose parts that were left in-service during the 2011 RFO. Each specific loose part was evaluated for potential wear rate to justify leaving the tube in-service. Most of the loose parts involve Flexitallic gaskets. Ginna has replaced all in-stock Flexitallic gasket material with an improved Flexitallic gasket, which is less susceptible to in-service uncoiling.

Table 3

	Number of parts left in-service	**Description of loose part source**
SG-A Cold Leg	1	1 - Flexitallic gasket piece
SG-A Hot Leg	24	17 - Flexitallic gasket pieces 4 – sludge rocks 3 – metallic pieces
SG-B Cold Leg	4	1 - Flexitallic gasket piece 2 – metallic pieces 1 – wire brush bristle
SG-B Hot Leg	15	12 - Flexitallic gasket pieces 2 – wire brush bristles 1 – metallic piece

Question 8:

Please discuss whether there has been any change in the number of tubes in close proximity or the extent to which the affected tubes are in close proximity (e.g., decreased spacing or length of tubing in close proximity increasing).

Response:

Ginna became aware of the potential for tube-to-tube proximity issue prior to the first SG inservice inspection (ISI) performed during the 1997 refueling outage (RFO) as a result of an original manufacturer's information notice. Ginna has examined the susceptible proximity areas during each RFO. A new set of proximity tubes were detected in SG-A and SG-B during the 1999 RFO due to improved eddy current analyses and sensitivity. When reviewing the data, these new sets of proximity tubes were detectable in the previous 1997 RFO examination. Since the 1999 RFO, no additional tube-to-tube proximity tubes have been detected. The total history is in Table 4.

Table 4

	Steam Generator A detected proximity tubes	Steam Generator B detected proximity tubes
1997 RFO SG ISI	11	10
1999 RFO SG ISI	13	12
2002 RFO SG ISI	13	12
2005 RFO SG ISI	13	12
2008 RFO SG ISI	13	12
2011 RFO SG ISI	13	12

When reviewing the tube data with tube-to-tube proximity, there have been no changes in the affected tube proximity locations or extent since the original detection of these indications. Based upon the specific Ginna manufacturing process that provided the tube-to-tube proximity issues, this is the expected result. There has been no evidence of tube-to-tube wear detected in these tubes. The detected proximity within a given set of tubes is over several inches and to date the Ginna proximity tubes have been consistent.

ATTACHMENT 2

Ginna Steam Generator A and B Bobbin Coil Dents Detected During the 2011 Refueling Outage (RFO)

Attachment 2

Ginna Steam Generator A Cold Leg Bobbin Coil Dents (2011 RFO)

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	BEGT	ENDT	PDIA	PTYPE	CAL	L	UTIL1
49	43	5.42	179	DNT		P1	TSC	0.15		TEC	TEH	0.61	ZBAZB	17	H	
51	43	13.28	178	DNT		P1	TSC	0.2		TEC	TEH	0.61	ZBAZB	17	H	
50	44	4.46	179	DNT		P1	TSC	0.28		TEC	TEH	0.61	ZBAZB	17	H	
52	44	3.93	179	DNT		P1	TSC	0.28		TEC	TEH	0.61	ZBAZB	17	H	

Attachment 2

Ginna Steam Generator B Cold Leg Bobbin Coil Dents (2011 RFO)

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	BEGT	ENDT	PDIA	PTYPE	CAL	L	UTIL1
34	36	10.89	182	DNT		P1	TSC	0.44		TEC	TEH	0.61	NBAZB	17	H	
36	36	5.68	177	DNT		P1	TSC	0.39		TEC	TEH	0.61	NBAZB	17	H	
35	37	40.46	181	DNT		P1	TSC	0.1		TEC	TEH	0.61	NBAZB	18	H	
37	37	18.17	181	DNT		P1	TSC	0.1		TEC	TEH	0.61	NBAZB	18	H	
34	38	7.81	180	DNT		P1	TSC	0.15		TEC	TEH	0.61	NBAZB	18	H	
36	38	8.72	177	DNT		P1	TSC	0.34		TEC	TEH	0.61	NBAZB	18	H	
32	50	3.2	178	DNT		P1	TSC	0.2		01C	TEC	0.61	ZBAZB	2	C	
34	56	6.74	180	DNT		P1	TSC	0.21		TEC	TEH	0.61	NBAZB	12	H	
36	56	7.43	180	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	12	H	
33	57	2.94	182	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	13	H	
35	57	29.87	180	DNT		P1	TSC	0.21		TEC	TEH	0.61	NBAZB	13	H	
37	57	12.7	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	13	H	
53	57	4.5	180	DNT		P1	TSC	0.15		TEC	TEH	0.61	NBAZB	8	H	
55	57	8.41	178	DNT		P1	TSC	0		TEC	TEH	0.61	NBAZB	8	H	
57	57	4.06	181	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	8	H	
34	58	11.28	179	DNT		P1	TSC	0.31		TEC	TEH	0.61	NBAZB	13	H	
36	58	19.05	180	DNT		P1	TSC	0.28		TEC	TEH	0.61	NBAZB	13	H	
52	58	6.32	181	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	8	H	
54	58	9.26	181	DNT		P1	TSC	0.07		TEC	TEH	0.61	NBAZB	8	H	
56	58	10.03	179	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	8	H	
58	58	2.37	182	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	8	H	
35	59	3.35	183	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	12	H	
39	59	12.79	179	DNT		P1	TSC	0.24		01C	TEC	0.61	ZBAZB	1	C	
51	59	9.55	179	DNT		P1	TSC	0.34		01C	TEC	0.61	ZBAZB	1	C	
53	59	13.03	178	DNT		P1	TSC	0.19		01C	TEC	0.61	ZBAZB	1	C	
55	59	7.58	179	DNT		P1	TSC	0.24		01C	TEC	0.61	ZBAZB	1	C	
57	59	2.75	175	DNT		P1	TSC	0.34		01C	TEC	0.61	ZBAZB	1	C	
38	60	5.74	179	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	12	H	
40	60	10.77	178	DNT		P1	TSC	0.24		01C	TEC	0.61	ZBAZB	1	C	
52	60	3.62	173	DNT		P1	TSC	0.27		01C	TEC	0.61	ZBAZB	1	C	
39	61	3.79	179	DNT		P1	TSC	0.32		01C	TEC	0.61	ZBAZB	1	C	
48	62	2.38	184	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	8	H	
53	63	2.63	179	DNT		P1	TSC	0.22		01C	TEC	0.61	ZBAZB	1	C	
55	63	2.7	177	DNT		P1	TSC	0.24		01C	TEC	0.61	ZBAZB	1	C	
50	64	5.73	177	DNT		P1	TSC	0.27		01C	TEC	0.61	ZBAZB	1	C	
52	64	3.06	179	DNT		P1	TSC	0.27		01C	TEC	0.61	ZBAZB	1	C	
39	65	2.09	177	DNT		P1	TSC	0.27		01C	TEC	0.61	ZBAZB	1	C	
47	65	2.13	184	DNT		P1	TSC	0.05		TEC	TEH	0.61	NBAZB	8	H	
49	65	3.13	184	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	8	H	
51	65	7.73	178	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	8	H	
34	66	7.52	179	DNT		P1	TSC	0.16		TEC	TEH	0.61	NBAZB	13	H	
50	66	5.62	179	DNT		P1	TSC	0		TEC	TEH	0.61	NBAZB	8	H	
52	66	3.09	182	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	8	H	
54	66	3.84	182	DNT		P1	TSC	0.16		TEC	TEH	0.61	NBAZB	8	H	
33	67	2.45	183	DNT		P1	TSC	0.12		TEC	TEH	0.61	NBAZB	10	H	
35	67	9.79	180	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	10	H	

Attachment 2

Ginna Steam Generator B Cold Leg Bobbin Coil Dents (2011 RFO)

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	BEGT	ENDT	PDIA	PTYPE	CAL	L	UTIL1
51	67	5.19	178	DNT		P1	TSC	0.29		01C	TEC	0.61	ZBAZB	1	C	
53	67	12.65	178	DNT		P1	TSC	0.05		01C	TEC	0.61	ZBAZB	1	C	
55	67	17.36	179	DNT		P1	TSC	0.05		01C	TEC	0.61	ZBAZB	1	C	
57	67	2.28	183	DNT		P1	TSC	0.29		01C	TEC	0.61	ZBAZB	1	C	
38	68	2.85	176	DNT		P1	TSC	0.1		TEC	TEH	0.61	NBAZB	5	H	
54	68	2.53	178	DNT		P1	TSC	0.17		01C	TEC	0.61	ZBAZB	1	C	
56	68	5	177	DNT		P1	TSC	0.17		01C	TEC	0.61	ZBAZB	1	C	
58	68	2.72	182	DNT		P1	TSC	0.27		01C	TEC	0.61	ZBAZB	1	C	
60	68	2.77	181	DNT		P1	TSC	0.22		01C	TEC	0.61	ZBAZB	1	C	
53	69	13.62	179	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	6	H	
55	69	4.02	181	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	6	H	
57	69	7.9	180	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	6	H	
59	69	7.53	180	DNT		P1	TSC	0.05		TEC	TEH	0.61	NBAZB	6	H	
61	69	3.33	182	DNT		P1	TSC	0.12		TEC	TEH	0.61	NBAZB	6	H	
54	70	2.07	174	DNT		P1	TSC	0.21		TEC	TEH	0.61	NBAZB	6	H	
1	71	10.53	180	DNT		P1	TSC	0.56		08C	TEC	0.61	ZBAZB	3	C	
37	71	9.93	178	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	10	H	
39	71	5.12	175	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	5	H	
43	71	3.82	176	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	5	H	
51	71	2.58	174	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	5	H	
2	72	11.76	178	DNT		P1	TSC	0.56		08C	TEC	0.61	ZBAZB	3	C	
36	72	12.57	180	DNT		P1	TSC	0.31		TEC	TEH	0.61	NBAZB	10	H	
38	72	11.28	179	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	5	H	
42	72	4.36	176	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
44	72	8.37	178	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	5	H	
46	72	2.8	173	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	5	H	
48	72	2.53	173	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
50	72	7.23	177	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	5	H	
52	72	3.16	177	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
41	73	3.59	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	6	H	
43	73	7.81	177	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	6	H	
45	73	4.68	173	DNT		P1	TSC	0.21		TEC	TEH	0.61	NBAZB	6	H	
47	73	5.5	179	DNT		P1	TSC	0.31		TEC	TEH	0.61	NBAZB	6	H	
49	73	8.48	179	DNT		P1	TSC	0.05		TEC	TEH	0.61	NBAZB	6	H	
51	73	5.14	179	DNT		P1	TSC	0.1		TEC	TEH	0.61	NBAZB	6	H	
32	74	2.14	178	DNT		P1	TSC	0.27		01C	TEC	0.61	ZBAZB	1	C	
42	74	6.95	177	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	6	H	
44	74	5.48	177	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	6	H	
46	74	9.14	179	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	6	H	
48	74	21.44	178	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	6	H	
50	74	26.48	179	DNT		P1	TSC	0.33		TEC	TEH	0.61	NBAZB	6	H	
52	74	2.61	179	DNT		P1	TSC	0.31		TEC	TEH	0.61	NBAZB	6	H	DBH
31	75	3.36	181	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	6	H	
41	75	5.35	178	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	6	H	
43	75	6.17	176	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
45	75	2.57	176	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	

Attachment 2

Ginna Steam Generator B Cold Leg Bobbin Coil Dents (2011 RFO)

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	BEGT	ENDT	PDIA	PTYPE	CAL	L	UTIL1
47	75	16.84	177	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
49	75	17.59	178	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
51	75	10.25	177	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
53	75	4.94	175	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	5	H	
55	75	8.95	178	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	5	H	
57	75	5.05	181	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	5	H	
30	76	2.52	182	DNT		P1	TSC	0.21		TEC	TEH	0.61	NBAZB	6	H	
40	76	6.74	177	DNT		P1	TSC	0.05		TEC	TEH	0.61	NBAZB	6	H	
42	76	6.68	177	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	5	H	
46	76	12.97	177	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	5	H	
48	76	10.79	177	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	5	H	
50	76	6.42	178	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
52	76	5.56	177	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	5	H	
54	76	2.51	176	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	5	H	
56	76	2.86	176	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
60	76	3.31	179	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	5	H	
41	77	5.8	176	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	2	H	
43	77	5.53	179	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	2	H	
45	77	7.25	178	DNT		P1	TSC	0.28		TEC	TEH	0.61	NBAZB	2	H	
47	77	10.95	178	DNT		P1	TSC	0.43		TEC	TEH	0.61	NBAZB	2	H	
30	78	3.59	179	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	5	H	
32	78	4.6	178	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
42	78	4.3	176	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	2	H	
44	78	6.32	178	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	2	H	
46	78	16.03	179	DNT		P1	TSC	0.31		TEC	TEH	0.61	NBAZB	2	H	
48	78	3.31	180	DNT		P1	TSC	0.33		TEC	TEH	0.61	NBAZB	2	H	
31	79	5.7	180	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	6	H	
45	79	8.69	178	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	1	H	
47	79	20.67	179	DNT		P1	TSC	0.35		TEC	TEH	0.61	NBAZB	1	H	
49	79	4.83	177	DNT		P1	TSC	0.23		TEC	TEH	0.61	NBAZB	1	H	
26	80	2.36	184	DNT		P1	TSC	0.27		TEC	TEH	0.61	NBAZB	6	H	
28	80	2.62	184	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	6	H	
42	80	6.87	179	DNT		P1	TSC	0.21		TEC	TEH	0.61	NBAZB	1	H	
44	80	8.36	178	DNT		P1	TSC	0.23		TEC	TEH	0.61	NBAZB	1	H	
46	80	7.45	178	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	1	H	
48	80	9.55	176	DNT		P1	TSC	0.16		TEC	TEH	0.61	NBAZB	1	H	
50	80	10.38	177	DNT		P1	TSC	0.21		TEC	TEH	0.61	NBAZB	1	H	
25	81	3.93	180	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	5	H	
27	81	4.88	180	DNT		P1	TSC	0.1		TEC	TEH	0.61	NBAZB	5	H	
29	81	2.72	183	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	5	H	
41	81	5.82	181	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	2	H	
43	81	21.44	180	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	2	H	
45	81	5.75	180	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	2	H	
47	81	7.32	179	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	2	H	
49	81	16.91	179	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	2	H	
51	81	6	180	DNT		P1	TSC	0.21		TEC	TEH	0.61	NBAZB	2	H	

Attachment 2

Ginna Steam Generator B Cold Leg Bobbin Coil Dents (2011 RFO)

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	BEGT	ENDT	PDIA	PTYPE	CAL	L	UTIL1
53	81	2.71	184	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	2	H	
30	82	2.15	176	DNT		P1	TSC	0.12		TEC	TEH	0.61	NBAZB	5	H	
40	82	4.53	181	DNT		P1	TSC	0.27		TEC	TEH	0.61	NBAZB	2	H	
42	82	30.89	180	DNT		P1	TSC	0.32		TEC	TEH	0.61	NBAZB	2	H	
44	82	16.5	179	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	2	H	
48	82	12.72	179	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	2	H	
50	82	15.01	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	2	H	
52	82	9.37	179	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	2	H	
54	82	4.01	181	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	2	H	
37	83	3.16	184	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	6	H	
39	83	14.45	177	DNT		P1	TSC	0.4		TEC	TEH	0.61	NBAZB	1	H	
41	83	26.79	179	DNT		P1	TSC	0.38		TEC	TEH	0.61	NBAZB	1	H	
43	83	36.61	179	DNT		P1	TSC	0.5		TEC	TEH	0.61	NBAZB	1	H	
45	83	5.8	180	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	1	H	
47	83	4.42	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	1	H	
49	83	13.39	180	DNT		P1	TSC	0.31		TEC	TEH	0.61	NBAZB	1	H	
51	83	8.59	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	1	H	
53	83	4.84	179	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	1	H	
24	84	3.64	183	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	6	H	
26	84	2.41	183	DNT		P1	TSC	0.39		TEC	TEH	0.61	NBAZB	6	H	
36	84	2.16	186	DNT		P1	TSC	0.26		TEC	TEH	0.61	NBAZB	6	H	
38	84	16.11	178	DNT		P1	TSC	0.38		TEC	TEH	0.61	NBAZB	1	H	
40	84	20.41	179	DNT		P1	TSC	0.33		TEC	TEH	0.61	NBAZB	1	H	
42	84	16.52	179	DNT		P1	TSC	0.45		TEC	TEH	0.61	NBAZB	1	H	
44	84	10.68	178	DNT		P1	TSC	0.34		TEC	TEH	0.61	NBAZB	1	H	
46	84	8.64	177	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	1	H	
48	84	4.56	180	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	1	H	
50	84	3.18	181	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	1	H	
52	84	2.16	181	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	1	H	
21	85	2.72	176	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
23	85	3.66	179	DNT		P1	TSC	0.12		TEC	TEH	0.61	NBAZB	5	H	
25	85	5.69	180	DNT		P1	TSC	0.12		TEC	TEH	0.61	NBAZB	5	H	
37	85	8.8	178	DNT		P1	TSC	0.14		TEC	TEH	0.61	NBAZB	5	H	
39	85	13.27	178	DNT		P1	TSC	0.07		TEC	TEH	0.61	NBAZB	6	H	
41	85	17.06	178	DNT		P1	TSC	0.46		TEC	TEH	0.61	NBAZB	2	H	
43	85	19.97	179	DNT		P1	TSC	0.41		TEC	TEH	0.61	NBAZB	2	H	
45	85	4.79	178	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	2	H	
47	85	3.98	183	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	2	H	
26	86	2.38	172	DNT		P1	TSC	0.1		TEC	TEH	0.61	NBAZB	5	H	
36	86	4.61	177	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	5	H	
38	86	10.05	177	DNT		P1	TSC	0.12		TEC	TEH	0.61	NBAZB	5	H	
40	86	20.79	180	DNT		P1	TSC	0.37		TEC	TEH	0.61	NBAZB	2	H	
42	86	26.48	180	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	2	H	
44	86	12.71	179	DNT		P1	TSC	0.05		TEC	TEH	0.61	NBAZB	2	H	
46	86	5.58	176	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	2	H	
48	86	2.86	184	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	2	H	

Attachment 2

Ginna Steam Generator B Cold Leg Bobbin Coil Dents (2011 RFO)

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	BEGT	ENDT	PDIA	PTYPE	CAL	L	UTIL1
17	87	6.34	179	DNT		P1	TSC	0.27		TEC	TEH	0.61	NBAZB	6	H	
23	87	5.18	183	DNT		P1	TSC	0.25		TEC	TEH	0.61	NBAZB	6	H	
37	87	6.99	178	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	6	H	
39	87	13.13	178	DNT		P1	TSC	0.25		TEC	TEH	0.61	NBAZB	1	H	
41	87	23.93	179	DNT		P1	TSC	0.46		TEC	TEH	0.61	NBAZB	1	H	
43	87	19.49	178	DNT		P1	TSC	0.48		TEC	TEH	0.61	NBAZB	1	H	
45	87	5.77	179	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	1	H	
47	87	3.4	177	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	1	H	
16	88	6.21	179	DNT		P1	TSC	0.27		TEC	TEH	0.61	NBAZB	6	H	
18	88	8.33	180	DNT		P1	TSC	0.1		TEC	TEH	0.61	NBAZB	6	H	
22	88	12.42	180	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	6	H	
24	88	15.37	180	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	6	H	
38	88	11.46	179	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	1	H	
40	88	23.57	180	DNT		P1	TSC	0.41		TEC	TEH	0.61	NBAZB	1	H	
42	88	28.78	179	DNT		P1	TSC	0.41		TEC	TEH	0.61	NBAZB	1	H	
44	88	6.61	178	DNT		P1	TSC	0.34		TEC	TEH	0.61	NBAZB	1	H	
21	89	2.82	181	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	5	H	
23	89	9.58	181	DNT		P1	TSC	0.15		TEC	TEH	0.61	NBAZB	5	H	
25	89	3.44	180	DNT		P1	TSC	0.27		TEC	TEH	0.61	NBAZB	5	H	
31	89	3.22	177	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
33	89	2.5	179	DNT		P1	TSC	0.12		TEC	TEH	0.61	NBAZB	5	H	
35	89	4.26	177	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	5	H	
37	89	8.24	177	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	5	H	
39	89	22.14	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	5	H	
41	89	23.62	180	DNT		P1	TSC	0.51		TEC	TEH	0.61	NBAZB	4	H	
43	89	18.61	179	DNT		P1	TSC	0.44		TEC	TEH	0.61	NBAZB	4	H	
45	89	8.12	178	DNT		P1	TSC	0.42		TEC	TEH	0.61	NBAZB	4	H	
20	90	3.39	179	DNT		P1	TSC	0.15		TEC	TEH	0.61	NBAZB	5	H	
30	90	3.82	176	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	5	H	
32	90	4.5	178	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	5	H	
34	90	11.86	178	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	5	H	
36	90	18.42	179	DNT		P1	TSC	0.22		TEC	TEH	0.61	NBAZB	5	H	
38	90	29.54	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	5	H	
40	90	17.44	179	DNT		P1	TSC	0.52		TEC	TEH	0.61	NBAZB	4	H	
42	90	9.48	179	DNT		P1	TSC	0		TEC	TEH	0.61	NBAZB	4	H	
44	90	7.53	178	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	4	H	
46	90	6.66	178	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	4	H	
48	90	4.22	178	DNT		P1	TSC	0.34		TEC	TEH	0.61	NBAZB	4	H	
33	91	16.84	180	DNT		P1	TSC	0.44		TEC	TEH	0.61	NBAZB	6	H	
35	91	8.34	175	DNT		P1	TSC	0.41		TEC	TEH	0.61	NBAZB	6	H	
37	91	14.73	177	DNT		P1	TSC	0.12		TEC	TEH	0.61	NBAZB	6	H	
39	91	15.31	178	DNT		P1	TSC	0.17		TEC	TEH	0.61	NBAZB	3	H	
41	91	5.41	176	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	3	H	
34	92	9.88	176	DNT		P1	TSC	0.53		TEC	TEH	0.61	NBAZB	4	H	
36	92	14.51	178	DNT		P1	TSC	0.2		TEC	TEH	0.61	NBAZB	4	H	
38	92	18.57	178	DNT		P1	TSC	0.34		TEC	TEH	0.61	NBAZB	3	H	

Attachment 2

Ginna Steam Generator B Cold Leg Bobbin Coil Dents (2011 RFO)

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	BEGT	ENDT	PDIA	PTYPE	CAL	L	UTIL1
40	92	15.4	178	DNT		P1	TSC	0.29		TEC	TEH	0.61	NBAZB	3	H	
42	92	2.15	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	3	H	
35	93	10.1	180	DNT		P1	TSC	0.27		TEC	TEH	0.61	NBAZB	5	H	
37	93	7.45	180	DNT		P1	TSC	0.24		TEC	TEH	0.61	NBAZB	5	H	
39	93	17.53	180	DNT		P1	TSC	0.19		TEC	TEH	0.61	NBAZB	5	H	
41	93	14.87	180	DNT		P1	TSC	0.15		TEC	TEH	0.61	NBAZB	4	H	

Attachment 2

Steam Generator B Hot Leg Bobbin Coil Dents (2011 RFO)

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	BEGT	ENDT	PDIA	PTYPE	CAL	L	UTIL1
37	75	3.05	179	DNT		P1	TSH	0.25		TEC	TEH	0.61	NBAZB	6	H	

ATTACHMENT 3

Ginna Steam Generator A Tubesheet Map

SG - A BOBBIN INSPECTION PROGRAM

R.E. Ginna 35RFO RGE RGEACL

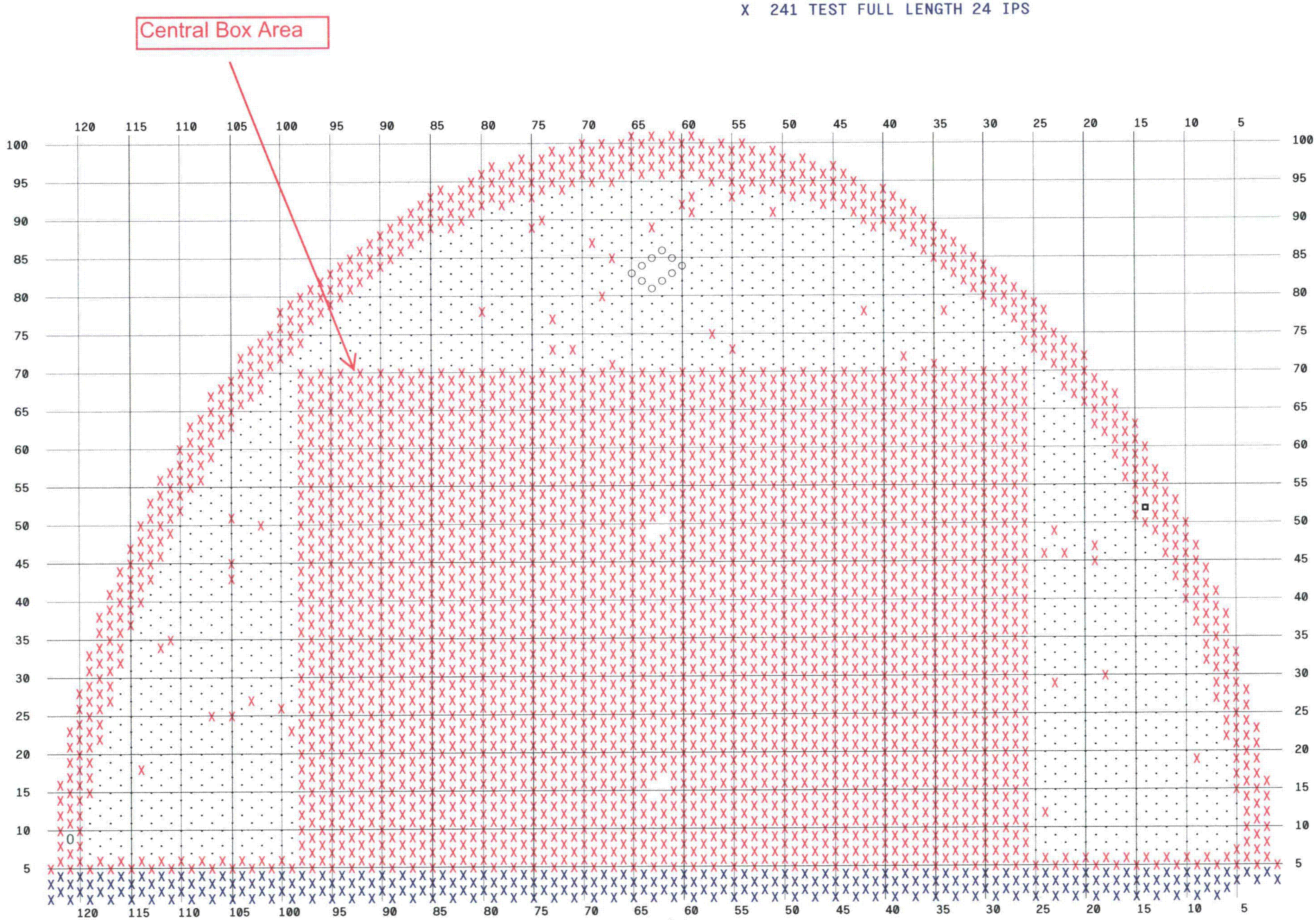
Attachment 3

□ 1 PLUGGED TUBE

X 3000 TEST FULL LENGTH 40 IPS

X 241 TEST FULL LENGTH 24 IPS

O 1 Obstructed Tube in 2008
Attempt Full Length 24IPS
From HL Then If Neccissary
Test Remainder From the CL



Westinghouse Electric Company LLC - ST Max 05/18/2011 16:31:18