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MATERIALS ENGINEERING AND INSPECTION SERVICES

SUMMARY EXAMINATION REPORT

FOR THE

1992 STEAM GENERATOR EDDY CURRENT INSPECTION

AT

R. E. GINNA NUCLEAR POWER STATION

REVISION 0
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1.0 INTRODUCTION

The following is a summary report of the results of the multifrequency eddy current examination performed during the 1992 Annual Refueling and Maintenance Outage at the R. E. Ginna Nuclear Power Station in Ontario, New York. The examinations were performed in both the "A" and "B" recirculating steam generators which are Westinghouse Series-44 design. Each generator contains 3260 Inconel 600 Mill Annealed U-Bend tubes having an outside diameter of 0.875" and a nominal wall thickness of 0.050".

The purpose of the eddy current examination was to assess any corrosion or mechanical damage that may have occurred during the cycle since the 1991 examination. Particular attention was given to the detection of:

- 1) Intergranular attack (IGA) and intergranular stress corrosion cracking (IGSCC) within the inlet tubesheet crevice region.
- 2) Intergranular attack (IGA) and intergranular stress corrosion cracking (IGSCC) within the outlet tubesheet crevice region (none detected).
- 3) Primary water stress corrosion cracking (PWSCC) at the inlet tubesheet roll transition.

- 4) Primary water stress corrosion cracking (PWSCC) at the outlet tubesheet roll transition (none detected).
- 5) Pitting and wastage between the tubesheet and first support plate.
- 6) Wear at the antivibration bar to tube intersections in the U-bend region.
- 7) Denting at tube support intersections.
- 8) Primary water stress corrosion cracking (PWSCC) in the Row 1 and Row 2 U-bend area (none detected).
- 9) Intergranular attack (IGA) and intergranular stress corrosion cracking (IGSCC) at the #1 tube support plate region on the inlet side (none detected).
- 10) Stress corrosion cracking (SCC) at the #6 tube support plate region with dents (none detected).

The examination was performed by personnel from Rochester Gas and Electric (RG&E) and Allen Nuclear Associates, Inc. (ANA). All personnel were trained and qualified in the eddy current examination method and have been certified to a minimum of Level I for data acquisition and Level II for data analysis. In addition, all acquisition personnel were trained and qualified to site specific procedures and all analysis personnel were trained and qualified to the site specific "Steam Generator Data Analysis Guidelines -

RG&E Ginna Station". These analysis guidelines were prepared in accordance with Revision 2 of the Electric Power Research Institutes (EPRI) "PWR Steam Generator Inspection Guidelines".

The data analysis was performed by two independent teams. Both teams performed their analysis manually utilizing the Zetec Digital Data Analysis (DDA-4) System. The results of these two analyses were compared for discrepancies using the ISIS-TUBE computerized data management system. The typical data flow chart is shown on Figure 1 (Page 5). The following list describes some typical discrepancies between analysis teams requiring resolution by the Level III resolution team.

- o Any indication that is reported as $\geq 20\%$ by either team and is not reported by the other team or is sized at $> 10\%$ difference.
- o Any indication spanning the repair limit, (39% vs. 41%).
- o Any difference of > 1 inch in the axial location of a flaw.
- o Any tube which was analyzed by one team but not the other (may have been missed or improperly entered by one analysis team).
- o Any difference in the reported test extent.
- o All indications identified as IGA and/or SCC regardless of whether one or both parties have reported it.



- o Any tube reported as restricted by one team but not the other (may have been missed or improperly entered by one analysis team).
- o Any tube for which a retest was requested by one team but not the other.
- o All Roll Transition Indications reported by one team but not the other.

In addition to the above, all tubes requiring repair whether reported by one or both teams were reviewed by the resolution team (usually consisting of two Level III individuals). In all cases; the removal of a repairable indication from the data base required the concurrence of two Resolution personnel.

Typical Data Flow Chart

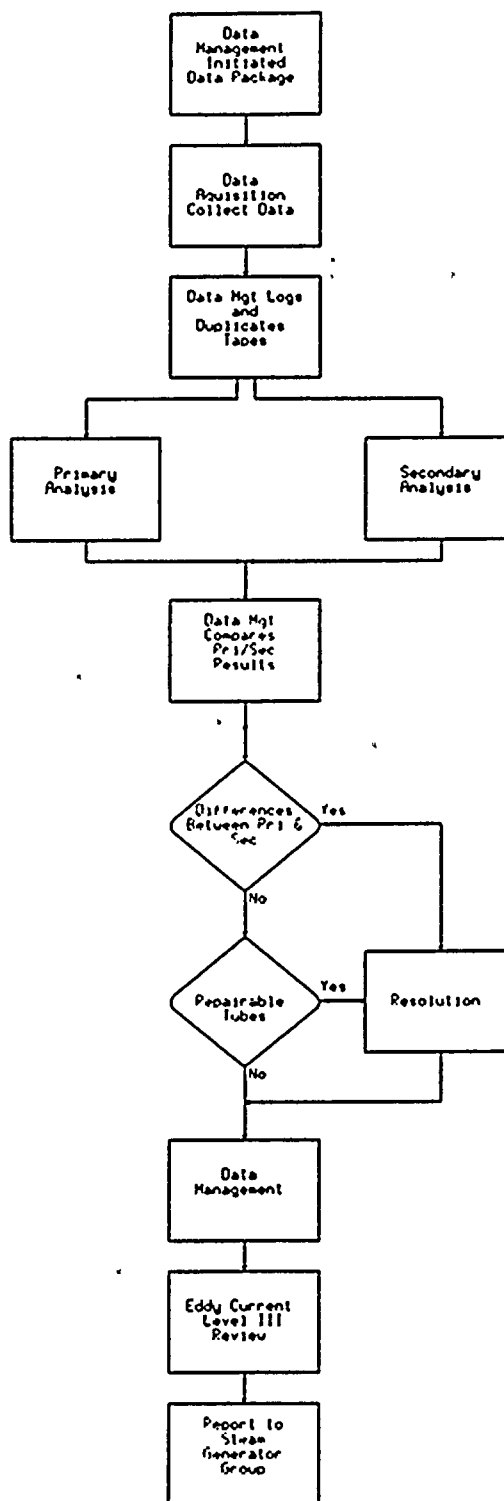


Figure 1

2.0 DATA ACQUISITION PROGRAM

The initial eddy current examination of the "A" and "B" steam generators was performed utilizing the Zetec 3-coil Motorized Rotating Pancake Probe (MRPC) and the Zetec Miz-18 Digital Data Acquisition System. The frequencies selected were 400, 300, 100 and 25 kHz. The examination was performed primarily through the full length of the tube sheet region to examine the open crevice and roll transition regions.

Additional eddy current examinations of the "A" and "B" steam generators were performed utilizing the standard 0.740" or 0.720" O.D. bobbin coil probe. The frequencies selected were 400, 200, 100 and 25 kHz. Smaller diameter probes were used to traverse the smaller radius U-bends and dented regions.

Prior to examination of the steam generators, an inspection program was established for the inlet and outlet sides of both the "A" and "B" steam generators. The inlet or hot leg examination program plan was generated to provide the examination of 100% of each open unsleeved steam generator tube from the tube end to the top of the tube sheet with MRPC, along with 20% of these tubes being selected and examined for their full length (20%

random sample as recommended in the Electric Power Research Institute (EPRI) guidelines) with the bobbin coil. In addition, 20% of each type of sleeve was examined and the remaining tube examined full length. All Row 1 and Row 2 U-bend regions selected as part of the 20% random sample were examined with the Motorized Rotating Pancake Coil (MRPC) between the 06H and 06C from the cold leg side.

A number of supplemental examinations were also performed to assist in flaw characterization and confirmation and to continue to monitor for the onset of new damage mechanisms.

Table 1 is a breakdown, by steam generator, of all tubes programmed for examination, numbers examined and the extent examined.

STEAM GENERATOR "A"
1992 EDDY CURRENT INSPECTION EXTENTS
PRIOR TO CORRECTIVE ACTION

Total Tubes	3260
Out of Service	187
Sleeved Tubes	<u>325</u>
Open Unsleeved Tubes	2748

	<u>REQ'D MIN¹</u>	<u>NUMBER PROGM'D</u>	<u>NUMBER INSPT'D</u>	<u>PERCENT COMPLETE²</u>
Hot Leg to TSH (MRPC)	2748	2748	2748	100.0%
Full Length (20% Random)	550	596	596	108.4%
Previous Ind. \geq 20%	27	27	27	100.0%
Sleeves	65	82	82	126.2%
Deplugged Tubes (F/L)	16	16	16	100.0%

Table 1

¹ Per Appendix B requirement.

² % Complete = Tubes Inspected/Required Minimum.

STEAM GENERATOR "B"
1992 EDDY CURRENT INSPECTION EXTENTS
PRIOR TO CORRECTIVE ACTION

Total Tubes	3260
Out of Service	323
Sleeved Tubes	<u>939</u>
Open Unsleeved Tubes	1998

	<u>REQ'D MIN¹</u>	<u>NUMBER PROGM'D</u>	<u>NUMBER INSPT'D</u>	<u>PERCENT COMPLETE²</u>
Hot Leg to TSH (MRPC)	1998	1998	1998	100.0%
Full Length (20% Random)	400	446	446	111.5%
Previous Ind. \geq 20%	18	18	18	100.0%
Sleeves	187	212	212	113.3%
Deplugged Tubes (F/L)	30	30	30	100.0%

Table 1 (Cont'd)

¹ Per Appendix B requirement.

² % Complete = Tubes Inspected/Required Minimum.

3.0 DATA ANALYSIS RESULTS SUMMARY

The data analysis was performed using the Zetec DDA-4 Digital Data Analysis System with Edition 18.6 Revision 5.2 software and MRPC (Revision 14) supplements.

For the MRPC examinations, all data was reviewed by displaying the 400 kHz or 300 kHz pancake coil data on the CRT along with the vertical component of the pancake and axial sensitive coils in strip chart form. Other frequencies and coils were selected as necessary for the evaluation of indications. No depth sizing was performed with the MRPC data. Any tube containing a flaw detected by the MRPC examination was repaired.

For the bobbin coil examination, all data was reviewed by displaying the 400 kHz data on the CRT along with the vertical component of the differential and absolute mix outputs in strip chart form (where applicable). Other frequencies and their components were selected as necessary for the evaluation of indications.

All recordable indications were logged into the computer and stored on floppy disk. The final report form summarizing all indications $\geq 20\%$ TW (including IGA and PWSCC which is assumed to be $>20\%$) for each generator can be found in Table 2. An explanation of the abbreviations and nomenclature used on these lists has been compiled for ease of interpretation.

LIST OF >20% INDICATION AND CREVICE INDICATION NOMENCLATURE

Top of List Information

ROW -	ROW number from the tube identification.
COL -	Column number from the tube identification.
VOLTS -	Amplitude of the measured indication signal response.
IND.DESC.-	Type of damage mechanism.
% TWD -	Percent through wall depth or code for non-measurable indications.
INDICATION LOCATION -	Reference point from which the indication was measured along with axial distance from that reference point.

Information Under IND. DESC.

ADI -	Absolute Drift Indication Signal which is indicative of IGA.
ADS -	Absolute Drift Signal which may be indicative of IGA.
CRI -	Circumferential Roll Transition Indication
CCI -	Circumferential Indication not at the Roll Transition (B&W Plugs)
DRT -	Distorted Roll Transition may be indicative of PWSCC.
DRI -	Distorted Roll Indication indicative of PWSCC.
MAI -	Multiple Axial Indication - MRPC identified or verified crevice indication(s).
MRI -	Multiple Roll Indication - MRPC identified or verified axial roll transition indication(s).
PTF -	Parent Tube Flaw
SAI -	Single Axial Indication - MRPC identified or verified crevice indication.
SRI -	Single Roll Indication - MRPC identified or verified axial roll transition indication.
SCC -	Stress Corrosion Cracking - Signals identified from bobbin coil (<0.5 volts) as possible Stress Corrosion Cracking that require disposition by MRPC.

LIST OF >20% INDICATION AND CREVICE INDICATION NOMENCLATURE (CON'T)

Information Under % TWD

XX% - The measured percent TW depth of the indication.

Information Under INDICATION LOCATION

TEH - Hot Leg Tube End (Bottom).

TSH - Top of inlet tubesheet.

TSP - Tube Support Plate

TEC - Cold Leg Tube End (Bottom).

TSC - Top of outlet tubesheet.

AVB - Antivibration Bars (Numbered from Hot Leg to Cold Leg).

-XX.X - Axial distance below the secondary face of the tubesheet or support plates where the indication is located.

+XX.X - Axial distance above the secondary face of the tubesheet or support plates where the indication is located.

0XH - Tube Support Plate Location Hot Leg 1-6

0XC - Tube Support Plate Location Cold Leg 1-6

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location		
12	2	1.3	SRI		TEH	+1.5 to	+1.4
7	3	3.4	SRI		TEH	+1.9 to	+1.6
4	4	0.8	SRI		TEH	+1.3 to	+1.1
16	4	0.8	SAI		TSH	-17.6 to	-18.5
5	5	3.8	SRI		TEH	+3.1 to	+2.8
10	5	2.0	SRI		TEH	+2.2 to	+2.0
5	6	4.3	MRI		TEH	+2.2 to	+2.1
7	7	2.0	MRI		TEH	+1.8 to	+1.7
21	7	2.4		24	AV2	+0.0	
21	7	1.3		16	AV3	+0.0	
3	9	1.3	SRI		TEH	+2.5 to	+2.2
24	9	5.4	MRI		TEH	+2.6 to	+2.4
26	9	0.6		93	TSH	-15.4	
26	9	0.6	SAI		TSH	-15.3 to	-15.6
7	10	3.5	MRI		TEH	+2.3 to	+2.5
8	10	4.1	MRI		TEH	+2.4 to	+2.5
9	10	2.1	MRI		TEH	+2.4 to	+2.5
4	11	5.0	SRI		TEH	+2.3 to	+2.5
7	11	5.5	SRI		TEH	+2.4 to	+2.6
8	11	1.9	SRI		TEH	+2.4 to	+2.5
9	11	2.6	SRI		TEH	+2.2 to	+2.4
7	12	2.7	SRI		TEH	+2.2 to	+2.4
1	13	1.2	SRI		TEH	+3.0 to	+3.3
7	13	0.6	SRI		TEH	+2.2 to	+2.4
7	14	1.4	SRI		TEH	+2.3 to	+2.1
3	15	1.7	SRI		TEH	+2.0 to	+1.8
9	15	6.8	SRI		TEH	+2.0 to	+1.6
15	15	2.0	MRI		TEH	+2.3 to	+2.1
16	15	1.9	MRI		TEH	+2.0 to	+1.9
17	15	3.2	MRI		TEH	+2.0 to	+1.8
21	15	1.0	MRI		TEH	+2.2 to	+2.0
4	16	1.6	SRI		TEH	+2.3 to	+2.2
9	16	1.0	MAI		TSH	-17.5 to	-18.6
9	16	0.3	SCC		TSH	-16.3	
9	16	1.1	SAI		TSH	-13.8 to	-14.2
7	17	0.9	SAI		TSH	-17.7 to	-18.0
21	17	0.2	SCC		TSH	-16.8	
4	18	3.7	SRI		TEH	+2.0 to	+1.8
5	18	2.8	SRI		TEH	+2.1 to	+1.8
3	19	0.4	SRI		TEH	+2.1 to	+2.0
4	19	0.8		15	TSH	+0.7	
11	19	3.0		10	TSH	+1.8	
13	19	0.6		32	TSH	+1.1	
30	19	1.7	PTF		TEH	+1.9	
30	19	1.3	SRI		TEH	+2.1 to	+1.9
8	20	7.6		16	TSH	+2.2	
10	20	4.4		16	TSH	+1.8	
11	20	3.6		1	TSH	+1.4	

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
11	20	1.2		25	TSH +1.9
13	20	1.3		11	TSH +1.6
23	20	1.7	SAI		TSH -18.1 to -18.4
8	21	4.6		23	TSH +2.0
9	21	3.0	SRI		TEH +2.4 to +2.2
9	21	6.0		29	TSH +2.4
10	21	3.0		36	TSH +1.9
11	21	7.8		26	TSH +2.4
11	21	4.5		22	TSH +3.1
13	21	5.1		23	TSH +2.4
15	21	4.7		31	TSH +1.4
17	21	3.3		30	TSH +1.0
18	21	1.2	SAI		TSH -14.3 to -14.5
23	21	2.6	SAI		TSH -19.1 to -19.2
23	21	1.2		15	TSH +0.7
38	21	2.5		24	AV3 +0.0
8	22	4.0		10	TSH +1.3
8	22	3.7		31	TSH +1.4
10	22	3.8		22	TSH +2.5
11	22	4.4		23	TSH +2.4
12	22	4.6		16	TSH +2.0
13	22	10.1		16	TSH +2.3
14	22	7.6		22	TSH +2.7
15	22	0.3	SAI		TSH -15.7 to -16.2
15	22	6.9		15	TSH +2.7
16	22	4.0	CRI		TEH +2.7 to +2.9
16	22	5.9		22	TSH +1.6
17	22	6.1		15	TSH +1.5
18	22	5.2		23	TSH +1.1
22	22	1.2	SAI		TSH -8.6 to -10.5
23	22	2.6		19	TSH +0.7
26	22	0.8	MAI		TSH -16.0 to -16.8
26	22	1.1	MAI		TSH -8.2 to -12.9
28	22	0.7	SAI		TSH -19.5 to -19.8
30	22	1.0	SRI		TEH +2.5 to +2.8
31	22	0.6	SRI		TEH +2.5 to +2.7
9	23	2.5	SRI		TEH +2.5 to +2.3
9	23	3.8		11	TSH +1.5
9	23	3.5		10	TSH +1.5
10	23	6.0		19	TSH +2.2
12	23	5.0		23	TSH +2.2
12	23	6.8		21	TSH +2.9
13	23	14.4		30	TSH +2.9
14	23	6.9		20	TSH +2.8
22	23	4.8		17	TSH +1.1
23	23	2.8		27	TSH +1.3
24	23	2.1		17	TSH +1.4
26	23	2.4		9	TSH +1.0

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
27	23	1.0	SAI		TSH -15.7 to -16.0
10	24	4.7		8	TSH +1.3
10	24	2.7		24	TSH +1.9
11	24	3.4		19	TSH +2.0
11	24	2.5		24	TSH +2.6
13	24	4.6		25	TSH +2.4
13	24	7.5		24	TSH +2.8
13	24	2.4		7	TSC +4.3
22	24	4.5		18	TSH +2.0
23	24	3.2		19	TSH +1.3
28	24	1.0	MAI		TSH -17.5 to -18.4
12	25	6.1		24	TSH +2.1
13	25	7.9		32	TSH +2.5
14	25	12.8		32	TSH +2.6
14	25	4.3		9	TSH +3.2
17	25	9.1		28	TSH +2.4
23	25	3.5		19	TSH +1.7
4	26	1.1		12	TSC +1.6
9	26	6.2		25	TSH +0.7
12	26	2.5		15	TSH +2.2
24	26	2.7		24	TSH +1.2
28	26	3.1	SRI		TEH +2.7 to +2.4
34	26	4.8	SRI		TEH +2.4 to +2.0
11	27	0.9	SRI		TEH +2.3 to +2.0
13	27	3.4		11	TSH +2.1
17	27	7.4		26	TSH +3.0
22	27	3.0		23	TSH +1.4
22	27	12.8		24	TSH +2.4
22	27	13.1		25	TSH +2.5
23	27	5.5		26	TSH +2.0
31	27	1.1	SRI		TEH +2.5 to +2.3
39	27	2.6	SRI		TEH +2.6 to +2.4
11	28	1.3	SRI		TEH +2.5 to +2.2
13	28	1.2		6	TSH +1.1
14	28	4.8		14	TSH +2.6
23	28	5.4		27	TSH +2.0
24	28	1.9	SRI		TEH +2.7 to +2.3
24	28	8.2		20	TSH +1.2
25	28	5.1		19	TSH +1.3
26	28	3.5		12	TSH +1.0
3	29	2.3	SRI		TEH +2.5 to +2.3
7	29	1.0	MRI		TEH +2.9 to +2.6
10	29	0.6		9	TSC +2.0
12	29	0.8		11	TSH +1.0
15	29	6.1		21	TSH +3.0
24	29	4.9		20	TSH +1.3
26	29	3.0		4	TSH +0.9
30	29	2.3	SRI		TEH +2.9 to +2.7

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location		
7	30	0.9	SRI		TEH	+2.5 to	+2.4
23	30	7.9		28	TSH	+1.7	
24	30	4.1		28	TSH	+1.7	
25	30	10.9		19	TSH	+1.4	
26	30	3.0		14	TSH	+1.3	
34	30	2.0	MRI		TEH	+2.1 to	+1.9
39	30	4.8	MRI		TEH	+2.4 to	+2.2
39	30	1.5		21	AV3	+0.0	
1	31	3.5	MRI		TEH	+2.6 to	+2.4
7	31	1.8	SRI		TEH	+3.1 to	+3.0
8	31	5.7	SRI		TEH	+3.0 to	+2.7
14	31	1.1		9	TSH	+0.8	
14	31	2.8		7	TSC	+3.1	
14	31	3.1		15	TSC	+2.8	
23	31	11.1		28	TSH	+2.1	
24	31	0.3	SCC		TSH	-18.4	
24	31	6.8		28	TSH	+1.4	
25	31	8.0		19	TSH	+1.2	
26	31	4.3		23	TSH	+1.3	
26	31	3.5		21	TSC	+1.5	
3	32	4.7	SRI		TEH	+2.1 to	+1.9
14	32	3.5		13	TSC	+2.7	
14	32	0.7		12	TSC	+2.2	
17	32	0.7		7	TSH	+3.7	
17	32	3.9		7	TSC	+3.3	
20	32	6.5		31	TSH	+2.8	
22	32	3.3		27	TSH	+1.5	
22	32	13.5		30	TSH	+2.0	
22	32	13.9		29	TSH	+2.3	
23	32	10.0		26	TSH	+2.4	
24	32	11.3		22	TSH	+1.6	
26	32	6.1		24	TSH	+1.0	
28	32	3.7	MRI		TEH	+2.5 to	+2.3
31	32	2.1	MRI		TEH	+2.2 to	+2.0
39	32	5.2	SRI		TEH	+2.1 to	+1.9
15	33	1.2	MAI		TSH	-15.1 to	-16.1
17	33	4.3	SRI		TEH	+2.1 to	+1.9
19	33	6.6		25	TSH	+2.8	
20	33	3.2		15	TSH	+2.0	
21	33	5.8		19	TSH	+1.6	
22	33	12.0		22	TSH	+2.1	
23	33	10.1		29	TSH	+2.1	
24	33	8.5		28	TSH	+1.8	
25	33	1.8		24	TSH	+0.8	
25	33	5.9		21	TSH	+1.6	
26	33	1.8		16	TSH	+0.8	
26	33	2.7		11	TSH	+1.3	
26	33	1.3		35	TSH	+1.6	

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location		
31	33	2.3	SRI		TEH	+2.6 to	+2.5
34	33	2.7	MRI		TEH	+2.2 to	+2.0
39	33	6.6	SRI		TEH	+2.4 to	+2.1
4	34	3.2	SRI		TEH	+2.5 to	+2.3
14	34	3.1	SRI		TEH	+2.6 to	+2.4
19	34	1.1	SAI		TSH	-17.2 to	-17.4
19	34	3.8		26	TSH	+2.2	
19	34	3.6		9	TSC	+3.3	
20	34	0.8		11	TSH	+0.8	
20	34	2.7		12	TSH	+2.6	
25	34	9.5		22	TSH	+1.6	
25	34	1.6		13	TSH	+2.4	
27	34	0.8	SAI		TSH	-17.4 to	-17.7
27	34	0.4	SCC		TSH	-17.4	
27	34	5.8		24	01H	+0.5	
27	34	2.9		4	TSC	+1.7	
34	34	0.9	SRI		TEH	+2.2 to	+2.0
35	34	1.3	SRI		TEH	+2.3 to	+2.1
37	34	2.7	SRI		TEH	+2.2 to	+2.0
41	34	2.2	MRI		TEH	+1.8 to	+1.5
8	35	1.6	SRI		TEH	+2.5 to	+2.3
19	35	5.7		28	TSH	+2.9	
20	35	1.0		7	TSH	+1.7	
20	35	2.1		21	TSH	+2.3	
21	35	2.0		20	TSH	+1.1	
21	35	3.7		18	TSH	+1.5	
21	35	7.0		20	TSH	+2.3	
21	35	2.5		13	TSH	+3.0	
22	35	5.3		19	TSH	+1.4	
22	35	3.5		14	TSH	+2.1	
22	35	2.2		11	TSH	+2.5	
23	35	0.8		10	TSH	+0.8	
23	35	2.0		24	TSH	+1.4	
23	35	6.2		26	TSH	+2.4	
25	35	1.8		20	TSH	+1.1	
25	35	7.1		15	TSH	+1.5	
25	35	6.8		20	TSH	+1.6	
25	35	4.2		23	TSH	+1.9	
25	35	3.5		20	TSH	+2.0	
26	35	6.2		19	TSH	+1.4	
27	35	0.9	MRI		TEH	+2.4 to	+2.6
27	35	6.3		23	TSH	+1.0	
39	35	6.3	MRI		TEH	+1.7 to	+1.9
39	35	1.0		14	AV1	+0.0	
39	35	3.3		33	AV3	+0.0	
39	35	1.7		21	AV4	+0.0	
7	36	4.1	MRI		TEH	+2.1 to	+2.3
20	36	3.4		24	TSH	+2.2	

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
20	36	3.7		11	TSC +2.7
21	36	4.7		19	TSH +1.8
21	36	2.5		16	TSH +3.0
21	36	2.2		18	TSC +2.4
23	36	2.0		7	TSH +0.9
23	36	5.2		15	TSH +2.1
26	36	6.9		30	TSH +1.4
26	36	7.5		27	TSH +1.7
37	36	1.6	SRI		TEH +2.0 to +2.2
8	37	1.2	SRI		TEH +2.4 to +2.7
14	37	0.6		8	TSH +0.4
14	37	0.5		14	TSH +0.9
14	37	0.7		13	TSH +1.8
14	37	0.9		8	TSH +2.1
14	37	2.0		5	TSC +2.4
16	37	1.2		18	TSH +1.0
16	37	1.0		17	TSH +4.5
18	37	0.9		20	TSH +2.5
18	37	2.3		26	TSH +3.3
20	37	3.3		13	TSH +2.0
20	37	2.1		7	TSH +2.8
21	37	4.9		28	TSC +2.4
22	37	6.1		20	TSH +1.5
22	37	1.1		3	TSH +2.5
22	37	2.6		13	TSC +2.1
23	37	3.6		23	TSH +1.1
23	37	2.7		20	TSH +2.4
23	37	1.8		15	TSC +2.1
23	37	2.3		19	TSC +1.8
24	37	2.7		10	TSH +1.4
24	37	7.8		15	TSH +2.2
24	37	2.8		13	TSH +2.9
25	37	10.0		31	TSH +1.3
25	37	6.7		23	TSH +2.3
26	37	1.4	SRI		TEH +2.8 to +2.5
26	37	4.8		25	TSH +1.5
26	37	4.0		21	TSH +2.0
26	37	1.8		25	TSH +2.3
26	37	4.6		9	TSH +2.8
37	37	2.8	SRI		TEH +2.1 to +1.9
8	38	0.7	SRI		TEH +2.2 to +2.1
8	38	1.4		15	TSH +0.6
12	38	2.3		5	TSC +2.4
18	38	3.0		10	TSH +3.3
19	38	1.0		19	TSH +2.4
19	38	0.7		24	TSH +3.6
20	38	2.3		16	TSH +1.9
23	38	1.0		25	TSH +0.7

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
23	38	2.5		19	TSH +1.2
23	38	1.9		26	TSH +1.8
23	38	2.7		19	TSH +2.6
23	38	3.5		9	TSC +1.8
23	38	3.6		13	TSC +1.8
26	38	5.3		20	TSH +1.7
26	38	5.5		20	TSH +1.9
26	38	2.8		21	TSH +2.1
26	38	2.5		16	TSH +2.4
26	38	6.0		8	TSH +2.7
31	38	1.0	SRI		TEH +1.9 to +1.7
31	38	1.0		12	TSH +0.8
32	38	1.9	SRI		TEH +2.3 to +2.2
10	39	2.0		9	TSH +0.9
10	39	1.0		8	TSC +3.3
11	39	1.8		4	TSH +0.8
19	39	3.8		5	TSH +2.2
19	39	3.8		14	TSH +2.5
19	39	1.6		6	TSH +3.5
19	39	1.0		8	TSH +3.6
19	39	1.3		20	TSC +3.7
19	39	1.3		9	TSC +3.3
19	39	0.6		54	TSC +2.8
19	39	1.7		9	TSC +2.1
20	39	1.2		18	TSH +0.4
20	39	5.5		22	TSC +2.1
21	39	6.1		16	TSC +2.0
24	39	5.7	SRI		TEH +2.2 to +1.9
24	39	3.5		16	TSH +1.3
24	39	5.5		13	TSH +2.6
25	39	1.2		15	TSH +1.5
25	39	6.4		22	TSH +2.2
25	39	6.5		28	TSH +2.6
26	39	3.0		20	TSH +1.9
26	39	10.4		20	TSH +2.9
29	39	4.2		10	TSH +1.7
29	39	3.2		10	TSH +2.2
33	39	2.3	SRI		TEH +2.1 to +2.0
35	39	0.7	MAI		TSH -18.1 to -18.8
40	39	1.1	MRI		TEH +2.3 to +2.1
2	40	1.4	SRI		TEH +2.6 to +2.4
10	40	0.7		10	TSH +0.9
10	40	1.0		18	TSH +1.2
10	40	1.3		16	TSC +3.3
10	40	2.7		8	TSC +2.7
16	40	1.0	SAI		TSH -9.6 to -10.3
19	40	1.2		8	TSH +0.6
19	40	3.0		19	TSH +2.1

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
19	40	0.7		18	TSH +3.2
19	40	1.1		14	TSC +3.2
19	40	2.1		10	TSC +1.9
21	40	0.8		11	TSC +3.1
21	40	5.5		19	TSC +1.9
23	40	2.1		7	TSH +0.5
23	40	1.5		15	TSH +1.0
23	40	1.6		6	TSH +1.8
23	40	1.1		14	TSH +2.7
23	40	3.2		12	TSC +1.1
24	40	3.6		19	TSH +1.1
24	40	2.5		26	TSH +1.7
24	40	3.0		10	TSH +2.4
26	40	9.4		25	TSH +2.4
26	40	4.8		13	TSC +0.4
27	40	2.3		17	TSH +1.2
27	40	9.8		25	TSH +2.4
27	40	2.7		11	TSC +0.2
30	40	3.5		11	TSH +2.1
15	41	0.8	MAI		TSH -7.0 to -8.3
16	41	0.8		12	TSH +0.8
16	41	1.0		13	TSH +4.1
16	41	1.4		12	TSC +2.1
16	41	1.1		21	TSC +1.2
17	41	1.2		5	TSH +2.2
17	41	1.2		24	TSH +3.9
19	41	1.0		18	TSH +1.3
19	41	2.4		13	TSH +2.1
19	41	1.1		15	TSH +2.7
21	41	2.9	MRI		TEH +3.3 to +3.1
21	41	1.3		9	TSH +1.0
21	41	0.9		15	TSH +2.1
21	41	4.7		17	TSC +2.2
23	41	2.5		17	TSH +1.2
24	41	3.7		13	TSH +1.0
24	41	2.3		21	TSH +2.2
25	41	4.1		25	TSH +1.2
25	41	8.5		23	TSH +1.9
25	41	4.2		12	TSH +2.7
26	41	3.5		18	TSH +1.1
26	41	6.1		24	TSH +2.2
29	41	5.2		15	TSH +1.6
29	41	2.9		28	TSH +2.7
32	41	1.6	SAI		TSH -5.8 to -9.3
4	42	1.9	SRI		TEH +2.8 to +2.6
7	42	1.7	SRI		TEH +3.5 to +3.3
8	42	2.5	MRI		TEH +3.1 to +2.8
13	42	1.5		4	TSC +3.0

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
13	42	2.5		14	TSC +2.2
13	42	2.1		9	TSC +2.0
14	42	5.9	SRI		TEH +3.0 to +2.6
15	42	6.8	CRI		TEH +2.6
15	42	1.4		9	TSH +3.1
17	42	1.7		9	TSH +3.8
19	42	3.4		8	TSH +1.9
21	42	4.4	SRI		TEH +3.2 to +2.9
21	42	3.1		11	TSC +1.9
22	42	1.4		11	TSH +0.4
22	42	1.1		12	TSH +0.8
22	42	2.5		12	TSH +0.9
22	42	2.0		8	TSC +2.1
23	42	2.4		12	TSH +0.9
23	42	2.6		6	TSH +2.2
25	42	7.0		19	TSH +1.8
25	42	1.7		11	TSC +0.7
26	42	7.5		25	TSH +2.2
27	42	5.8		15	TSH +2.2
29	42	3.1		23	TSH +1.0
29	42	3.0		23	TSH +1.3
29	42	7.3		26	TSH +1.8
29	42	4.9		27	TSH +1.9
30	42	3.5	SRI		TEH +2.8 to +2.5
30	42	3.1		9	TSH +2.1
37	42	1.5		20	AV1 +0.0
37	42	4.3		38	AV2 +0.0
37	42	2.9		30	AV3 +0.0
37	42	2.4		27	AV4 +0.0
7	43	5.7	SRI		TEH +2.1 to +2.3
8	43	2.2	MRI		TEH +1.0 to +1.1
12	43	7.5	SRI		TEH +3.3 to +3.0
13	43	2.5		9	TSC +2.3
15	43	3.3	SRI		TEH +2.9 to +2.7
17	43	4.9	SRI		TEH +3.2 to +2.9
17	43	1.9		6	TSH +3.9
18	43	1.3	SRI		TEH +3.5 to +3.3
18	43	1.0	MAI		TSH -3.1 to -9.4
18	43	1.9		23	TSH +2.5
18	43	4.5		20	TSH +3.0
19	43	2.2		8	TSH +2.0
21	43	0.8	SRI		TEH +3.3 to +3.1
21	43	2.4		8	TSH +2.0
22	43	3.0		18	TSH +0.9
23	43	3.4		3	TSH +1.0
24	43	2.6		19	TSH +1.1
24	43	2.3		24	TSH +1.4
24	43	2.3		11	TSH +1.9

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	
25	43	3.0		5	TSH	+0.6
25	43	3.0		20	TSH	+1.4
26	43	5.3		11	TSH	+1.4
27	43	2.5		22	TSH	+1.1
27	43	3.4		27	TSH	+1.5
27	43	3.9		23	TSH	+1.9
27	43	3.5		29	TSH	+1.9
27	43	2.3		9	TSH	+2.4
28	43	3.1	SRI		TEH	+2.4 to +2.1
28	43	4.0		19	TSH	+1.2
28	43	8.6		24	TSH	+2.3
28	43	8.7		33	TSH	+2.3
31	43	0.7	SRI		TEH	+2.8 to +2.6
32	43	2.3	SRI		TEH	+2.8 to +2.6
32	43	1.5		27	TSH	+0.5
32	43	0.8		13	TSH	+1.4
35	43	0.3	SCC		TSH	-18.1
35	43	0.9	MAI		TSH	-17.7 to -20.3
11	44	1.6	SRI		TEH	+2.7 to +2.9
11	44	3.6		5	TSC	+2.4
12	44	1.8	SRI		TEH	+2.5 to +2.7
16	44	1.6	SRI		TEH	+2.4 to +2.6
16	44	1.4		15	TSH	+4.6
16	44	1.4		10	TSC	+1.8
16	44	1.5		11	TSC	+1.7
17	44	5.7	SRI		TEH	+2.7 to +3.0
17	44	1.1		4	TSH	+0.5
17	44	1.7		10	TSH	+3.7
17	44	1.3		11	TSH	+4.1
18	44	1.4		16	TSH	+2.4
18	44	1.1		14	TSH	+2.4
19	44	0.9	SCC		TSH	-19.3
19	44	0.9	MAI		TSH	-18.1 to -18.9
19	44	0.2	SCC		TSH	-13.0
19	44	0.8		14	TSH	+1.0
20	44	1.5		15	TSH	+1.3
20	44	1.4		13	TSH	+2.2
21	44	5.3		14	TSC	+1.9
22	44	2.8		16	TSH	+1.0
22	44	1.6		21	TSC	+2.0
25	44	3.9		4	TSH	+0.5
25	44	7.0		12	TSH	+1.3
27	44	1.3	SRI		TEH	+2.3 to +2.5
27	44	2.5		22	TSH	+1.1
27	44	0.9		28	TSH	+1.4
27	44	3.8		20	TSH	+1.8
27	44	6.1		15	TSH	+2.1
27	44	6.5		20	TSH	+2.3

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	
28	44	3.5		30	TSH	+0.9
28	44	9.7		22	TSH	+1.9
28	44	9.5		27	TSH	+2.0
29	44	20.7		25	TSH	+1.3
33	44	0.9		14	TSH	+0.7
6	45	4.2	SRI		TEH	+4.4 to +4.0
12	45	4.0		29	TSH	+2.1
12	45	1.5		7	TSH	+2.8
12	45	3.6		7	TSC	+2.1
17	45	4.1	SRI		TEH	+1.8 to +1.9
19	45	0.6		28	TSH	+3.4
20	45	2.0		12	TSH	+2.3
20	45	6.6		19	TSC	-15.5
21	45	3.0		19	TSH	+1.1
21	45	1.6		9	TSH	+2.1
21	45	9.4		19	TSC	-15.9
22	45	1.3		6	TSH	+0.6
22	45	1.5		18	TSH	+1.5
22	45	0.8		18	TSC	+2.1
22	45	12.4		15	TSC	-15.7
23	45	3.5		17	TSH	+0.9
23	45	2.1		11	TSH	+0.9
24	45	3.7		10	TSH	+0.9
25	45	6.2		16	TSH	+1.2
27	45	11.8		23	TSH	+1.5
27	45	3.5		7	TSC	+0.3
29	45	10.5		34	TSH	+1.1
29	45	5.6		15	TSC	-2.0
30	45	4.1		18	TSH	+0.5
30	45	1.6		16	TSH	+1.2
32	45	0.6	SAI		TSH	-17.8 to -18.2
32	45	0.2	SCC		TSH	-17.1
32	45	1.0		14	TSH	+0.3
37	45	0.5	SRI		TEH	+2.0 to +2.1
7	46	1.4	SRI		TEH	+3.7 to +3.4
10	46	1.1		15	TSH	+1.9
10	46	3.4		4	TSC	+2.7
10	46	0.8		12	TSC	+2.1
11	46	3.9		3	TSC	+2.4
17	46	2.2		14	TSH	+0.5
19	46	1.5		8	TSH	+2.6
20	46	0.7		17	TSH	+1.1
20	46	2.9		11	TSH	+1.6
20	46	1.4		11	TSH	+2.5
20	46	2.8		10	TSC	+1.6
20	46	13.6		12	TSC	-15.7
21	46	1.5		15	TSH	+1.3
21	46	0.8		5	TSH	+2.5

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	
21	46	15.4		19	TSC	-15.8
22	46	1.7		3	TSH	+1.3
22	46	1.5		10	TSC	+1.0
22	46	2.7		19	TSC	-15.3
22	46	10.7		19	TSC	-16.3
25	46	8.4		25	TSH	+1.1
25	46	7.4		28	TSH	+1.3
25	46	1.3		13	TSH	+1.8
26	46	1.4		20	TSH	+0.8
26	46	8.0		34	TSH	+1.2
26	46	8.4		28	TSH	+1.3
26	46	3.7		22	TSH	+2.0
30	46	3.9		7	TSH	+1.2
31	46	2.3		19	TSH	+1.1
34	46	1.1	SRI		TEH	+1.8 to +2.0
12	47	3.4		14	TSC	+1.8
14	47	0.5	SCC		TSH	-2.6
14	47	2.1	MAI		TSH	-1.6 to -10.5
14	47	3.0		4	TSH	+3.4
14	47	1.4		10	TSC	+2.2
14	47	2.8		11	TSC	+2.0
14	47	5.8		6	TSC	-17.7
16	47	2.5		12	TSC	+1.5
18	47	2.8	CRI		TEH	+2.5
18	47	2.9		3	TSH	+3.8
20	47	1.9		12	TSH	+1.7
20	47	1.2		7	TSC	+1.5
20	47	0.8		14	TSC	+1.2
20	47	1.7		4	TSC	+0.7
20	47	10.7		9	TSC	-16.3
22	47	2.4		14	TSH	+1.2
22	47	3.4		3	TSC	+0.5
22	47	25.5		9	TSC	-15.9
24	47	3.8		9	TSH	+0.9
30	47	8.3		21	TSH	+1.0
30	47	1.3		10	TSC	+1.0
6	48	8.4	SRI		TEH	+3.5 to +3.2
24	48	2.8		6	TSC	+0.6
28	48	8.6		21	TSH	+1.5
30	48	6.7		26	TSH	+0.9
30	48	2.0		2	TSC	+0.9
7	49	1.3		14	TSC	+2.7
12	49	3.0		15	TSC	+1.9
16	49	1.7		13	TSH	+1.4
16	49	1.6		8	TSH	+2.2
16	49	4.4		12	TSH	+4.6
16	49	2.8		26	TSC	+1.4
17	49	0.4	MAI		TSH	-12.9 to -13.9

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
17	49	3.9		10	TSH +0.6
17	49	2.2		12	TSH +3.3
17	49	1.0		15	TSH +3.9
17	49	2.4		14	TSH +4.4
18	49	3.4		12	TSH +2.3
20	49	4.7		7	TSH +1.1
20	49	2.0		15	TSH +1.6
20	49	4.3		7	TSC +0.7
25	49	1.3		12	TSH +1.1
26	49	2.4		13	TSH +0.6
26	49	0.9		30	TSH +1.2
26	49	1.1		26	TSH +1.2
26	49	5.6		16	TSH +1.6
26	49	5.5		22	TSH +1.7
28	49	9.2		20	TSH +0.4
28	49	8.2		19	TSH +1.5
30	49	6.4		9	TSH +0.8
34	49	0.2	SCC		TSH -15.8
34	49	0.5	SAI		TSH -15.3 to -15.6
11	50	2.0		6	TSH +0.7
11	50	2.8		5	TSC +1.6
12	50	2.3	SRI		TEH +2.1 to +2.3
15	50	2.4		10	TSC +1.6
16	50	1.4		22	TSC +1.9
17	50	1.6		16	TSH +0.6
17	50	2.6		18	TSH +3.2
17	50	2.3		13	TSH +4.3
17	50	3.6		4	TSC +1.3
19	50	4.6		6	TSC +1.0
26	50	0.4		22	TSH +1.1
26	50	1.8		11	TSH +1.7
26	50	1.7		9	TSH +2.2
27	50	5.7		18	TSH +1.5
28	50	4.2		12	TSH +1.5
29	50	4.5		20	TSH +1.1
30	50	4.8		18	TSH +0.6
30	50	5.4		14	TSH +0.6
37	50	3.1		17	AV3 +0.0
17	51	0.8	ADS		TSH -13.0
17	51	0.8	SAI		TSH -7.2 to -7.8
17	51	4.0		26	TSH +0.6
17	51	1.9		10	TSH +3.3
17	51	1.3		13	TSH +4.0
17	51	2.5		14	TSH +4.8
17	51	0.7		15	TSH +5.5
19	51	7.4		23	TSH +1.9
20	51	6.7		16	TSH +1.3
27	51	2.0	SRI		TEH +2.3 to +2.5

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	
27	51	2.7		9	TSH	+0.5
27	51	2.7		23	TSH	+1.6
27	51	2.7		6	TSC	+1.0
10	52	2.1		9	TSC	+1.7
19	52	4.5		13	TSC	+1.2
31	52	1.4		19	TSH	+0.2
31	52	1.0		19	TSH	+0.6
12	53	3.4	SRI		TEH	+2.7 to +2.5
16	53	0.6		19	TSH	+0.6
16	53	1.1		11	TSH	+1.4
16	53	5.3		17	TSC	+1.2
17	53	1.7	SRI		TEH	+2.6 to +2.4
17	53	2.5		9	TSH	+0.7
17	53	3.5		15	TSH	+0.8
17	53	1.7		38	TSH	+3.2
17	53	2.8		41	TSH	+3.7
17	53	2.3		44	TSH	+4.2
19	53	0.9	SAI		TSH	-17.5 to -19.2
19	53	2.0		27	TSH	+1.7
19	53	2.5		34	TSH	+1.7
19	53	1.5		30	TSH	+2.0
19	53	1.8		31	TSH	+2.2
19	53	3.2		12	TSH	+2.7
19	53	3.8		16	TSH	+2.8
20	53	1.7		11	TSH	+1.9
20	53	0.7		16	TSH	+2.2
20	53	1.9		13	TSC	+1.5
20	53	1.8		14	TSC	+1.3
27	53	2.5	SRI		TEH	+2.4 to +2.2
27	53	2.6		13	TSH	+1.6
27	53	2.2		6	TSC	+1.4
28	53	1.4		5	TSH	+0.5
28	53	2.2		15	TSH	+0.9
29	53	4.2		22	TSH	+0.6
30	53	2.1	SRI		TEH	+1.8 to +1.6
13	54	4.8		17	TSC	+1.8
14	54	1.4		8	TSH	+2.2
14	54	4.8		14	TSC	+1.7
17	54	1.6		21	TSC	+1.4
18	54	2.7		31	TSH	+2.6
28	54	1.7	SRI		TEH	+2.6 to +2.4
28	54	2.7		15	TSH	+1.3
29	54	2.3		9	TSH	+0.6
29	54	2.4		14	TSH	+0.7
29	54	0.8		3	TSC	+0.7
40	54	4.8	MRI		TEH	+2.3 to +2.1
9	55	5.1	SRI		TEH	+2.4 to +2.2
9	55	3.3		5	TSC	+1.3

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
12	55	1.9		10	TSH +1.3
12	55	3.3		8	TSC +1.5
13	55	1.8		15	TSH +1.4
13	55	3.1		10	TSC +1.6
17	55	2.5		12	TSH +3.4
17	55	3.8		12	TSH +3.6
17	55	0.8		34	TSH +4.2
19	55	3.8		15	TSH +2.1
19	55	5.3		15	TSH +2.2
30	55	3.4	SRI		TEH +2.5 to +2.3
31	55	2.0	SRI		TEH +2.5 to +2.3
9	56	3.4		7	TSC +1.4
16	56	5.4		13	TSH +3.5
16	56	6.3		28	TSH +3.7
19	56	2.0		12	TSH +2.0
21	56	0.8	SRI		TEH +2.9 to +2.7
21	56	4.2		5	TSH +1.1
21	56	1.3		13	TSC +1.8
21	56	1.4		7	TSC +1.0
22	56	5.3		19	TSH +1.4
30	56	1.8		25	TSH +0.5
30	56	4.4		17	TSH +0.6
37	56	0.7	SRI		TEH +2.7 to +2.5
41	56	0.6	SRI		TEH +2.6 to +2.4
6	57	3.8		4	TSC +1.5
7	57	3.9	SRI		TEH +1.8 to +1.6
22	57	10.8		27	TSH +1.3
22	57	8.1		26	TSH +1.4
22	57	3.2		17	TSH +2.0
26	57	1.4	SRI		TEH +3.1 to +2.8
40	57	0.6	SRI		TEH +2.7 to +2.6
11	58	1.6	SAI		TSH -16.3 to -16.9
14	58	1.4		11	TSH +2.5
14	58	2.3		6	TSC +1.3
17	58	4.4		20	TSH +2.5
18	58	4.0		19	TSH +2.5
19	58	8.2		20	TSH +1.8
20	58	3.1		11	TSH +1.6
20	58	2.0		12	TSH +1.6
20	58	1.2		41	TSH +1.9
21	58	3.4		19	TSH +1.5
21	58	5.9		12	TSH +2.4
21	58	1.8		3	TSC +2.1
24	58	1.8		21	TSH +1.3
24	58	2.7		20	TSH +1.4
24	58	2.1		10	TSC +2.2
25	58	1.4		7	TSH +1.3
25	58	0.5		32	TSH +1.5

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location		
41	58	0.3	SRI		TEH	+2.4 to	+2.3
7	59	1.3	SRI		TEH	+2.2 to	+2.4
9	59	1.5		26	TSH	+0.4	
9	59	2.9		8	TSC	+1.6	
7	60	1.3	SRI		TEH	+2.5 to	+2.7
9	60	1.5	SRI		TEH	+2.5 to	+2.7
9	60	2.2		7	TSH	+0.9	
26	60	1.6		14	TSH	+0.8	
39	60	2.0	MRI		TEH	+2.5 to	+2.7
39	60	4.0		22	AV3	+0.0	
39	60	2.8		15	AV4	+0.0	
7	61	1.1	MRI		TEH	+2.5 to	+2.7
13	61	1.3		39	TSH	+1.4	
14	61	0.7	MRI		TEH	+2.1 to	+2.2
14	61	0.9		10	TSH	+1.5	
14	61	1.5		13	TSH	+1.8	
17	61	4.9		24	TSH	+1.4	
17	61	4.2		23	TSH	+1.9	
21	61	2.6	SRI		TEH	+2.8 to	+3.1
25	61	0.7	SRI		TEH	+2.7 to	+2.9
33	61	1.0	MRI		TEH	+2.3 to	+2.5
34	61	0.9	SRI		TEH	+2.5 to	+2.6
9	62	4.0	SRI		TEH	+3.2 to	+2.9
9	62	3.1		10	TSH	+0.6	
12	62	4.3		19	TSH	+0.9	
12	62	1.6		11	TSC	+1.5	
13	62	1.3	SRI		TEH	+2.9 to	+2.8
14	62	5.9		18	TSH	+1.6	
14	62	2.4		5	TSC	+1.8	
17	62	1.0	MAI		TSH	-17.6 to	-19.5
17	62	7.8		22	TSH	+1.3	
17	62	2.8		7	TSC	+3.1	
20	62	3.9		27	TSH	+1.2	
20	62	1.7		21	TSH	+1.7	
21	62	7.5		12	TSH	+1.3	
22	62	6.1		11	TSH	+1.3	
24	62	3.2		9	TSH	+0.7	
24	62	1.0		15	TSC	+2.5	
25	62	2.2	SRI		TEH	+2.6 to	+2.9
6	63	3.2	SRI		TEH	+2.9 to	+2.6
7	63	2.9		6	TSH	+0.7	
7	63	2.4		10	TSC	+1.3	
15	63	5.8		18	TSH	+1.6	
16	63	1.7		24	TSH	+1.5	
17	63	9.3		19	TSH	+1.4	
19	63	5.9		26	TSH	+1.3	
19	63	1.0		15	TSC	+3.6	
24	63	1.2		12	TSH	+1.1	

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location		
27	63	2.0	SRI		TEH	+3.2 to	+3.0
38	63	1.2	SRI		TEH	+2.4 to	+2.2
41	63	1.8	SRI		TEH	+2.3 to	+2.2
9	64	2.0	MRI		TSH	-20.7 to	-21.0
9	64	0.6		27	TSH	+0.5	
9	64	2.1		8	TSH	+1.0	
11	64	4.3		9	TSH	+0.8	
11	64	4.1		8	TSH	+0.8	
12	64	3.5		15	TSH	+1.5	
13	64	6.1		19	TSH	+1.5	
13	64	6.1		19	TSH	+1.6	
13	64	1.4		27	TSH	+2.0	
13	64	1.3		29	TSH	+2.0	
17	64	2.2		10	TSC	+2.7	
20	64	1.9		19	TSH	+1.1	
20	64	1.3		5	TSC	+2.8	
22	64	4.9		7	TSH	+1.3	
27	64	5.6	SRI		TEH	+1.9 to	+1.6
28	64	1.0	MRI		TEH	+2.1 to	+1.7
34	64	1.5	MRI		TEH	+1.2 to	+1.1
9	65	4.1	SRI		TEH	+2.8 to	+2.5
9	65	6.1		19	TSH	+0.6	
9	65	3.0		4	TSC	+1.5	
11	65	2.6		21	TSH	+0.8	
11	65	2.2		24	TSH	+1.2	
13	65	4.4		14	TSH	+1.2	
14	65	3.7		15	TSH	+1.4	
14	65	2.6		4	TSC	+2.5	
14	65	2.4		5	TSC	+2.0	
15	65	3.9		11	TSH	+1.2	
15	65	2.8		28	TSH	+1.6	
17	65	4.3		9	TSH	+1.3	
20	65	5.3		18	TSH	+1.2	
6	66	1.9	SRI		TEH	+2.2 to	+2.0
7	66	3.2		10	TSH	+0.9	
11	66	3.1		14	TSH	+1.0	
11	66	2.8		17	TSH	+1.1	
11	66	3.6		14	TSH	+1.6	
11	66	3.7		16	TSH	+1.7	
12	66	4.2		31	TSH	+1.5	
12	66	4.4		22	TSH	+1.6	
13	66	8.3		20	TSH	+1.3	
13	66	2.0		20	TSH	+2.0	
15	66	7.4		19	TSH	+1.5	
15	66	2.8		14	TSC	+2.5	
19	66	10.0		18	TSH	+1.5	
21	66	5.9		10	TSH	+1.3	
22	66	1.3		8	TSH	+0.6	

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location		
22	66	1.3		9	TSC	+1.5	
26	66	3.0	SRI		TEH	+2.3	to +2.0
38	66	1.1	CRI		TEH	+2.0	to +1.6
6	67	2.1	SRI		TEH	+3.4	to +3.2
6	67	2.8		8	TSH	+0.5	
10	67	5.2		13	TSH	+1.1	
11	67	4.2		17	TSH	+1.1	
11	67	5.0		20	TSH	+1.2	
11	67	2.3		17	TSH	+1.4	
11	67	2.4		17	TSH	+1.6	
11	67	2.3		7	TSH	+1.8	
11	67	2.3		7	TSH	+2.0	
12	67	5.0		13	TSH	+1.4	
12	67	5.3		16	TSH	+1.5	
12	67	1.6		11	TSH	+2.0	
13	67	4.1		13	TSH	+1.3	
13	67	5.2		10	TSH	+1.5	
15	67	5.6		12	TSH	+1.6	
15	67	5.8		10	TSH	+1.6	
19	67	4.0		19	TSH	+1.6	
19	67	1.4		9	TSC	+2.2	
21	67	0.8	MAI		TSH	-17.7	to -19.0
21	67	2.3		11	TSH	+0.6	
38	67	2.4		13	AV3	+0.0	
38	67	3.2		18	AV4	+0.0	
8	68	6.4		8	TSH	+0.7	
8	68	6.2		7	TSH	+0.7	
8	68	2.3		19	TSH	+1.1	
8	68	2.0		18	TSH	+1.2	
8	68	0.9		15	TSH	+1.5	
11	68	3.5		13	TSH	+1.1	
11	68	3.3		17	TSH	+1.6	
13	68	4.0		25	TSH	+1.5	
13	68	4.2		21	TSH	+1.6	
15	68	3.3		8	TSH	+1.4	
15	68	3.3		4	TSH	+1.4	
15	68	1.9		14	TSH	+1.9	
15	68	1.9		18	TSH	+1.9	
15	68	2.0		3	TSC	+2.3	
23	68	0.4	SRI		TEH	+2.9	to +2.7
25	68	0.8	SRI		TEH	+2.7	to +2.5
6	69	2.3		9	TSH	+0.8	
7	69	3.7		13	TSH	+0.6	
8	69	4.9		18	TSH	+0.6	
8	69	4.2		14	TSH	+0.7	
8	69	1.7		8	TSH	+1.1	
8	69	2.4		13	TSH	+1.2	
8	69	2.2		15	TSH	+1.8	

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	
8	69	2.3		12	TSH	+1.8
10	69	1.9		20	TSH	+1.1
10	69	1.2		18	TSH	+1.2
10	69	2.1		8	TSH	+2.5
11	69	4.1		14	TSH	+1.1
11	69	3.3		9	TSH	+1.6
12	69	7.1		20	TSH	+1.5
12	69	1.4		20	TSH	+2.0
13	69	3.6		3	TSH	+1.6
13	69	3.0		2	TSH	+1.6
14	69	2.9		12	TSH	+1.4
14	69	2.7		11	TSH	+1.5
14	69	1.3		41	TSH	+2.0
14	69	1.2		33	TSH	+2.1
15	69	4.9		13	TSH	+1.6
19	69	2.3		18	TSH	+0.9
10	70	4.7		7	TSH	+1.4
11	70	6.1		19	TSH	+1.3
16	70	1.1	SRI		TEH	+2.8 to +3.0
16	70	6.7		11	TSH	+1.4
17	70	5.3		22	TSH	+0.8
21	70	3.1	ADS		TSH	-4.7 to -5.0
23	70	0.6	SRI		TEH	+2.5 to +2.7
25	70	1.1	MRI		TEH	+2.5 to +2.7
31	70	1.4	MRI		TEH	+1.6 to +1.8
6	71	2.1	SRI		TEH	+2.7 to +2.4
6	71	6.6		20	TSH	+0.7
8	71	2.8	SRI		TEH	+2.7 to +2.5
8	71	6.8		17	TSH	+1.2
10	71	6.3		4	TSH	+1.3
12	71	2.7		16	TSH	+1.3
20	71	1.5		13	TSC	+1.2
6	72	5.0		18	TSH	+1.4
8	72	6.9		20	TSH	+1.1
10	72	6.3		13	TSH	+1.4
11	72	4.9		10	TSH	+0.9
21	72	1.4		5	TSC	+1.0
31	72	2.4	SRI		TEH	+2.7 to +2.4
32	72	1.4	SRI		TEH	+2.6 to +2.5
37	72	2.0		23	AV2	+0.0
6	73	3.7		14	TSH	+1.0
8	73	1.7		24	TSH	+0.9
8	73	5.9		15	TSH	+1.4
16	73	2.7		10	TSH	+0.4
18	73	0.8	SAI		TSH	-12.1 to -12.4
31	73	2.6	SRI		TEH	+2.6 to +2.5
6	74	3.9		9	TSH	+0.7
6	74	2.4		15	TSH	+1.0

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	
8	74	4.5		25	TSH	+0.7
10	74	3.3		8	TSH	+1.5
11	74	6.8		18	TSH	+1.2
12	74	1.0		15	TSH	+0.5
12	74	4.5		14	TSH	+1.3
7	75	2.0		12	TSH	+0.9
8	75	6.0	SRI		TEH	+2.5 to +2.4
8	75	2.4		17	TSH	+1.0
10	75	3.7		9	TSH	+1.1
11	75	0.9	SRI		TEH	+2.6 to +2.5
14	75	1.4	MRI		TEH	+2.6 to +2.2
24	75	1.3	SRI		TEH	+2.6 to +2.4
25	75	1.2	SRI		TEH	+2.6 to +2.4
7	76	3.9	MRI		TEH	+2.7 to +2.5
7	76	1.9		13	TSH	+0.8
9	76	0.4	CRI		TEH	+2.3
9	76	2.4		22	TSH	+0.8
17	76	2.0	MAI		TSH	-17.4 to -18.3
29	76	1.7	SRI		TEH	+2.5
2	77	8.9	SRI		TEH	+2.5
5	77	1.9	SRI		TEH	+2.5
14	77	1.6	CRI		TEH	+2.6
21	78	0.9	SRI		TEH	+2.4
8	79	1.0	SRI		TEH	+2.6 to +2.7
21	80	1.0	SRI		TEH	+2.7 to +2.9
8	81	1.2	SRI		TEH	+2.6 to +2.8
9	81	2.6	SRI		TEH	+2.5 to +2.8
9	82	2.2	MRI		TEH	+2.4 to +2.2
1	83	0.7	SRI		TEH	+2.7 to +2.6
9	84	0.6	SRI		TEH	+2.6
14	86	0.8	SRI		TEH	+2.7 to +2.2
4	87	3.5	MRI		TEH	+2.2 to +1.9
7	87	1.4	SRI		TEH	+2.3
15	87	1.0	SAI		TSH	-16.9 to -17.1
15	87	1.2	MAI		TSH	-6.8 to -7.6
15	87	0.6	SAI		TSH	-5.8
16	87	0.8		31	TSH	+12.0
1	89	0.3		31	TSH	+11.3
3	89	1.4	SRI		TEH	+2.1 to +1.9
11	91	3.3		19	TSH	+1.1
11	91	2.6		22	TSH	+1.1

Number of Tubes: 553

Number of Indications: 953

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
18	5	2.1		26	01C +0.0
18	6	2.5		38	02C +0.0
18	6	1.8		31	01C +0.0
23	7	0.2	SCC		TSH -18.0
24	8	2.8		37	01C +0.0
1	10	0.7	SAI		TSH -19.4 to -19.8
19	12	1.1	MAI		TSH -19.2 to -21.3
4	13	1.0	MAI		TSH -6.2 to -10.1
21	13	0.9	SAI		TSH -18.9 to -19.4
21	13	0.5	SCC		TSH -17.6
24	13	1.8	MAI		TSH -18.9 to -20.0
24	13	1.7		97	TSH -18.2
24	13	0.8		81	TSH -17.9
25	13	1.6	SRI		TEH +1.5 to +1.3
6	14	1.1	SRI		TEH +1.7 to +1.5
18	14	0.9	MAI		TEH +4.3 to +2.6
18	14	1.9	ADS		TSH -17.5 to -18.0
29	14	1.0	SRI		TEH +2.1 to +1.7
2	17	0.8	SAI		TSH -16.1 to -16.5
3	17	0.8	MAI		TSH -3.6 to -16.3
23	17	0.7	SAI		TSH -17.1 to -17.3
26	17	0.4	SAI		TSH -17.4 to -18.2
2	18	0.3	SAI		TSH -16.9 to -17.5
8	18	0.9	SAI		TSH -9.0 to -9.5
8	18	2.5		15	TSH +1.2
31	18	3.5	SRI		TEH +1.7 to +1.5
35	18	2.1		59	01C +0.0
8	19	3.8		10	TSH +1.5
8	19	3.5		7	TSC +1.1
12	19	2.9		17	TSH +1.1
13	19	2.6		10	TSH +1.1
14	19	2.0		11	TSH +1.0
5	20	6.6		11	TSH +1.6
13	20	9.5		3	TSH +1.2
15	20	0.3	SAI		TSH -13.5 to -13.7
19	20	0.3	SAI		TSH -18.4 to -18.7
28	20	2.7		16	TSH +1.0
4	21	2.3		14	TSH +1.0
4	21	3.0		6	TSC +0.6
5	21	3.9		5	TSH +1.2
8	21	0.7	SRI		TEH +2.1 to +1.9
8	21	3.9		12	TSH +1.6
12	21	9.4		6	TSH +1.6
15	21	0.9	MAI		TSH -17.4 to -18.5
15	21	2.2	ADS		TSH -12.2 to -13.0
6	22	3.0		15	TSH +1.3
6	22	2.1		4	TSC +1.1
15	22	4.7		3	TSH +1.7

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
18	22	1.0	SAI		TSH -16.5 to -18.0
25	22	1.0	SRI		TEH +1.8 to +2.0
26	22	1.9		21	TSH +1.1
5	23	5.1		9	TSH +0.7
5	23	2.5		4	TSC +1.1
8	23	6.7		18	TSH +1.3
8	23	2.1		9	TSC +1.2
11	23	10.7		21	TSH +1.6
13	23	7.9		20	TSH +1.2
15	23	4.9		15	TSH +1.8
16	23	6.5		10	TSH +1.2
17	23	1.4	MRI		TEH +2.1 to +2.4
17	23	2.8		19	TSH +1.5
18	23	1.0	SAI		TSH -16.9 to -17.4
18	23	0.3	SCC		TSH -16.8
18	23	3.0		4	TSH +1.8
21	23	0.9		10	TSH +1.3
25	23	2.2	SRI		TEH +1.8 to +2.0
25	23	1.3		5	TSH +1.4
32	23	2.8	ADI		TSH -1.7
36	23	0.6	SAI		TSH -19.3 to -19.6
29	24	1.2	SRI		TEH +2.2 to +2.4
34	24	1.3	SRI		TEH +1.6 to +1.9
36	24	1.6	MAI		TSH -19.5 to -19.7
36	24	1.5		84	TSH -18.0
38	24	0.8	SRI		TEH +1.8 to +2.0
9	25	0.8	SAI		TSH -16.6 to -17.2
9	25	5.8		3	TSH +1.1
11	25	6.4		9	TSH +1.0
11	25	6.5		10	TSH +1.0
15	25	0.4	SCC		TSH -17.2
15	25	0.5	SAI		TSH -17.1 to -17.5
15	25	6.6		17	TSH +1.4
19	25	0.8	SAI		TSH -6.1 to -7.5
19	25	2.3	ADS		TSH -5.1 to -7.0
19	25	10.4		15	TSH +1.1
19	25	8.7		14	TSH +1.3
21	25	8.7		13	TSH +1.5
24	25	11.2		28	TSH +1.2
25	25	1.1	MRI		TEH +2.3 to +2.4
25	25	3.8		9	TSH +1.3
11	26	3.6		9	TSC +1.8
14	26	3.0		8	TSH +1.2
17	26	7.2		24	TSH +1.1
17	26	7.0		31	TSH +1.6
18	26	17.9		33	TSH +1.4
19	26	12.1		32	TSH +1.2
22	26	10.9		26	TSH +1.5

Table 2



REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
24	26	10.6		29	TSH +1.3
26	26	3.0		11	TSH +0.6
6	27	4.7		13	TSC +1.9
6	27	4.9		6	TSC +1.8
11	27	2.1	SRI		TEH +2.4 to +2.0
14	27	3.7		9	TSH +1.1
15	27	9.7		17	TSH +1.2
19	27	8.7		17	TSH +1.4
20	27	3.8		11	TSH +1.1
20	27	6.4		17	TSH +1.8
22	27	3.7	SRI		TEH +2.3 to +2.1
22	27	8.3		20	TSH +1.6
23	27	1.5		21	TSH +1.7
23	27	4.5		11	TSH +1.9
26	27	3.0	MRI		TEH +2.1 to +1.9
7	28	3.4		5	TSC +1.8
11	28	2.6	SRI		TEH +2.5 to +2.2
16	28	3.7		11	TSH +1.6
17	28	7.9		20	TSH +1.3
17	28	8.1		19	TSH +1.3
20	28	8.9		12	TSH +1.4
10	29	2.3		5	TSC +1.8
15	29	4.3		8	TSH +1.5
17	29	4.0		20	TSH +1.5
19	29	14.5		23	TSH +1.4
20	29	9.9		19	TSH +1.5
21	29	2.4		17	TSH +1.5
21	29	2.2		14	TSH +2.4
23	29	7.0		18	TSH +1.3
23	29	2.9		15	TSH +1.8
5	30	0.4	SCC		TSH -18.7
17	30	1.2		29	TSH +1.9
18	30	1.2	SAI		TSH -12.2 to -14.5
18	30	4.0		14	TSH +1.6
19	30	3.7		9	TSH +1.5
21	30	10.3		15	TSH +1.5
21	30	1.3		10	TSC +0.4
23	30	3.5		20	TSH +1.3
18	31	1.9		15	TSH +2.5
18	31	1.9		8	TSC +1.4
19	31	4.3		10	TSH +1.9
20	31	2.7		17	TSH +1.6
21	31	4.2		14	TSH +1.3
24	31	4.7		15	TSH +1.2
25	31	1.0	SRI		TEH +2.6 to +2.4
25	31	3.0		20	TSH +1.3
42	31	4.1		31	TSC +15.2
25	32	1.8	SRI		TEH +2.6 to +2.4

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
25	32	3.8		5	TSH +1.4
29	32	0.8	SAI		TSH -18.7 to -19.7
29	32	0.5	SCC		TSH -16.5
38	33	0.9	SRI		TEH +2.0 to +2.3
8	34	0.9	SAI		TSH -17.0 to -17.4
8	34	0.2	SCC		TSH -14.4
30	34	3.0		62	TSH -15.2
10	35	4.3		8	TSC +1.5
14	35	1.3		16	TSH +1.2
14	35	2.1		5	TSC +1.9
20	35	0.7		16	TSH +2.0
20	35	1.2		8	TSH +2.5
22	35	2.9		7	TSH +1.5
27	35	2.3		13	TSH +0.9
36	35	2.0		81	TSH -17.3
22	36	2.3	SRI		TEH +2.3 to +2.7
22	36	0.6	MAI		TSH -9.3 to -9.8
22	36	0.2	SCC		TSH -7.7
22	36	1.0		7	TSH +0.5
25	36	3.5		8	TSH +1.5
27	36	3.4		7	TSH +0.9
29	36	0.6	SAI		TSH -17.8 to -18.3
29	36	0.3	SCC		TSH -17.7
29	36	2.8		5	TSH +0.4
32	36	1.0	SAI		TSH -18.4 to -18.9
32	36	0.3	SCC		TSH -16.1
38	36	2.1		68	TSH -17.1
6	37	3.8		8	TSC +2.1
6	37	3.8		8	TSC +2.1
11	37	5.3		9	TSC +1.7
14	37	2.3		8	TSC +2.1
22	37	1.1		8	TSH +0.5
22	37	2.6		6	TSH +1.5
25	37	3.6		5	TSH +1.2
22	38	2.4		17	TSC +1.3
22	38	2.8		13	TSC +1.2
31	38	0.5		6	TSH +0.9
36	38	2.3		77	TSH -18.2
39	38	1.2		64	TSH -17.1
40	38	2.1		65	TSH -18.4
24	39	0.5	SCC		TSH -3.2 to -17.3
24	39	4.8		23	TSH +1.2
24	39	1.8		19	TSC +0.5
36	39	0.2	SCC		TSH -16.7
37	39	1.4		41	TSH -18.5
45	39	1.6		18	TSH +41.2
2	40	0.8	MAI		TSH -17.1 to -17.9
2	40	1.7	ADS		TSH -13.3 to -18.6

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
3	40	0.4	SAI		TSH -12.6 to -13.0
6	40	1.9	SAI		TSH -18.8 to -19.2
9	40	2.0	SRI		TEH +3.0 to +2.6
10	40	3.4		5	TSC +1.8
11	40	1.3		21	TSH +0.4
23	40	1.7	SAI		TSH -17.9 to -19.4
23	40	7.0		24	TSH +1.5
24	40	2.7	ADS		TSH -8.5 to -10.2
24	40	5.5		22	TSH +1.3
26	40	3.4	SRI		TEH +2.9 to +3.0
26	40	2.7		15	TSH +1.6
28	40	2.4		11	TSH +1.2
31	40	1.7		11	TSH +0.3
20	41	1.5		15	TSH +2.5
22	41	2.2	SRI		TEH +3.0 to +2.9
24	41	5.8		35	TSH +1.3
25	41	1.0		15	TSH +1.7
26	41	2.4	SRI		TEH +2.5 to +2.7
31	41	0.9	SAI		TSH -13.8 to -14.5
43	41	1.2		95	TEH +2.9
43	41	2.9	MAI		TSH -18.5 to -19.4
10	42	2.4		7	TSC +1.8
10	42	2.4		8	TSC +1.8
10	42	2.4		13	TSC +1.6
23	42	0.8	ADS		TSH -16.2 to -17.2
23	42	4.1		11	TSH +1.3
25	42	2.3		15	TSH +1.5
30	42	0.8	ADS		TSH -7.2
30	42	1.9	MAI		TSH -6.2 to -7.3
33	42	2.6	SAI		TSH -19.7 to -20.0
33	42	0.6		53	TSH -19.6
34	42	1.5	SRI		TEH +2.1 to +2.0
3	43	0.3	SCC		TSH -16.2
3	43	1.1	MAI		TSH -14.8 to -18.6
3	43	1.7	ADS		TSH -12.2 to -14.6
5	43	1.9		12	TSH +0.5
9	43	3.0		7	TSC +1.9
14	43	6.3		16	TSC +1.7
14	43	6.7		19	TSC +1.6
25	43	2.3		9	TSH +1.5
29	43	3.3		8	TSH +1.2
33	43	0.8		88	TSH -19.4
33	43	1.3	SAI		TSH -19.1 to -19.3
36	43	0.9		69	TSH -17.3
23	44	0.6		16	TSH +0.4
23	44	1.9		6	TSH +1.7
25	44	1.2	SAI		TSH -6.8 to -7.1
25	44	0.2	SCC		TSH -6.7

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
25	44	3.8		7	TSH +1.2
25	44	1.0		15	TSH +2.6
36	44	3.8		81	TSH -17.6
4	45	1.4		24	TSH +0.4
9	45	5.0		12	TSC +1.7
14	45	1.1	MAI		TSH -8.0 to -11.6
14	45	1.7	ADS		TSH -5.9 to -6.7
14	45	2.4		2	TSH +0.9
18	45	6.0		20	TSC +1.2
18	45	5.5		15	TSC +1.0
22	45	2.1	MRI		TEH +3.1 to +2.8
22	45	2.7	ADS		TSH -6.0 to -7.2
22	45	2.2		9	TSH +1.7
31	45	3.1		18	TSH +0.8
45	45	0.7		15	TSH +30.6
2	46	1.0		13	TSH +0.5
12	46	5.7		3	TSC +1.5
15	46	8.0		18	TSC +1.7
15	46	8.4		16	TSC +1.7
27	46	8.4		19	TSH +1.2
12	47	2.3	SRI		TEH +1.7 to +1.8
12	47	3.8		6	TSH +0.8
13	47	0.8	SAI		TSH -17.8 to -19.1
13	47	0.5		96	TSH -16.9
13	47	1.8		9	TSH +0.8
18	47	5.9		21	TSC +1.6
18	47	6.3		20	TSC +1.5
22	47	0.3	SCC		TSH -10.4
22	47	0.5	MAI		TSH -9.8 to -12.6
25	47	3.7		8	TSH +1.4
25	47	2.0		10	TSH +2.2
25	47	3.6		3	TSC +0.9
26	47	1.2	MRI		TEH +2.7 to +2.9
26	47	0.7	SAI		TSH -6.4 to -6.6
26	47	0.2	SCC		TSH -5.6
26	47	3.0		6	TSH +1.4
28	47	0.6	SAI		TSH -18.5 to -19.1
28	47	0.9		27	TSH +0.9
29	47	0.8	SAI		TSH -4.1 to -4.5
29	47	1.8		9	TSH +0.8
33	47	0.5	SAI		TSH -18.1 to -18.4
33	47	0.5	SCC		TSH -17.6
35	47	0.7	SAI		TSH -18.6 to -18.8
35	47	0.3	SCC		TSH -17.6
20	48	1.5	SAI		TSH -8.1 to -12.1
20	48	0.3	SCC		TSH -8.0
20	48	1.5		8	TSH +1.0
20	48	1.3		5	TSH +2.4

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
26	48	2.4		9	TSH +1.5
26	48	2.8		18	TSH +3.1
6	49	1.2	ADS		TSH -18.7
6	49	1.5	SAI		TSH -17.9 to -18.2
7	49	3.1		5	TSC +1.9
11	49	4.8		12	TSC +1.7
11	49	4.8		11	TSC +1.5
14	49	1.5	SAI		TSH -10.1 to -10.7
18	49	1.0	SAI		TSH -15.6 to -16.2
18	49	0.3	SCC		TSH -10.4
18	49	1.5	SAI		TSH -9.2 to -11.0
19	49	0.6		88	TSH -11.0
19	49	2.0	MAI		TSH -9.0 to -14.2
28	49	5.4		10	TSH +1.0
28	49	1.5		9	TSH +2.0
28	49	0.7		15	TSH +2.4
28	49	1.6		16	TSH +2.9
13	50	2.0		8	TSH +0.7
13	50	6.2		16	TSC +1.8
13	50	6.3		16	TSC +1.6
18	50	2.6		9	TSC +1.3
25	50	3.4		17	TSH +1.0
25	50	3.5		29	TSH +3.3
25	50	2.9		3	TSH +4.3
26	50	3.0		10	TSH +0.9
26	50	2.0		3	TSH +2.9
26	50	2.0		5	TSH +3.8
29	50	2.8		8	TSH +0.7
29	50	1.4		10	TSH +1.7
29	50	1.2		4	TSH +2.3
35	50	1.3	MAI		TSH -18.3 to -19.0
35	50	0.3	SCC		TSH -17.9
6	51	2.5		7	TSC +1.7
8	51	12.1		10	TSC +1.6
13	51	3.3		9	TSH +0.7
13	51	4.9		11	TSC +1.7
13	51	5.2		10	TSC +1.5
18	51	2.0		17	TSH +2.6
26	51	2.1	MRI		TEH +2.9 to +2.6
26	51	2.7		28	TSH +3.2
29	51	0.6	SAI		TSH -16.8 to -17.3
29	51	0.2	SCC		TSH -16.2
29	51	1.4		18	TSH +2.1
43	51	4.1	SAI		TSH -19.1 to -20.0
43	51	1.0		78	TSH -18.0
6	52	2.9		8	TSC +1.8
8	52	4.1		13	TSH +0.2
8	52	6.8		18	TSC +1.6

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
9	52	0.3	SCC		TSH -17.3
9	52	1.2	SAI		TSH -16.8 to -18.6
18	52	0.9	ADS		TSH -3.4 to -4.6
18	52	1.2	MAI		TSH -3.0 to -4.9
18	52	1.0		12	TSH +0.5
18	52	1.7		8	TSH +3.0
18	52	2.9		7	TSC +1.3
22	52	0.2	SCC		TSH -4.8
22	52	1.3	MAI		TSH -4.1 to -5.1
22	52	1.5		2	TSH +1.5
2	53	1.5	SAI		TSH -17.5 to -18.6
2	53	0.2	SCC		TSH -15.8
15	53	3.5	SRI		TEH +2.1 to +1.8
15	53	3.6		8	TSH +1.2
17	53	1.0		19	TSC +2.6
25	53	1.2		23	TSH +4.4
26	53	1.5		20	TSC +0.5
43	53	1.3	CCI		TEH +0.9
14	54	1.3	ADS		TSH -16.2
14	54	1.0	MAI		TSH -14.1 to -16.6
16	54	3.9		6	TSH +1.9
20	54	3.4		6	TSC +1.6
22	54	3.8		6	TSC +1.3
24	54	2.9		12	TSC +1.6
29	54	1.3		5	TSH +1.5
29	54	0.9		6	TSH +2.8
36	54	2.4	ADI		TSH -13.0 to -18.0
42	54	0.3	SCC		TSH -17.1
42	54	1.0	SAI		TSH -14.7 to -15.1
12	55	3.9		13	TSC +1.6
12	55	4.2		10	TSC +1.5
18	55	4.4		12	TSH +2.3
18	55	2.3		18	TSC +2.3
18	55	4.0		10	TSC +1.5
28	55	0.8	MAI		TSH -17.3 to -18.2
28	55	1.6		7	TSH +0.5
28	55	2.0		3	TSH +1.0
28	55	1.3		6	TSH +3.1
29	55	12.1	MAI		TEH +1.2 to +0.4
32	55	0.2	SCC		TSH -17.9
32	55	1.0	SAI		TSH -17.7 to -18.0
32	55	1.8		16	TSH +0.9
41	55	0.5	SAI		TSH -12.6 to -12.8
41	55	0.4	SCC		TSH -11.9
3	56	0.5	MAI		TSH -18.8 to -19.3
3	56	2.3	ADS		TSH -12.7 to -18.7
12	56	1.2	SRI		TEH +2.6 to +2.4
12	56	0.4	SCC		TSH -19.5

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
18	56	4.8		7	TSC +2.1
18	56	3.8		13	TSC +1.6
22	56	2.8		13	TSC +1.6
28	56	2.1	MAI		TSH -18.2 to -18.8
28	56	0.6		69	TSH -17.5
28	56	2.6		10	TSH +1.2
28	56	2.8		1	TSH +3.6
33	56	2.2		26	TSH +0.4
33	56	1.3		9	TSH +0.9
18	57	0.9	SAI		TSH -10.5 to -10.8
18	57	2.2		15	TSH +2.5
19	57	1.5	SAI		TSH -17.9 to -18.1
19	57	0.5	SCC		TSH -17.3
19	57	4.5		9	TSH +2.0
21	57	1.2	MAI		TSH -2.8 to -15.8
41	57	1.7	SRI		TEH +2.0 to +1.8
4	58	4.5		8	TSC +2.2
6	58	1.7		6	TSH +0.3
6	58	3.1		5	TSC +2.3
7	58	1.5	ADS		TSH -15.3 to -18.1
8	58	1.3	SRI		TEH +2.0 to +2.0
12	58	1.2	MRI		TEH +2.2 to +2.0
15	58	1.2	MRI		TEH +2.2 to +2.1
16	58	1.8		3	TSC +2.2
16	58	2.0		6	TSC +1.6
22	58	3.5		8	TSC +1.9
27	58	2.2		8	TSH +4.6
27	58	0.8		6	TSC +0.6
30	58	1.5		5	TSH +0.9
7	59	2.3		6	TSH +0.4
14	59	4.1		16	TSH +0.6
17	59	3.1	SRI		TEH +2.4 to +2.2
14	60	1.3	MAI		TSH -12.7 to -13.9
14	60	2.6		18	TSH +0.7
28	60	0.4	SCC		TSH -17.6
28	60	0.6	SAI		TSH -17.4 to -17.7
28	60	0.8	SAI		TSH -10.6 to -10.9
28	60	2.6		5	TSH +3.8
1	61	1.1		90	TSH -17.1
1	61	1.1	SAI		TSH -15.5 to -15.5
6	61	0.2	SCC		TSH -15.2
6	61	1.0	MAI		TSH -13.0 to -14.3
9	61	0.5	MRI		TEH +2.0 to +1.9
10	61	2.1		3	TSC +1.8
17	61	0.8	MRI		TEH +1.9 to +1.7
18	61	4.4		3	TSH +1.8
23	61	4.2	CRI		TEH +2.2
23	61	1.5		14	TSH +0.5

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
23	61	3.9		8	TSH +1.9
23	61	1.6		10	TSC +1.4
25	61	0.8	SAI		TSH -16.4 to -16.9
25	61	0.2	SCC		TSH -7.6
25	61	0.6	MAI		TSH -4.4 to -5.8
26	61	0.3	SCC		TSH -7.0
26	61	1.3	SAI		TSH -6.6 to -6.9
26	61	1.7		9	TSH +1.9
26	61	0.6		13	TSC +0.5
28	61	0.4	SCC		TSH -13.5
28	61	0.7	MAI		TSH -7.7 to -9.0
28	61	4.9		9	TSH +1.3
30	61	4.5	SRI		TEH +2.2 to +2.1
30	61	0.8	SAI		TSH -17.5 to -17.9
30	61	0.4	SCC		TSH -17.5
30	61	4.1		11	TSH +0.9
1	62	1.7	SAI		TSH -18.5 to -18.7
1	62	0.5	SCC		TSH -18.4
23	62	0.7	SAI		TSH -17.6 to -17.9
23	62	0.2	SCC		TSH -16.2
23	62	4.6		11	TSH +1.9
26	62	1.3		14	TSH +1.4
26	62	1.5		12	TSH +2.5
30	62	0.7	MAI		TSH -7.3 to -8.5
30	62	0.9	SAI		TSH -5.4 to -5.9
30	62	2.0		13	TSH +0.8
31	62	1.1	MAI		TSH -15.6 to -17.9
31	62	1.6		11	TSH +0.6
36	62	0.2	CCI		TEH +1.4
36	62	0.5	CCI		TEH +1.5
40	62	1.2	SAI		TSH -19.6 to -20.4
15	63	3.6		8	TSC +2.0
22	63	10.3		29	TSH +1.9
22	63	1.7		8	TSC +1.1
6	64	1.1	MAI		TSH -16.7 to -17.2
6	64	1.8	ADS		TSH -12.6 to -13.8
13	64	1.4		7	TSH +0.9
15	64	3.7		2	TSC +1.9
16	64	0.8	MAI		TSH -13.3 to -14.4
20	64	3.5		5	TSH +1.2
27	64	0.3	SCC		TSH -17.5
27	64	1.4	MAI		TSH -17.0 to -17.9
27	64	4.9		9	TSH +2.0
15	65	0.9		16	TSH +1.1
18	65	0.8	SAI		TSH -9.7 to -9.9
18	65	6.3		10	TSH +1.6
19	65	0.5		95	TSH -15.5
19	65	0.7	MAI		TSH -15.4 to -19.3

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
19	65	0.5	MAI		TSH -13.1 to -13.7
19	65	6.9		5	TSH +1.6
21	65	5.9		3	TSH +1.4
21	65	1.8		7	TSC +1.4
26	65	3.5	CRI		TEH +2.5 to +2.6
26	65	2.7		13	TSH +1.3
31	65	0.4	CCI		TEH +1.1
33	65	0.8		59	TSH -17.6
6	66	0.7	SAI		TSH -17.3 to -18.7
6	66	1.5	SAI		TSH -15.8 to -16.3
6	66	0.2	SCC		TSH -15.1
10	66	2.9		5	TSC +2.2
16	66	6.2		11	TSH +1.3
38	66	1.3	SAI		TSH -18.6 to -19.0
38	66	0.6		95	TSH -17.6
38	66	0.9	SAI		TSH -16.6 to -17.0
38	66	0.6		85	TSH -15.8
4	67	3.0		8	TSC +2.0
9	67	1.5	SRI		TEH +2.6 to +2.8
10	67	0.5	SAI		TSH -17.9 to -18.3
10	67	1.1	ADS		TSH -14.3 to -14.6
18	67	6.0		11	TSH +1.5
21	67	0.7		96	TSH -17.9
21	67	2.5	MAI		TSH -17.1 to -20.0
21	67	2.9		11	TSH +1.4
23	67	2.2		5	TSH +1.3
24	67	0.6	MAI		TSH -7.0 to -9.6
24	67	2.6		4	TSH +1.2
30	67	0.9	SAI		TSH -18.3 to -18.5
30	67	0.3	SCC		TSH -17.4
3	68	0.8	MAI		TSH -16.9 to -18.9
4	68	2.6		9	TSC +1.6
6	68	5.1		11	TSC +2.0
15	68	2.0		7	TSH +1.4
15	68	1.2		16	TSC +1.7
16	68	6.8		8	TSH +1.5
29	68	1.9	ADS		TSH -16.7 to -17.1
29	68	0.9	SAI		TSH -5.1 to -5.4
35	68	2.8	ADI		TSH -17.4 to -19.3
14	69	0.7	SAI		TSH -17.0 to -17.1
14	69	0.3	SCC		TSH -16.6
14	69	3.0		11	TSH +0.7
16	69	5.1		14	TSH +1.4
16	69	1.6		3	TSC +1.0
19	69	0.9	MAI		TSH -16.0 to -19.0
10	70	0.5	SAI		TSH -16.3 to -16.5
12	70	2.5		8	TSH +0.9
15	70	1.0	SRI		TEH +3.0 to +2.7

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
15	70	2.3		13	TSH +0.9
17	70	1.8	SRI		TEH +2.8 to +2.6
20	70	0.6	MAI		TSH -15.7 to -16.5
20	70	3.5	ADS		TSH -14.0 to -14.8
21	70	1.2	SAI		TSH -14.5 to -15.0
21	70	1.0	ADS		TSH -14.1 to -14.6
27	70	0.7	SAI		TSH -17.5 to -19.0
28	70	0.4	SCC		TSH -17.3
28	70	1.1	MAI		TSH -16.4 to -18.1
5	71	0.9	MAI		TSH -14.8 to -18.2
5	71	1.8	ADS		TSH -13.1 to -13.8
6	71	3.0		5	TSC +1.9
8	71	1.2		7	TSH +0.5
15	71	0.8	ADS		TSH -15.6 to -18.9
15	71	0.7	SAI		TSH -15.4 to -16.8
15	71	0.8		22	TSH +1.0
18	71	1.2	MAI		TSH -12.9 to -16.7
21	71	1.4		5	TSH +0.8
25	71	0.9	SRI		TEH +2.7 to +2.4
7	72	1.9		8	TSH +0.7
7	72	3.6		9	TSC +1.9
7	72	3.4		8	TSC +1.7
8	72	1.0	SAI		TSH -17.2 to -17.6
22	72	1.5	MRI		TEH +2.9 to +2.6
3	73	0.6	MAI		TSH -18.0 to -18.9
10	73	2.0		18	TSH +0.6
10	73	1.1		14	TSH +1.2
15	73	0.8	SRI		TEH +2.8 to +2.4
17	73	1.5	MRI		TEH +2.7 to +2.5
17	73	0.6	SAI		TSH -15.8 to -16.5
18	73	0.3	SCC		TSH -17.1
19	73	0.7	MAI		TSH -10.9 to -18.8
25	73	1.8	MRI		TEH +2.9 to +2.7
31	73	1.8	SRI		TEH +3.0 to +2.6
5	74	0.9	MAI		TSH -18.1 to -20.3
5	74	2.5		11	TSC +1.9
7	74	0.6	SAI		TSH -10.4 to -11.5
17	74	0.7	SAI		TSH -8.7 to -8.9
17	74	2.4	ADS		TSH -6.0 to -6.9
23	74	0.9	MAI		TEH +3.9 to +2.7
25	74	1.5	SRI		TEH +2.2 to +2.1
27	74	0.7	MAI		TEH +4.0 to +3.0
11	75	0.6	MAI		TSH -19.4 to -20.1
15	75	2.2	CRI		TEH +2.7
17	75	1.5	SRI		TEH +2.6 to +2.5
17	75	0.5	MAI		TSH -18.9 to -19.9
18	75	0.6	SAI		TSH -9.7 to -10.3
32	75	3.4		87	TSH -18.7

Table 2

REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
33	75	5.0		71	TSH -19.2
33	75	5.0		70	TSH -18.4
33	75	5.2		40	TSH +2.7
16	76	0.8	MAI		TSH -18.3 to -20.3
25	76	3.9	SRI		TEH +3.0 to +2.8
31	76	2.4	MRI		TEH +3.0 to +2.8
11	77	5.7	MAI		TSH -17.0 to -20.0
11	77	0.5		70	TSH -16.7
11	77	1.2		66	TSH -16.4
11	77	1.3		81	TSH -16.1
11	77	0.4	SAI		TSH -14.7 to -15.2
11	77	2.3		8	TSH +1.0
31	77	1.8	SRI		TEH +3.0 to +2.8
11	78	1.3		14	TSH +1.2
13	78	1.0	SRI		TEH +2.7 to +2.5
17	78	0.7	SAI		TSH -19.1 to -19.5
17	78	0.4	SCC		TSH -17.4
22	78	2.8		79	TSH -17.7
10	79	0.6	SAI		TSH -17.2 to -18.4
10	79	0.4	SAI		TSH -12.3 to -12.4
13	79	1.4		5	TSH +0.8
15	79	1.7	CRI		TEH +2.5 to +2.4
15	79	1.1	MAI		TSH -17.0 to -18.7
15	79	2.3	ADS		TSH -16.8 to -17.2
19	80	1.8		68	TSH -16.7
20	80	3.1		85	TSH -16.7
23	80	1.8	ADI		TSH -3.3
27	80	8.4		77	TSH -18.3
28	80	0.6	SAI		TEH +3.1 to +3.4
29	81	4.9	SRI		TEH +2.4 to +2.6
22	82	0.7	MRI		TEH +2.4 to +2.6
29	82	6.3	SRI		TEH +2.3 to +2.4
2	83	2.1		77	TSH -18.0
4	83	0.6		79	TSH -18.9
4	84	1.2		69	TSH -17.5
17	84	1.8		79	TSH -18.9
22	85	1.4	SRI		TEH +2.5
9	86	5.9		75	TSH -18.8
11	86	1.4		75	TSH -17.5
17	86	4.6	MRI		TEH +2.8 to +2.7
2	87	4.6	ADI		TSH -16.1 to -18.4
19	87				
11	88	1.1		24	01C +0.0
11	88	1.1		24	01C +0.0
11	88	1.1		24	01C +0.0
9	89	3.2		90	TSH -18.1
11	89	2.0	PID		01C +0.0
11	89	0.9		60	01C +0.0

Table 2

R. G. & E.
GINNA STATION

SG/B APR92

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REPORTABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location
11	89	0.8		66	01C +0.0
1	91	0.8		16	TSC +11.4
1	92	1.4		32	TSH +11.3
1	92	2.6		37	TSC +11.4

Number of Tubes: 392 Number of Indications: 628

Table 2

4.0 OBSERVATIONS

The results of the examination indicate that IGA and IGSCC continue to be active within the tubesheet crevice region on the inlet side of each steam generator. As in the past, IGA/SCC is much more prevalent in the "B" steam generator with 118 new crevice indications reported. In the "A" steam generator, 34 new crevice indications were reported.

The majority of the inlet tubesheet crevice corrosion indications are IGA/SCC of the Mill Annealed Inconel 600 tube material. This form of corrosion is believed to be the result of an alkaline environment forming in the tubesheet crevices. This environment has developed over the years as deposits and active species such as sodium and phosphate, have reacted, changing a neutral or inhibited crevice into the aggressive environment that presently exists. Table 3 shows the steam generator IGA/SCC history.

Ginna Steam Generators
Crevice Corrosion Indication History

	Not Sizeable		0-25%		26-50%		51-75%		76-100%		TOTAL	
	A	B	A	B	A	B	A	B	A	B	A	B
Mar 1979	0	0	0	0	0	0	0	2	0	0	0	2
Dec 1979	0	0	0	0	0	6	0	5	0	0	0	11
Apr 1980	0	19	0	1	0	2	0	7	0	2	0	31
Nov 1980	0	2	0	0	0	0	0	1	0	0	0	3
Apr 1981	0	0	0	5	0	4	0	5	0	0	0	14
Feb 1982	0	1	0	0	0	1	0	6	0	5	0	13
Oct 1982	0	27	0	4	0	5	1	7	0	16	1	59
Apr 1983	3	11	1	3	0	15	0	7	0	15	4	51
Mar 1984	0	5	0	0	1	0	0	1	0	2	1	8
Mar 1985	0	23	0	4	0	6	1	9	1	27	2	69
Feb 1986	2	3	2	9	0	1	1	14	0	25	5	52
Feb 1987	17	82	0	1	1	8	3	16	13	46	34	153
Feb 1988	3	22	0	0	0	1	2	7	2	11	7	41
Mar 1988	0	1	0	0	0	0	0	1	0	4	0	6
Mar 1989	14	150	0	0	0	4	2	35	8	79	24	268
Apr 1990	16	108	2	1	3	8	6	8	11	32	38	157
Apr 1991	14	42	0	1	0	6	2	12	14	18	30	79
Apr 1992	33	104	0	0	0	0	0	2	1	12	34	118
TOTALS:	102	600	5	29	5	67	18	145	50	294	180	1135

TABLE 3

Along with IGA/SCC in the crevices, there appears to have been a slight increase in PWSCC at the roll transition during the last operating cycle. This mechanism was first addressed in 1989 and this year there were 63 Roll Transition (PWSCC) indications in "B" steam generator and 189 Roll Transition (PWSCC) indications in "A" steam generator. These numbers include tubes that may have PWSCC in combination with IGA or SCC in the crevice.

A large volume, typically <20% TW, wastage type condition exists just above the tubesheet secondary face of both generators. A small percentage of the tubes, generally toward the center of the bundle, have this condition. A number of these tubes did have penetrations >20% TW but have not showed an increase in the growth rate for several cycles. Three tubes in the "A" steam generator were listed for corrective action from this condition. These tubes were essentially unchanged from prior inspections but were repaired as a preventative measure. It is believed that these wastage indications were caused by the original water chemistry when phosphate was used as a buffering medium.

Small indications of probable copper deposits were also found in the tubesheet crevice region randomly located throughout each steam generator.

Minor denting has been detected at the tubesheet secondary face for many years in both steam generators, primarily on the inlet side. Denting was also detected at the 1st, 2nd and 6th tube support plates randomly throughout the generator, and in most cases was of greater magnitude in size than that at the tubesheet secondary side face. In general, minor distortions of most of the tube support signals were seen.

The denting phenomenon and minor distortions at the tubesheet and support plates can be attributed to secondary side corrosion product buildup in the annular region between the tube outside surface and the carbon steel support member. Comparisons with previous data indicates that a small increase in the extent or magnitude of denting has occurred from what has been detected by previous inspections.

Indications were detected at the support plates in periphery tubes on the cold leg of the "B" steam generator. These indications were present and recorded in previous years and were programmed as part of the $\geq 20\%$ TW examination. Two tubes were listed for corrective action from this condition. These tubes were essentially unchanged from prior inspections but were repaired as a preventative measure.

MRPC at the #1 tube support plate intersections in the Hot Leg of both steam generators showed no indications within the support plates. This sample included tubes with and without denting at the support intersection.

MRPC at #6 tube support plate intersections with dents in the Cold Leg of both steam generators showed no indications in or near the support plates.

The eight (8) tubes in the "A" Steam Generator recorded with indications at the anti-vibration bar intersections were examined again to monitor growth rates. These indications are less than the repair limit. Many of them were recorded in earlier outages and have not changed significantly since previous examinations. In light of the fact that only a small number of tubes exhibit these indications and no measurable growth has been noted, AVB fretting wear is not considered to be an active damage mechanism or major concern at this time but will be periodically monitored for any growth.

In summary, the "A" Steam Generator had 223 tubes that were found to have "new" tubesheet crevice indications (34 IGA/SCC and 189 roll transitions). The "B" Steam Generator had 181 "new" tubesheet crevice indications (118 IGA/SCC and 63 roll transitions).

5.0 CORRECTIVE ACTION

Table 4 has been generated to identify tubes with crevice indications or with indications which exceed the repair criteria. This table also shows the axial location of the indication and what corrective action was taken on these tubes. Tubes requiring repair due to hot leg tubesheet crevice indications were identified by the appropriate codes:

- a) an absolute drift signal (ADS) of the Mix-2 Channel
- b) quantifiable IGSCC indications on the 400 kHz data
- c) roll transition or crevice indications as identified from the MRPC examination

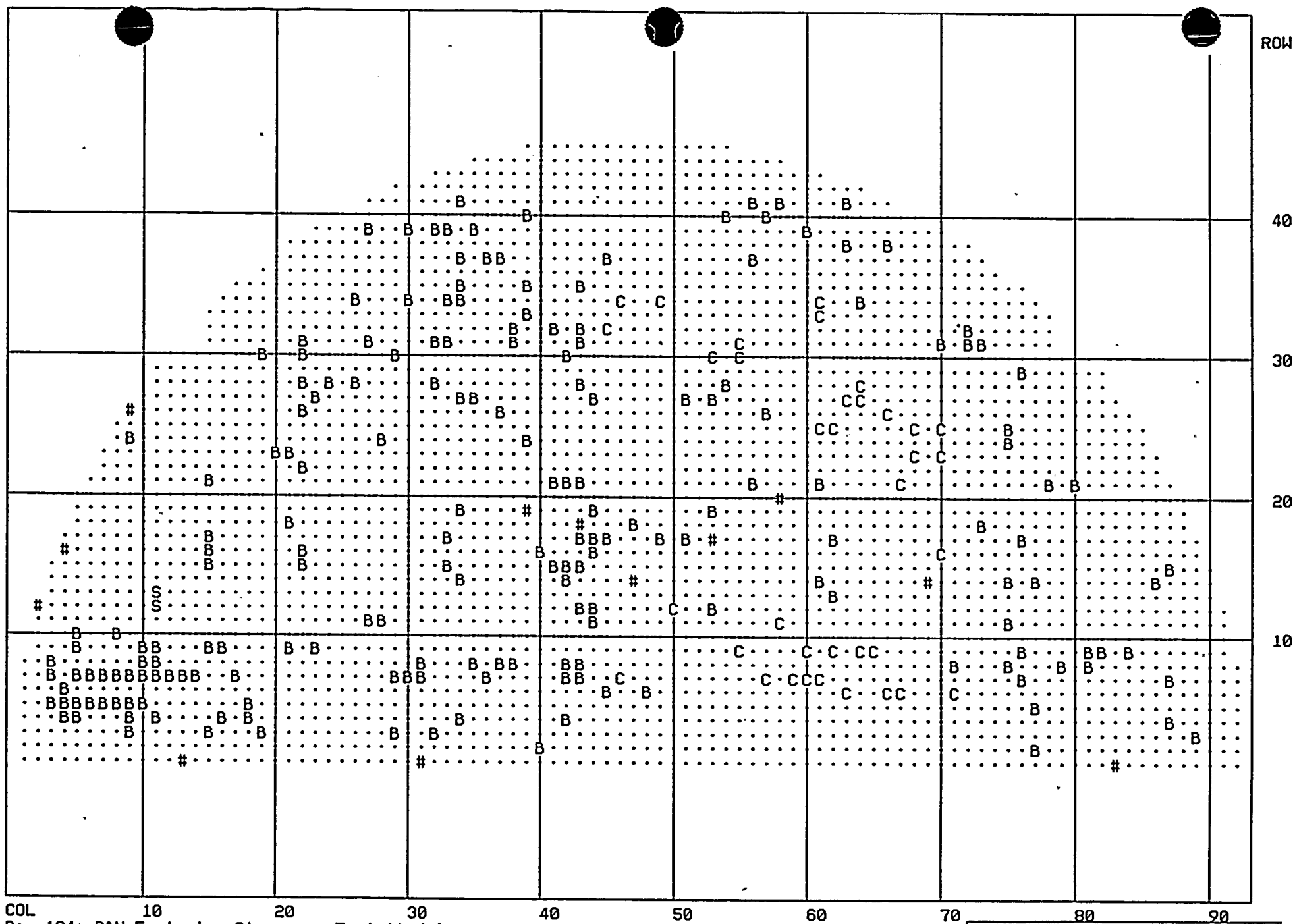
There were 16 tubes unplugged in the "A" generator and 30 tubes unplugged in the "B" generator in an effort to return them to service by sleeving. These tubes were recorded with repairable indications in earlier outages. A full length examination was performed after unplugging to insure no indications existed that would prevent them from being returned to service.

The breakdown of corrective action (repairs) performed are as follows:

The A steam generator had a total of 226 tubes with indications identified by eddy current. Sixteen (16) unplugged tubes were returned to service by sleeving. Two (2) tubes were stabilized for AVB concerns. A total of 244 repairs.

The B steam generator had a total of 183 tubes with indications identified by eddy current. Three (3) B&W explosive plugs were repaired. Of the 30 unplugged tubes, 29 tubes were returned to service by sleeving (1 unplugged tube was re-plugged). Two (2) tubes were stabilized for AVB concerns. A total of 218 repairs.

A Ginna Steam Generator Tube Inspection and Corrective Action History has been tabulated on page 68 as Table 5.



Rochester Gas & Electric Corp.
 Ginna Nuclear Power Station
 S/G - A Hot Leg 04/28/92

FIGURE 2

ACRI ISIS Tubes

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location			Repair
12	2	1.3	SRI		TEH	+1.5	to +1.4	plug
5	3	23.5	DRI		TSH	-19.4		sleeve
7	3	3.4	SRI		TEH	+1.9	to +1.6	sleeve
8	3	26.5	DRI		TSH	-19.3		sleeve
4	4	0.8	SRI		TEH	+1.3	to +1.1	sleeve
5	4	69.2	DRI		TSH	-19.4		sleeve
6	4	30.7	DRI		TSH	-19.4		sleeve
16	4	0.8	SAI		TSH	-17.6	to -18.5	plug
4	5	26.7	DRI		TSH	-19.8		sleeve
5	5	3.8	SRI		TEH	+3.1	to +2.8	sleeve
7	5	33.7	DRI		TSH	-19.1		sleeve
9	5	38.5	DRI		TSH	-18.8		sleeve
10	5	2.0	SRI		TEH	+2.2	to +2.0	sleeve
5	6	4.3	MRI		TEH	+2.2	to +2.1	sleeve
7	6	26.6	DRI		TSH	-19.3		sleeve
5	7	48.0	DRI		TSH	-19.1		sleeve
7	7	2.0	MRI		TEH	+1.8	to +1.7	sleeve
5	8	48.2	DRI		TSH	-19.3		sleeve
7	8	31.0	DRI		TSH	-19.1		sleeve
10	8	23.4	DRI		TSH	-18.9		sleeve
3	9	1.3	SRI		TEH	+2.5	to +2.2	sleeve
4	9	30.4	DRI		TSH	-16.4		sleeve
5	9	25.5	DRI		TSH	-19.2		sleeve
7	9	26.7	DRI		TSH	-18.9		sleeve
24	9	5.4	MRI		TEH	+2.6	to +2.4	sleeve
26	9	0.6		93	TSH	-15.4		plug
		0.6	SAI		TSH	-15.3	to -15.6	
5	10	53.2	DRI		TSH	-19.3		sleeve
7	10	3.5	MRI		TEH	+2.3	to +2.5	sleeve
8	10	4.1	MRI		TEH	+2.4	to +2.5	sleeve
9	10	2.1	MRI		TEH	+2.4	to +2.5	sleeve
4	11	5.0	SRI		TEH	+2.3	to +2.5	sleeve
7	11	5.5	SRI		TEH	+2.4	to +2.6	sleeve
8	11	1.9	SRI		TEH	+2.4	to +2.5	sleeve
9	11	2.6	SRI		TEH	+2.2	to +2.4	sleeve
7	12	2.7	SRI		TEH	+2.2	to +2.4	sleeve
1	13	1.2	SRI		TEH	+3.0	to +3.3	plug
7	13	0.6	SRI		TEH	+2.2	to +2.4	sleeve
7	14	1.4	SRI		TEH	+2.3	to +2.1	sleeve
3	15	1.7	SRI		TEH	+2.0	to +1.8	sleeve
9	15	6.8	SRI		TEH	+2.0	to +1.6	sleeve
15	15	2.0	MRI		TEH	+2.3	to +2.1	sleeve
16	15	1.9	MRI		TEH	+2.0	to +1.9	sleeve
17	15	3.2	MRI		TEH	+2.0	to +1.8	sleeve
21	15	1.0	MRI		TEH	+2.2	to +2.0	sleeve
4	16	1.6	SRI		TEH	+2.3	to +2.2	sleeve
9	16	1.0	MAI		TSH	-17.5	to -18.6	sleeve
		1.1	SAI		TSH	-13.8	to -14.2	

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
7	17	0.9	SAI		TSH -17.7 to -18.0	sleeve
4	18	3.7	SRI		TEH +2.0 to +1.8	sleeve
5	18	2.8	SRI		TEH +2.1 to +1.8	sleeve
3	19	0.4	SRI		TEH +2.1 to +2.0	sleeve
30	19	1.7	SAI		TEH +1.7	sleeve
		1.3	SRI		TEH +2.1 to +1.9	
23	20	1.7	SAI		TSH -18.1 to -18.4	sleeve
9	21	3.0	SRI		TEH +2.4 to +2.2	sleeve
18	21	1.2	SAI		TSH -14.3 to -14.5	sleeve
23	21	2.6	SAI		TSH -19.1 to -19.2	sleeve
15	22	0.3	SAI		TSH -15.7 to -16.2	sleeve
16	22	4.0	CRI		TEH +2.7 to +2.9	sleeve
22	22	1.2	SAI		TSH -8.6 to -10.5	sleeve
26	22	0.8	MAI		TSH -16.0 to -16.8	sleeve
		1.1	MAI		TSH -8.2 to -12.9	
28	22	0.7	SAI		TSH -19.5 to -19.8	sleeve
30	22	1.0	SRI		TEH +2.5 to +2.8	sleeve
31	22	0.6	SRI		TEH +2.5 to +2.7	sleeve
9	23	2.5	SRI		TEH +2.5 to +2.3	sleeve
27	23	1.0	SAI		TSH -15.7 to -16.0	sleeve
28	24	1.0	MAI		TSH -17.5 to -18.4	sleeve
28	26	3.1	SRI		TEH +2.7 to +2.4	sleeve
34	26	4.8	SRI		TEH +2.4 to +2.0	sleeve
11	27	0.9	SRI		TEH +2.3 to +2.0	sleeve
31	27	1.1	SRI		TEH +2.5 to +2.3	sleeve
39	27	2.6	SRI		TEH +2.6 to +2.4	sleeve
11	28	1.3	SRI		TEH +2.5 to +2.2	sleeve
24	28	1.9	SRI		TEH +2.7 to +2.3	sleeve
3	29	2.3	SRI		TEH +2.5 to +2.3	sleeve
7	29	1.0	MRI		TEH +2.9 to +2.6	sleeve
30	29	2.3	SRI		TEH +2.9 to +2.7	sleeve
7	30	0.9	SRI		TEH +2.5 to +2.4	sleeve
34	30	2.0	MRI		TEH +2.1 to +1.9	sleeve
39	30	4.8	MRI		TEH +2.4 to +2.2	sleeve
1	31	3.5	MRI		TEH +2.6 to +2.4	plug
7	31	1.8	SRI		TEH +3.1 to +3.0	sleeve
8	31	5.7	SRI		TEH +3.0 to +2.7	sleeve
3	32	4.7	SRI		TEH +2.1 to +1.9	sleeve
28	32	3.7	MRI		TEH +2.5 to +2.3	sleeve
31	32	2.1	MRI		TEH +2.2 to +2.0	sleeve
39	32	5.2	SRI		TEH +2.1 to +1.9	sleeve
15	33	1.2	MAI		TSH -15.1 to -16.1	sleeve
17	33	4.3	SRI		TEH +2.1 to +1.9	sleeve
31	33	2.3	SRI		TEH +2.6 to +2.5	sleeve
34	33	2.7	MRI		TEH +2.2 to +2.0	sleeve
39	33	6.6	SRI		TEH +2.4 to +2.1	sleeve
4	34	3.2	SRI		TEH +2.5 to +2.3	sleeve
14	34	3.1	SRI		TEH +2.6 to +2.4	sleeve

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
19	34	1.1	SAI		TSH -17.2 to -17.4	sleeve
27	34	0.8	SAI		TSH -17.4 to -17.7	sleeve
34	34	0.9	SRI		TEH +2.2 to +2.0	sleeve
35	34	1.3	SRI		TEH +2.3 to +2.1	sleeve
37	34	2.7	SRI		TEH +2.2 to +2.0	sleeve
41	34	2.2	MRI		TEH +1.8 to +1.5	sleeve
8	35	1.6	SRI		TEH +2.5 to +2.3	sleeve
27	35	0.9	MRI		TEH +2.4 to +2.6	sleeve
39	35	6.3	MRI		TEH +1.7 to +1.9	sleeve
7	36	4.1	MRI		TEH +2.1 to +2.3	sleeve
37	36	1.6	SRI		TEH +2.0 to +2.2	sleeve
8	37	1.2	SRI		TEH +2.4 to +2.7	sleeve
26	37	1.4	SRI		TEH +2.8 to +2.5	sleeve
37	37	2.8	SRI		TEH +2.1 to +1.9	sleeve
8	38	0.7	SRI		TEH +2.2 to +2.1	sleeve
31	38	1.0	SRI		TEH +1.9 to +1.7	sleeve
32	38	1.9	SRI		TEH +2.3 to +2.2	sleeve
19	39	0.6		54	TSC +2.8	plug
24	39	5.7	SRI		TEH +2.2 to +1.9	sleeve
33	39	2.3	SRI		TEH +2.1 to +2.0	sleeve
35	39	0.7	MAI		TSH -18.1 to -18.8	sleeve
40	39	1.1	MRI		TEH +2.3 to +2.1	sleeve
2	40	1.4	SRI		TEH +2.6 to +2.4	sleeve
16	40	1.0	SAI		TSH -9.6 to -10.3	sleeve
15	41	0.8	MAI		TSH -7.0 to -8.3	sleeve
21	41	2.9	MRI		TEH +3.3 to +3.1	sleeve
32	41	1.6	SAI		TSH -5.8 to -9.3	sleeve
4	42	1.9	SRI		TEH +2.8 to +2.6	sleeve
7	42	1.7	SRI		TEH +3.5 to +3.3	sleeve
8	42	2.5	MRI		TEH +3.1 to +2.8	sleeve
14	42	5.9	SRI		TEH +3.0 to +2.6	sleeve
15	42	6.8	CRI		TEH +2.6	sleeve
21	42	4.4	SRI		TEH +3.2 to +2.9	sleeve
30	42	3.5	SRI		TEH +2.8 to +2.5	sleeve
7	43	5.7	SRI		TEH +2.1 to +2.3	sleeve
8	43	2.2	MRI		TEH +1.0 to +1.1	sleeve
12	43	7.5	SRI		TEH +3.3 to +3.0	sleeve
15	43	3.3	SRI		TEH +2.9 to +2.7	sleeve
17	43	4.9	SRI		TEH +3.2 to +2.9	sleeve
18	43	1.3	SRI		TEH +3.5 to +3.3	plug
		1.0	MAI		TSH -3.1 to -9.4	
21	43	0.8	SRI		TEH +3.3 to +3.1	sleeve
28	43	3.1	SRI		TEH +2.4 to +2.1	sleeve
31	43	0.7	SRI		TEH +2.8 to +2.6	sleeve
32	43	2.3	SRI		TEH +2.8 to +2.6	sleeve
35	43	0.9	MAI		TSH -17.7 to -20.3	sleeve
11	44	1.6	SRI		TEH +2.7 to +2.9	sleeve
12	44	1.8	SRI		TEH +2.5 to +2.7	sleeve

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location			Repair
16	44	1.6	SRI		TEH	+2.4 to	+2.6	sleeve
17	44	5.7	SRI		TEH	+2.7 to	+3.0	sleeve
19	44	0.9	MAI		TSH	-18.1 to	-18.9	sleeve
27	44	1.3	SRI		TEH	+2.3 to	+2.5	sleeve
6	45	4.2	SRI		TEH	+4.4 to	+4.0	sleeve
17	45	4.1	SRI		TEH	+1.8 to	+1.9	sleeve
32	45	0.6	SAI		TSH	-17.8 to	-18.2	sleeve
37	45	0.5	SRI		TEH	+2.0 to	+2.1	sleeve
7	46	1.4	SRI		TEH	+3.7 to	+3.4	sleeve
34	46	1.1	SRI		TEH	+1.8 to	+2.0	sleeve
14	47	2.1	MAI		TSH	-1.6 to	-10.5	plug
18	47	2.8	CRI		TEH	+2.5		sleeve
6	48	8.4	SRI		TEH	+3.5 to	+3.2	sleeve
17	49	0.4	MAI		TSH	-12.9 to	-13.9	sleeve
34	49	0.5	SAI		TSH	-15.3 to	-15.6	sleeve
12	50	2.3	SRI		TEH	+2.1 to	+2.3	sleeve
17	51	0.8	SAI		TSH	-7.2 to	-7.8	sleeve
27	51	2.0	SRI		TEH	+2.3 to	+2.5	sleeve
12	53	3.4	SRI		TEH	+2.7 to	+2.5	sleeve
17	53	1.7	SRI		TEH	+2.6 to	+2.4	plug
		2.8		41	TSH	+3.7		
		2.3		44	TSH	+4.2		
19	53	0.9	SAI		TSH	-17.5 to	-19.2	sleeve
27	53	2.5	SRI		TEH	+2.4 to	+2.2	sleeve
30	53	2.1	SRI		TEH	+1.8 to	+1.6	sleeve
28	54	1.7	SRI		TEH	+2.6 to	+2.4	sleeve
40	54	4.8	MRI		TEH	+2.3 to	+2.1	sleeve
9	55	5.1	SRI		TEH	+2.4 to	+2.2	sleeve
30	55	3.4	SRI		TEH	+2.5 to	+2.3	sleeve
31	55	2.0	SRI		TEH	+2.5 to	+2.3	sleeve
21	56	0.8	SRI		TEH	+2.9 to	+2.7	sleeve
37	56	0.7	SRI		TEH	+2.7 to	+2.5	sleeve
41	56	0.6	SRI		TEH	+2.6 to	+2.4	sleeve
7	57	3.9	SRI		TEH	+1.8 to	+1.6	sleeve
26	57	1.4	SRI		TEH	+3.1 to	+2.8	sleeve
40	57	0.6	SRI		TEH	+2.7 to	+2.6	sleeve
11	58	1.6	SAI		TSH	-16.3 to	-16.9	sleeve
20	58	1.2		41	TSH	+1.9		plug
41	58	0.3	SRI		TEH	+2.4 to	+2.3	sleeve
7	59	1.3	SRI		TEH	+2.2 to	+2.4	sleeve
7	60	1.3	SRI		TEH	+2.5 to	+2.7	sleeve
9	60	1.5	SRI		TEH	+2.5 to	+2.7	sleeve
39	60	2.0	MRI		TEH	+2.5 to	+2.7	sleeve
7	61	1.1	MRI		TEH	+2.5 to	+2.7	sleeve
14	61	0.7	MRI		TEH	+2.1 to	+2.2	sleeve
21	61	2.6	SRI		TEH	+2.8 to	+3.1	sleeve
25	61	0.7	SRI		TEH	+2.7 to	+2.9	sleeve
33	61	1.0	MRI		TEH	+2.3 to	+2.5	sleeve

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location			Repair
34	61	0.9	SRI		TEH	+2.5 to	+2.6	sleeve
9	62	4.0	SRI		TEH	+3.2 to	+2.9	sleeve
13	62	1.3	SRI		TEH	+2.9 to	+2.8	sleeve
17	62	1.0	MAI		TSH	-17.6 to	-19.5	sleeve
25	62	2.2	SRI		TEH	+2.6 to	+2.9	sleeve
6	63	3.2	SRI		TEH	+2.9 to	+2.6	sleeve
27	63	2.0	SRI		TEH	+3.2 to	+3.0	sleeve
38	63	1.2	SRI		TEH	+2.4 to	+2.2	sleeve
41	63	1.8	SRI		TEH	+2.3 to	+2.2	sleeve
9	64	2.0	MRI		TSH	-20.7 to	-21.0	sleeve
27	64	5.6	SRI		TEH	+1.9 to	+1.6	sleeve
28	64	1.0	MRI		TEH	+2.1 to	+1.7	sleeve
34	64	1.5	MRI		TEH	+1.2 to	+1.1	sleeve
9	65	4.1	SRI		TEH	+2.8 to	+2.5	sleeve
6	66	1.9	SRI		TEH	+2.2 to	+2.0	sleeve
26	66	3.0	SRI		TEH	+2.3 to	+2.0	sleeve
38	66	1.1	CRI		TEH	+2.0 to	+1.6	sleeve
6	67	2.1	SRI		TEH	+3.4 to	+3.2	sleeve
21	67	0.8	MAI		TSH	-17.7 to	-19.0	sleeve
23	68	0.4	SRI		TEH	+2.9 to	+2.7	sleeve
25	68	0.8	SRI		TEH	+2.7 to	+2.5	sleeve
14	69	1.3		41	TSH	+2.0		plug
16	70	1.1	SRI		TEH	+2.8 to	+3.0	sleeve
23	70	0.6	SRI		TEH	+2.5 to	+2.7	sleeve
25	70	1.1	MRI		TEH	+2.5 to	+2.7	sleeve
31	70	1.4	MRI		TEH	+1.6 to	+1.8	sleeve
6	71	2.1	SRI		TEH	+2.7 to	+2.4	sleeve
8	71	2.8	SRI		TEH	+2.7 to	+2.5	sleeve
31	72	2.4	SRI		TEH	+2.7 to	+2.4	sleeve
32	72	1.4	SRI		TEH	+2.6 to	+2.5	sleeve
18	73	0.8	SAI		TSH	-12.1 to	-12.4	sleeve
31	73	2.6	SRI		TEH	+2.6 to	+2.5	sleeve
8	75	6.0	SRI		TEH	+2.5 to	+2.4	sleeve
11	75	0.9	SRI		TEH	+2.6 to	+2.5	sleeve
14	75	1.4	MRI		TEH	+2.6 to	+2.2	sleeve
24	75	1.3	SRI		TEH	+2.6 to	+2.4	sleeve
25	75	1.2	SRI		TEH	+2.6 to	+2.4	sleeve
7	76	3.9	MRI		TEH	+2.7 to	+2.5	sleeve
9	76	0.4	CRI		TEH	+2.3		sleeve
17	76	2.0	MAI		TSH	-17.4 to	-18.3	sleeve
29	76	1.7	SRI		TEH	+2.5		sleeve
2	77	8.9	SRI		TEH	+2.5		sleeve
5	77	1.9	SRI		TEH	+2.5		sleeve
14	77	1.6	CRI		TEH	+2.6		sleeve
21	78	0.9	SRI		TEH	+2.4		sleeve
8	79	1.0	SRI		TEH	+2.6 to	+2.7	sleeve
21	80	1.0	SRI		TEH	+2.7 to	+2.9	sleeve
8	81	1.2	SRI		TEH	+2.6 to	+2.8	sleeve

Table 4

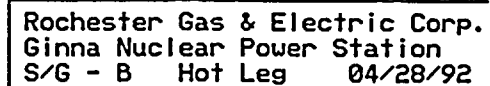
REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
9	81	2.6	SRI		TEH +2.5 to +2.8	sleeve
9	82	2.2	MRI		TEH +2.4 to +2.2	sleeve
1	83	0.7	SRI		TEH +2.7 to +2.6	plug
9	84	0.6	SRI		TEH +2.6	sleeve
14	86	0.8	SRI		TEH +2.7 to +2.2	sleeve
4	87	3.5	MRI		TEH +2.2 to +1.9	sleeve
7	87	1.4	SRI		TEH +2.3	sleeve
15	87	1.0	SAI		TSH -16.9 to -17.1	sleeve
		1.2	MAI		TSH -6.8 to -7.6	
		0.6	SAI		TSH -5.8	
3	89	1.4	SRI		TEH +2.1 to +1.9	sleeve

Number of Tubes: 242

Number of Indications: 251

Table 4



ACRI ISIS Tubes

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
1	10	0.7	SAI		TSH -19.4 to -19.8	plug
19	12	1.1	MAI		TSH -19.2 to -21.3	plug
4	13	1.0	MAI		TSH -6.2 to -10.1	sleeve
21	13	0.9	SAI		TSH -18.9 to -19.4	sleeve
24	13	1.8	MAI		TSH -18.9 to -20.0	sleeve
		1.7		97	TSH -18.2	
		0.8		81	TSH -17.9	
25	13	1.6	SRI		TEH +1.5 to +1.3	sleeve
6	14	1.1	SRI		TEH +1.7 to +1.5	sleeve
18	14	0.9	MAI		TEH +4.3 to +2.6	sleeve
29	14	1.0	SRI		TEH +2.1 to +1.7	plug
2	17	0.8	SAI		TSH -16.1 to -16.5	sleeve
3	17	0.8	MAI		TSH -3.6 to -16.3	sleeve
23	17	0.7	SAI		TSH -17.1 to -17.3	sleeve
26	17	0.4	SAI		TSH -17.4 to -18.2	sleeve
2	18	0.3	SAI		TSH -16.9 to -17.5	sleeve
8	18	0.9	SAI		TSH -9.0 to -9.5	sleeve
31	18	3.5	SRI		TEH +1.7 to +1.5	sleeve
35	18	2.1		59	01C +0.0	plug
15	20	0.3	SAI		TSH -13.5 to -13.7	sleeve
19	20	0.3	SAI		TSH -18.4 to -18.7	sleeve
8	21	0.7	SRI		TEH +2.1 to +1.9	sleeve
15	21	0.9	MAI		TSH -17.4 to -18.5	sleeve
18	22	1.0	SAI		TSH -16.5 to -18.0	sleeve
25	22	1.0	SRI		TEH +1.8 to +2.0	sleeve
17	23	1.4	MRI		TEH +2.1 to +2.4	sleeve
18	23	1.0	SAI		TSH -16.9 to -17.4	sleeve
25	23	2.2	SRI		TEH +1.8 to +2.0	sleeve
32	23	2.8	ADI		TSH -1.7	sleeve
36	23	0.6	SAI		TSH -19.3 to -19.6	sleeve
29	24	1.2	SRI		TEH +2.2 to +2.4	sleeve
34	24	1.3	SRI		TEH +1.6 to +1.9	sleeve
36	24	1.6	MAI		TSH -19.5 to -19.7	sleeve
36	24	1.5		84	TSH -18.0	
38	24	0.8	SRI		TEH +1.8 to +2.0	plug
9	25	0.8	SAI		TSH -16.6 to -17.2	sleeve
15	25	0.5	SAI		TSH -17.1 to -17.5	sleeve
19	25	0.8	SAI		TSH -6.1 to -7.5	sleeve
25	25	1.1	MRI		TEH +2.3 to +2.4	sleeve
11	27	2.1	SRI		TEH +2.4 to +2.0	sleeve
22	27	3.7	SRI		TEH +2.3 to +2.1	sleeve
26	27	3.0	MRI		TEH +2.1 to +1.9	sleeve
31	27	24.5	DRI		TSH -19.3	sleeve
11	28	2.6	SRI		TEH +2.5 to +2.2	sleeve
18	30	1.2	SAI		TSH -12.2 to -14.5	sleeve
25	31	1.0	SRI		TEH +2.6 to +2.4	sleeve
25	32	1.8	SRI		TEH +2.6 to +2.4	sleeve
29	32	0.8	SAI		TSH -18.7 to -19.7	sleeve

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
38	33	0.9	SRI		TEH +2.0 to +2.3	sleeve
8	34	0.9	SAI		TSH -17.0 to -17.4	sleeve
30	34	3.0		62	TSH -15.2	sleeve
36	35	2.0		81	TSH -17.3	sleeve
22	36	2.3	SRI		TEH +2.3 to +2.7	sleeve
		0.6	MAI		TSH -9.3 to -9.8	
29	36	0.6	SAI		TSH -17.8 to -18.3	sleeve
32	36	1.0	SAI		TSH -18.4 to -18.9	sleeve
38	36	2.1		68	TSH -17.1	sleeve
36	38	2.3		77	TSH -18.2	sleeve
39	38	1.2		64	TSH -17.1	sleeve
40	38	2.1		65	TSH -18.4	sleeve
37	39	1.4		41	TSH -18.5	sleeve
2	40	0.8	MAI		TSH -17.1 to -17.9	sleeve
3	40	0.4	SAI		TSH -12.6 to -13.0	sleeve
6	40	1.9	SAI		TSH -18.8 to -19.2	sleeve
9	40	2.0	SRI		TEH +3.0 to +2.6	sleeve
23	40	1.7	SAI		TSH -17.9 to -19.4	sleeve
26	40	3.4	SRI		TEH +2.9 to +3.0	sleeve
22	41	2.2	SRI		TEH +3.0 to +2.9	sleeve
26	41	2.4	SRI		TEH +2.5 to +2.7	plug
31	41	0.9	SAI		TSH -13.8 to -14.5	sleeve
43	41	1.2		95	TEH +2.9	plug
		2.9	MAI		TSH -18.5 to -19.4	
30	42	1.9	MAI		TSH -6.2 to -7.3	sleeve
33	42	2.6	SAI		TSH -19.7 to -20.0	sleeve
		0.6		53	TSH -19.6	
34	42	1.5	SRI		TEH +2.1 to +2.0	sleeve
3	43	1.1	MAI		TSH -14.8 to -18.6	plug
33	43	0.8		88	TSH -19.4	sleeve
		1.3	SAI		TSH -19.1 to -19.3	
36	43	0.9		69	TSH -17.3	sleeve
25	44	1.2	SAI		TSH -6.8 to -7.1	sleeve
36	44	3.8		81	TSH -17.6	sleeve
14	45	1.1	MAI		TSH -8.0 to -11.6	sleeve
22	45	2.1	MRI		TEH +3.1 to +2.8	sleeve
12	47	2.3	SRI		TEH +1.7 to +1.8	sleeve
13	47	0.8	SAI		TSH -17.8 to -19.1	sleeve
		0.5		96	TSH -16.9	
22	47	0.5	MAI		TSH -9.8 to -12.6	sleeve
26	47	1.2	MRI		TEH +2.7 to +2.9	plug
		0.7	SAI		TSH -6.4 to -6.6	
28	47	0.6	SAI		TSH -18.5 to -19.1	plug
29	47	0.8	SAI		TSH -4.1 to -4.5	sleeve
33	47	0.5	SAI		TSH -18.1 to -18.4	sleeve
35	47	0.7	SAI		TSH -18.6 to -18.8	sleeve
20	48	1.5	SAI		TSH -8.1 to -12.1	sleeve
6	49	1.5	SAI		TSH -17.9 to -18.2	sleeve

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
14	49	1.5	SAI		TSH -10.1 to -10.7	sleeve
18	49	1.0	SAI		TSH -15.6 to -16.2	sleeve
		1.5	SAI		TSH -9.2 to -11.0	
19	49	0.6		88	TSH -11.0	plug
		2.0	MAI		TSH -9.0 to -14.2	
35	50	1.3	MAI		TSH -18.3 to -19.0	sleeve
38	50	32.8	DRI		TSH -19.7	sleeve
26	51	2.1	MRI		TEH +2.9 to +2.6	sleeve
29	51	0.6	SAI		TSH -16.8 to -17.3	sleeve
43	51	4.1	SAI		TSH -19.1 to -20.0	sleeve
		1.0		78	TSH -18.0	
9	52	1.2	SAI		TSH -16.8 to -18.6	sleeve
18	52	1.2	MAI		TSH -3.0 to -4.9	sleeve
22	52	1.3	MAI		TSH -4.1 to -5.1	sleeve
2	53	1.5	SAI		TSH -17.5 to -18.6	sleeve
15	53	3.5	SRI		TEH +2.1 to +1.8	sleeve
43	53	1.3	CCI		TEH +0.9	re-plug
14	54	1.0	MAI		TSH -14.1 to -16.6	sleeve
36	54	2.4	ADI		TSH -13.0 to -18.0	sleeve
42	54	1.0	SAI		TSH -14.7 to -15.1	sleeve
28	55	0.8	MAI		TSH -17.3 to -18.2	sleeve
29	55	12.1	MAI		TEH +1.2 to +0.4	sleeve
32	55	1.0	SAI		TSH -17.7 to -18.0	sleeve
41	55	0.5	SAI		TSH -12.6 to -12.8	sleeve
3	56	0.5	MAI		TSH -18.8 to -19.3	sleeve
12	56	1.2	SRI		TEH +2.6 to +2.4	sleeve
28	56	2.1	MAI		TSH -18.2 to -18.8	sleeve
		0.6		69	TSH -17.5	
18	57	0.9	SAI		TSH -10.5 to -10.8	sleeve
19	57	1.5	SAI		TSH -17.9 to -18.1	plug
21	57	1.2	MAI		TSH -2.8 to -15.8	sleeve
41	57	1.7	SRI		TEH +2.0 to +1.8	sleeve
8	58	1.3	SRI		TEH +2.0 to +2.0	sleeve
12	58	1.2	MRI		TEH +2.2 to +2.0	sleeve
15	58	1.2	MRI		TEH +2.2 to +2.1	sleeve
17	59	3.1	SRI		TEH +2.4 to +2.2	sleeve
14	60	1.3	MAI		TSH -12.7 to -13.9	sleeve
28	60	0.6	SAI		TSH -17.4 to -17.7	sleeve
		0.8	SAI		TSH -10.6 to -10.9	
1	61	1.1		90	TSH -17.1	plug
		1.1	SAI		TSH -15.5 to -15.5	
6	61	1.0	MAI		TSH -13.0 to -14.3	sleeve
9	61	0.5	MRI		TEH +2.0 to +1.9	sleeve
17	61	0.8	MRI		TEH +1.9 to +1.7	sleeve
23	61	4.2	CRI		TEH +2.2	sleeve
25	61	0.8	SAI		TSH -16.4 to -16.9	sleeve
		0.6	MAI		TSH -4.4 to -5.8	
26	61	1.3	SAI		TSH -6.6 to -6.9	sleeve

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
28	61	0.7	MAI		TSH -7.7 to -9.0	sleeve
30	61	4.5	SRI		TEH +2.2 to +2.1	sleeve
		0.8	SAI		TSH -17.5 to -17.9	
1	62	1.7	SAI		TSH -18.5 to -18.7	plug
23	62	0.7	SAI		TSH -17.6 to -17.9	sleeve
30	62	0.7	MAI		TSH -7.3 to -8.5	sleeve
		0.9	SAI		TSH -5.4 to -5.9	
31	62	1.1	MAI		TSH -15.6 to -17.9	sleeve
36	62	0.2	CCI		TEH +1.4	re-plug
		0.5	CCI		TEH +1.5	
40	62	1.2	SAI		TSH -19.6 to -20.4	sleeve
6	64	1.1	MAI		TSH -16.7 to -17.2	sleeve
16	64	0.8	MAI		TSH -13.3 to -14.4	sleeve
27	64	1.4	MAI		TSH -17.0 to -17.9	sleeve
18	65	0.8	SAI		TSH -9.7 to -9.9	sleeve
19	65	0.5		95	TSH -15.5	sleeve
		0.7	MAI		TSH -15.4 to -19.3	
		0.5	MAI		TSH -13.1 to -13.7	
26	65	3.5	CRI		TEH +2.5 to +2.6	sleeve
31	65	0.4	CCI		TEH +1.1	re-plug
33	65	0.8		59	TSH -17.6	sleeve
6	66	0.7	SAI		TSH -17.3 to -18.7	sleeve
		1.5	SAI		TSH -15.8 to -16.3	
38	66	1.3	SAI		TSH -18.6 to -19.0	sleeve
		0.6		95	TSH -17.6	
		0.9	SAI		TSH -16.6 to -17.0	
		0.6		85	TSH -15.8	
9	67	1.5	SRI		TEH +2.6 to +2.8	sleeve
10	67	0.5	SAI		TSH -17.9 to -18.3	sleeve
21	67	0.7		96	TSH -17.9	sleeve
		2.5	MAI		TSH -17.1 to -20.0	
24	67	0.6	MAI		TSH -7.0 to -9.6	sleeve
30	67	0.9	SAI		TSH -18.3 to -18.5	sleeve
3	68	0.8	MAI		TSH -16.9 to -18.9	sleeve
29	68	0.9	SAI		TSH -5.1 to -5.4	sleeve
35	68	2.8	ADI		TSH -17.4 to -19.3	sleeve
14	69	0.7	SAI		TSH -17.0 to -17.1	sleeve
19	69	0.9	MAI		TSH -16.0 to -19.0	sleeve
10	70	0.5	SAI		TSH -16.3 to -16.5	sleeve
15	70	1.0	SRI		TEH +3.0 to +2.7	sleeve
17	70	1.8	SRI		TEH +2.8 to +2.6	sleeve
20	70	0.6	MAI		TSH -15.7 to -16.5	sleeve
21	70	1.2	SAI		TSH -14.5 to -15.0	sleeve
27	70	0.7	SAI		TSH -17.5 to -19.0	sleeve
28	70	1.1	MAI		TSH -16.4 to -18.1	sleeve
5	71	0.9	MAI		TSH -14.8 to -18.2	sleeve
15	71	0.7	SAI		TSH -15.4 to -16.8	sleeve
18	71	1.2	MAI		TSH -12.9 to -16.7	sleeve

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
25	71	0.9	SRI		TEH +2.7 to +2.4	sleeve
8	72	1.0	SAI		TSH -17.2 to -17.6	sleeve
22	72	1.5	MRI		TEH +2.9 to +2.6	sleeve
3	73	0.6	MAI		TSH -18.0 to -18.9	sleeve
15	73	0.8	SRI		TEH +2.8 to +2.4	sleeve
17	73	1.5	MRI		TEH +2.7 to +2.5	sleeve
		0.6	SAI		TSH -15.8 to -16.5	
19	73	0.7	MAI		TSH -10.9 to -18.8	sleeve
25	73	1.8	MRI		TEH +2.9 to +2.7	sleeve
31	73	1.8	SRI		TEH +3.0 to +2.6	sleeve
5	74	0.9	MAI		TSH -18.1 to -20.3	sleeve
7	74	0.6	SAI		TSH -10.4 to -11.5	sleeve
17	74	0.7	SAI		TSH -8.7 to -8.9	sleeve
23	74	0.9	MAI		TEH +3.9 to +2.7	sleeve
25	74	1.5	SRI		TEH +2.2 to +2.1	sleeve
27	74	0.7	MAI		TEH +4.0 to +3.0	sleeve
11	75	0.6	MAI		TSH -19.4 to -20.1	sleeve
15	75	2.2	CRI		TEH +2.7	sleeve
17	75	1.5	SRI		TEH +2.6 to +2.5	sleeve
		0.5	MAI		TSH -18.9 to -19.9	
18	75	0.6	SAI		TSH -9.7 to -10.3	sleeve
32	75	3.4		87	TSH -18.7	sleeve
33	75	5.0		71	TSH -19.2	plug
		5.0		70	TSH -18.4	
		5.2		40	TSH +2.7	
16	76	0.8	MAI		TSH -18.3 to -20.3	sleeve
25	76	3.9	SRI		TEH +3.0 to +2.8	sleeve
31	76	2.4	MRI		TEH +3.0 to +2.8	sleeve
11	77	5.7	MAI		TSH -17.0 to -20.0	sleeve
		0.5		70	TSH -16.7	
		1.2		66	TSH -16.4	
		1.3		81	TSH -16.1	
		0.4	SAI		TSH -14.7 to -15.2	
31	77	1.8	SRI		TEH +3.0 to +2.8	sleeve
13	78	1.0	SRI		TEH +2.7 to +2.5	sleeve
17	78	0.7	SAI		TSH -19.1 to -19.5	sleeve
22	78	2.8		79	TSH -17.7	sleeve
10	79	0.6	SAI		TSH -17.2 to -18.4	sleeve
		0.4	SAI		TSH -12.3 to -12.4	
15	79	1.7	CRI		TEH +2.5 to +2.4	sleeve
		1.1	MAI		TSH -17.0 to -18.7	
19	80	1.8		68	TSH -16.7	sleeve
20	80	3.1		85	TSH -16.7	sleeve
23	80	1.8	ADI		TSH -3.3	sleeve
27	80	8.4		77	TSH -18.3	sleeve
28	80	0.6	SAI		TEH +3.1 to +3.4	sleeve
29	81	4.9	SRI		TEH +2.4 to +2.6	plug
22	82	0.7	MRI		TEH +2.4 to +2.6	sleeve

Table 4

REPAIRABLE INDICATIONS

Row	Col	Volts	Ind. Desc	%TWD	Indication Location	Repair
29	82	6.3	SRI		TEH +2.3 to +2.4	plug
2	83	2.1		77	TSH -18.0	sleeve
4	83	0.6		79	TSH -18.9	sleeve
4	84	1.2		69	TSH -17.5	sleeve
17	84	1.8		79	TSH -18.9	sleeve
22	85	1.4	SRI		TEH +2.5	sleeve
9	86	5.9		75	TSH -18.8	sleeve
11	86	1.4		75	TSH -17.5	sleeve
17	86	4.6	MRI		TEH +2.8 to +2.7	sleeve
2	87	4.6	ADI		TSH -16.1 to -18.4	sleeve
9	89	3.2		90	TSH -18.1	sleeve
11	89	0.8		66	01C +0.0	plug
		2.0	SAI		01C +0.0	
		0.9		60	01C +0.0	

Number of Tubes: 216

Number of Indications: 254

Table 4

GINNA STATION
STEAM GENERATOR TUBE INSPECTION
AND CORRECTIVE ACTION HISTORY

DATE	NO. TUBES INSPECTED				TOTAL TUBES REQUIRING CORRECTIVE ACTION		TYPE OF DEGRADATION	>40% REQUIRED REPAIRS		NO. TUBES PLUGGED		NO. TUBES SLEEVED		NO. PLUGGED RETURNED TO SERVICE		NO. SLEEVES PLUGGED		NO. PULLED TUBES		TOTAL (NET) PLUGGED		TOTAL (NET) SLEEVED		COMMENT
	A		B		A	B		A	B	A	B	A	B	A	B	A	B	A	B					
	HOT	COLD	HOT	COLD		A														B	A	B	A	
IN FACTORY					1	0		1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	
APR 1972	1050				0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MAR 1974	3259	516	1088	516	19	0	WASTAGE	19	0	19	0	0	0	0	0	0	0	2	0	19	0	0	0	
NOV 1974	1701	430	672	39	2	0	WASTAGE	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0		
MAR 1975	2174	442	1931	442	46	11	CRACKING/WASTAGE	46	11	46	11	0	0	0	0	0	0	2	0	46	11	0	0	
JAN 1976	0	0	53	0	0	2	WASTAGE	0	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0	
FEB 1976	3192	3192	3247	3247	39	2	WASTAGE	39	2	39	2	0	0	0	0	0	0	0	0	39	2	0	0	
APR 1976	100	0	1025	75	0	15	CRACKING	0	15	0	15	0	0	0	0	0	0	0	0	15	0	0	0	
APR 1977	2003	268	1525	268	13	2	WASTAGE	13	1	13	1	0	0	0	0	0	0	0	13	1	0	0		
JUL 1977			300		0	6	ID CRACKING	0	5	0	5	0	0	0	0	0	0	0	0	5	0	0	0	
JAN 1978					0	6	CRACKING/WASTAGE	0	6	0	6	0	0	0	0	0	0	0	0	6	0	0	0	
APR 1978	2049	325	1714	375	1	15	ID CRACKING	1	15	1	15	0	0	0	0	0	0	0	1	15	0	0		
FEB 1979	2049	325	1714	375	0	6	CRACKING,WAS1GA	0	6	0	6	0	0	0	0	0	0	0	0	6	0	0	0	
DEC 1979					0	13	IGA/WASTAGE	0	13	0	13	0	0	0	0	0	0	0	0	13	0	0	0	
APR 1980	3139	325	3182	375	1	31	*A/FITTING,B1GA	1	13	1	34	0	0	0	0	0	0	3	1	34	0	0	0	1
NOV 1980	3138	325	3151	375	0	0	IGA	0	2	0	0	0	5	0	0	0	0	0	0	0	0	5	0	2
MAY 1981	3138	325	3141	400	0	4	IGA/WASTAGE	0	6	0	4	0	16	0	0	0	0	3	0	4	0	16	0	3
FEB 1982	3137	526	3140	526	0	16	IGA,MECH DAM	0	16	0	16	0	0	0	0	0	0	1	0	16	0	0	0	4
SEP 1982	3138	382	3129	693	1	33	IGA	1	26	1	33	0	0	0	0	0	0	0	1	33	0	0	0	
APR 1983	3137	633	3066	832	4	4	IGA/SCC	0	23	0	3	4	74	0	0	0	1	0	4	4	73	0	0	5
MAR 1984	3137	717	3093	963	1	1	IGA/SCC	0	5	1	1	0	9	0	0	0	1	0	0	1	2	0	8	
MAR 1985	3135	3135	3087	3087	3	4	IGA/SCC/WASTAGE	3	70	2	4	2	67	0	0	0	0	0	2	4	2	67	0	6
FEB 1986	3134	623	3083	770	6	27	IGA/SCC/WASTAGE	2	49	0	27	6	30	0	3	0	0	0	0	24	6	33	0	7
FEB 1987	3128	0	2684	0	34	73	IGA/SCC	17	76	10	72	24	80	0	0	0	3	0	10	75	24	77	0	8
FEB 1988	3122	1517	2723	1301	7	41	IGA/SCC	4	18	14	58	0	0	0	0	1	1	0	15	59	-1	-1	0	9
MAR 1988	0	0	208	0	0	9	IGA/SCC	0	6	0	6	0	0	0	0	0	1	0	0	9	0	-1	0	10
MAR 1989	3128	1668	2805	1486	177	445	IGA/SCC/PWSCC/WAS	21	142	36	73	132	306	17	82	4	5	0	22	-4	137	365	0	11
MAR 1990	2949	663	2437	653	75	211	IGA/SCC/PWSCC/WAS	18	70	22	20	56	163	0	28	5	1	2	24	-8	51	190	0	12
APR 1991	2945	1093	2359	1092	116	117	IGA/SCC/PWSCC/WAS	27	52	12	7	81	93	22	15	1	2	1	-10	-9	102	107	0	13
APR 1992	2748	757	1998	706	244	218	IGA/SCC/PWSCC/WAS	5	16	14	20	214	173	16	29	0	7	0	-2	-10	230	195	0	14
					790	1316				234	460	519	1016	55	157	11	22	7	9	185	313	555	1134	

* Returned to Service
without Sleeve
A=6 B=16

TABLE 5

K. J. Wachter
30-APR-92
Rev. 0

**STEAM GENERATOR
TUBE INSPECTION AND CORRECTIVE ACTION HISTORY
COMMENTS
(from TABLE 5)**

- (1) Pulled R15 C55 and R17 C41 from the hot leg and R17 C40 from the cold leg to determine IGA conditions in the "B" steam generator. R17 C41 and ECT indications at all frequencies, R15 C44 had only 100 kHz Absolute ECT indication and R17 C40 had no ECT indication. Both hot leg tubes had approximately 50% IGA, R17 C41 had a 60% SCC indication associated with the IGA.
- (2) Manually sleeved 5 tubes with nickel plated Inconel 600 thermally treated sleeves. Three tubes had IGA indications, two others were preventatively sleeved.
- (3) Sleeved 16 tubes with co-extruded sleeves, 13 with defects and 3 preventatively. Pulled Hot Leg tubes R21 C46 with a 100 kHz ECT indication, R7 C45 and R28 C 45 which were clean tubes.
- (4) Recovery from the January 25, 1982 Tube Rupture Event including removing 26 tube sections by EDM and ID cutters along with the one tube pulled from the secondary side.
- (5) The four tubes identified with IGA in the "A" steam generator were sleeved with 22" tubesheet sleeves. The 78 tubes identified in the "B" steam generator with IGA and/or SCC in the crevice were repaired as follows:

41	tubes were sleeved with 36" brazed sleeves
9	tubes were sleeved with 28" brazed sleeves
24	tubes were sleeved with 22" tubesheet sleeves
1	tube and 2 sleeves were plugged
1	tube R34 C54 was pulled for metallurgical analysis
- (6) The two tubes identified with IGA in the crevice in the "A" steam generator inlet were sleeved with 20" tubesheet sleeves. One indication >40% TWD in the U-bend was permanently plugged. The 70 tubes identified in the "B" steam generator were repaired as follows:

56	tubes were sleeved with 20" tubesheet sleeves
10	tubes were sleeved with 36" brazed sleeves
3	tubes were mechanically plugged (CE removable)
1	tube was explosively plugged
1	tube was sleeved with a 36" brazed sleeve due to the domino effect.

- (7) The five tubes identified with crevice indications in the "A" steam generator inlet were sleeved with 27" Combustion Engineering (CE) Sleeves. One tube identified with an O.D. general indication above the secondary side tubesheet was also sleeved with a 27" CE sleeve. The 57 tubes identified in the "B" steam generator were repaired as follows:

- 27 tubes were sleeved with 27" CE sleeves
- 27 tubes were mechanically plugged (CE removable)
- 3 CE Mechanical Plugs installed in 1985 were removed and sleeved with 27" sleeves

The present sleeve installation status is 83 brazed sleeves, 88 tube sheet sleeves, 30 welded CE sleeves in the "B" steam generator with 6 tubesheet sleeves and 6 welded CE sleeves in the "A" steam generator.

- (8) The 34 tubes identified with crevice indications in the "A" steam generator inlet were repaired as follows:

- 10 tubes were mechanically plugged (CE removable)
- 24 tubes were sleeved with 27" CE welded sleeve

The 153 tubes identified with crevice indications in the "B" steam generator inlet were repaired as follows:

- 72 tubes were mechanically plugged (CE removable)
- 80 tubes were sleeved with 27" CE welded sleeves
- 1 CE welded sleeve (installed in 1987) was plugged with a CE welded sleeve plug due to rejection of upper weld.

Other repairs required in the "B" steam generator are as follows:

- 2 B&W test brazed sleeves (installed in 1980) were plugged due to the loss of the primary to secondary pressure boundary as detected by the Hydro Test,
- 5 Westinghouse explosive plugs installed prior to 1987 were removed due to leakage and replaced with CE welded plugs.
- 1 CE Mechanical Plug on the cold leg was removed and replaced with a CE Mechanical Plug.
- 4 CE welded sleeves (installed in 1987), are considered as "leak limiting" due to the marginal acceptance of the upper welds.

(9) In the "A" steam generator, 15 tubes were plugged as follows:

- 7 tubes had tubesheet crevice indications
- 7 tubes for no confirmed AVB support
- 1 CE sleeve for unverified upper expansion

In "B" steam generator, 61 tubes were plugged as follows:

- 39 tubes had tubesheet crevice indications
- 2 tubes were misplugged in the hot leg during 1987 outage
- 8 tubes to box existing plugs were AVB support could not be verified.
- 10 tubes for no confirmed AVB support
- 1 tube for flow peaking consideration due to AVB placement
- 8 Westinghouse Explosive Plugs were removed and replaced with welded "Top Hat" Plugs

(10) The "B" steam generator had 9 tubes plugged for the following reasons:

- 6 tubes had tubesheet crevice indications identified by a review of the February data. These were removed from service with CE mechanical plugs.
- 2 tubes had signal changes from February to March. The tubes were removed from service with CE mechanical plugs.
- 1 B&W tubesheet sleeve identified by the hydrostatic pressure test was removed from service with a B&W explosive plug in the hot leg and a CE mechanical in the cold leg.

(11) A total of 177 tubes in "A" steam generator were repaired in 1989 as follows:

- 137 CE 27" welded sleeves (straight and periphery)
- 40 Tube and/or sleeve plugs
- 2 Previously plugged tubes stabilized (not counted as repaired)

A total of 445 tubes were repaired in "B" steam generator were repaired as follows:

- 367 CE 27" welded sleeves (straight and periphery)
- 78 Tubes and/or sleeve plugs
- 1 Previously plugged tube stabilized (not counted as repaired)

(12) A total of 75 tubes in "A" steam generator were repaired in 1990 as follows:

51	CE 27" welded sleeves (straight and periphery)
24	Tube and/or sleeve plugs (includes pulled tubes R25-C63 and R31-C66)

A total of 211 tubes in "B" steam generator were repaired as follows:

191	CE 27" welded sleeves (straight and periphery) including 28 deplugged tubes
20	Tubes and/or sleeve plugs (includes B&W tubesheet sleeve noted during hydro)

(13) A total of 116 tubes, including 24 deplugged tubes, in "A" steam generator were repaired in 1991 as follows:

61	CE 27" welded sleeves (straight and periphery)
41	CE 30" welded sleeves (straight)
14	Tube and/or sleeve plugs (includes pulled tube R45-C52 and deplugged tubes R17-C52 and R16-C48)

A total of 117 tubes, including 16 deplugged tubes, in "B" steam generator were repaired as follows:

80	CE 27" welded sleeves (straight and periphery)
28	CE 30" welded sleeves (straight)
9	Tube and/or sleeve plugs (includes sleeved tube R5-C37, deplugged tube R26-C56 and 2 B&W Explosive plug repairs)

(14) A total of 244 tubes, including 16 deplugged tubes, in "A" steam generator were repaired in 1992 as follows:

36	CE 27" welded sleeves (straight)
194	B&W explosively welded tubesheet sleeves
14	Tube and/or sleeve plugs (including two tubes stabilized R12-C11 and R13-C11)

A total of 218 tubes, including 30 deplugged tubes, in "B" steam generator were repaired as follows:

186	CE 27" welded sleeves (straight and periphery)
9	CE 30" welded sleeves (straight)
23	Tube and/or sleeve plugs (includes two tubes stabilized R11-C46 and R13-C89, deplugged tube R33-C75 and 3 B&W Explosive plug repairs)