

CALVERT CLIFFS
UNIT 1
STEAM GENERATORS 11 and 12
EDDY CURRENT TESTING
FINAL REPORT
April/June 1988

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PDC

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I. INTRODUCTION

Zetec, Inc. and NDE Technology were contracted in November 1987 to provide personnel to assist BG&E with the eddy current examination of the Calvert Cliffs Unit 1 Steam Generators in Lusby, Maryland. Zetec, Inc. provided twelve people for data acquisition and ten people for the primary data evaluation. NDE Technology provided four people for the secondary data evaluation.

This report summarizes the April/June 1988 eddy current inspection results of Calvert Cliffs Unit 1 Steam Generators.

II. DISCUSSION

The MIZ-18 eddy current system was used to inspect the Calvert Cliffs Unit 1 Steam Generators 11 and 12. The MIZ-18 uses eddy currents as the probing media to measure variations in effective conductivity and/or permeability of the tube being tested.

An alternating voltage is impressed across the test coil. The magnetic field developed by current flow in the test coil causes eddy currents to flow in the tube wall. The corresponding magnetic field caused by eddy current flow in the tube wall is out of phase with the field developed by the current in the test coil. Since these fields tend to cancel one another, the coil voltage is decreased in proportion to the magnitude of eddy current flow in the test piece. The magnitude of eddy currents in the test piece, thus the coil voltage, is dependent on the electrical properties of the tube being tested. The electrical properties which affect the flow of eddy currents are permeability and conductivity. In non-magnetic materials, such as inconel and 300 series stainless steel, conductivity is usually the only significant variable. When the effective conductivity decreases due to a discontinuity in the tube wall, the coil voltage increases in direct relationship with the effective conductivity change. Thus, the amount of increase in coil voltage is related to the size of the discontinuity in the tube wall. The coil voltage is sinusoidal, thus it can be described with a single vector having magnitude and phase.

The preselected Technical Specification eddy current (ET) testing plan for the April through June 1988 Calvert Cliffs Unit 1 refueling outage called for approximately 9% of the tubes in each steam generator (SG) to be inspected. The Technical Specification classification rules were applied to the test results of these tubes. The results were determined to be in Category C-3 and the requirement to expand the inspection to 100% was carried out for both SG's.

All of the tubes in service in each SG were examined through their entire length. The 100% inspection required a total of 16,945 tubes to be examined. Of the 16,945 tubes examined, 315 tubes had indications of 20% through-wall degradation or greater. A total of 37 tubes had indications which exceeded the plugging limit. Twenty-one tubes were plugged in SG 11 and 16 tubes were plugged in SG 12 for this reason.

As a preventative measure, 31 additional tubes with indications in the sludge pile area were plugged. Of these additional 31 tubes taken out of service, 21 were in SG 11 and 10 were in SG 12. Previous metallurgical examination of Unit 1 tubing has shown degradation in these areas was caused by Intergranular Attack (IGA). Even though these 31 tubes had indications which were less than the plugging limit, the tubes were plugged because of the potential for a local active IGA mechanism.

The examination of SG's 11 and 12 was performed using the Zetec MIZ-18 digital data acquisition system. The frequencies selected were 400, 200, 100, and 30 KHz - all of which were run in the differential and absolute modes. The examination was performed using a standard A.560-SF/RM bobbin coil probe. The MIZ-18 digital data acquisition system provides on-line data digitization and storage onto magnetic tape cartridges. The digital signal was also converted to analog where selected frequencies were recorded on strip chart media as an aid to the analyst.

Each tube's eddy current data was analyzed by two independent teams of qualified and certified personnel and by computer analysis. Zetec Analysis Software Edition 18.6, Rev. 5 with strip charts was used by each team of analysts. Additionally, all stored digital data was analytically processed by Zetec's Computer Data Screening (CDS) program using HP350 computers. All distorted and pluggable indications were retested. After all data review was completed, the primary and secondary lead analysts compared results with the CDS results and a final report was produced. Any final resolution that may have been required was performed by BG&E Level III personnel.

In addition to the standard eddy current testing, some tubes were inspected using motorized rotating pancake coil (MRPC) probes. Short radius SG U-bend tubing was inspected utilizing U-bend MRPC probes on both SG's. Of the 315 U-bends inspected using MRPC, no degradation was detected. Straight tube section MRPC probes were used in several tubes just below and above the secondary side of each SG hot leg tube sheet. These 58 tubes, located in the sludge pile area, were inspected to further quantify known bobbin coil indications. The straight tube section MRPC analysis confirmed the bobbin coil data.

Profilometry ET was used to evaluate tube denting at the 9th and 10th solid support plates on both SG's. Trend analysis of the profilometry information showed no denting growth since the November, 1986 outage.

Indications were found in a total of 290 tubes from the 8,463 tubes examined in SG 11 and 286 tubes from the 8,482 tubes examined in SG 12. Thirty-seven tubes were found to have indications which exceeded the Technical Specification plugging limit of 40% loss of nominal wall thickness. The cold leg side of one tube found to have been misplugged in SG 12 during the 1986 Outage was correctly plugged (see LER 317/88-03). An additional 31 tubes were plugged as a preventative measure. Of the total 69 tubes plugged during this Inservice Inspection, 42 tubes were plugged in SG 11 and 27 tubes were plugged in SG 12. Table II-1 is a summary of the Calvert Cliffs Unit One 1988 Eddy Current examination results.

Prior to the outage, an estimate of tube plugging for each SG was made based on ET data trend analysis. An eighteen month degradation rate of 7% nominal wall thickness was used. Using this degradation rate, it was estimated 76 tubes would exceed the plugging limit this inspection. However, only 37 tubes actually exceeded the plugging limit.

Various plots illustrating the locations and distribution of tube indications and a listing of tubes plugged this inspection for SG's 11 and 12 are provided in Appendix I and II respectively. The SG sketch in Appendix III shows the various tube support locations within the SG's and the nomenclature used throughout this report.

All indications found were on tube outside surfaces. The tubing ET indications can be placed into one of three major location categories:

- just below and above the top of the tube sheet
- at supports, or
- in free span areas between and not associated with supports.

These inspection results are similar to that reported for Calvert Cliffs Unit 2. There are no apparent differences between Unit 1 and Unit 2 that indicate a unique problem in any particular SG. This is to be expected since operating and chemistry conditions have remained similar between the two plants.

Indications found just below and above the top of the tube sheet are in regions of higher sludge levels. Most of these indications are on the inlet tube sheet side and produce relatively low magnitude signals. In late 1986, tube specimens containing these type of indications were removed from SG 11 and have undergone metallurgical and chemical evaluations. Results show that these indications are caused by IGA.

TABLE II - 1

Unit One 1988 Eddy Current Inspection Results

	<u>SG #11</u>	<u>SG #12</u>
Number of Tubes Inspected	8,463	8,482
Percent of Tubes Inspected	100%	100%
Number of Distorted Indications	15	13
Number of Tubes with Distorted Indications	13	13
Percent of Tubes with Distorted Indications	0.15%	0.15%
Number of Indications <20% (Imperfections)	141	160
Number of Tubes with <20% Indications	135	152
Percent of Tubes with <20% Indications	1.60%	1.80%
Number of Indications 20-39% (Degraded)	166	147
Number of Tubes with 20-39% Indications	149	136
Percent of Tubes with 20-39% Indications	1.75%	1.60%
Number of Indications >39% (Defective)	21	17*
Number of Tubes with >39% Indications	21	17*
Percent of Tubes with >39% Indications	0.25%	0.20%
Number of Tubes Plugged this Outage	42	27*
Total Tubes Plugged each Steam Generator	98	65*

Note: Tubes, which contained more than one indication in more than one category (<20%, 20-39%, and 40% and greater), are listed in all appropriate categories.

*These numbers include R94 L66 found to be defective during the 1986 outage (see LER 317/88-03).

ET indications seen at support locations appear to be caused by tube wear or steam blanketing corrosion. Wear marks at a support contact region were confirmed on one tube removed from SG 11 in 1983. Note that most indications at supports occur at the vertical middle (VM), diagonal (DH & DC), and vertical hot and cold (VH & VC) leg side supports. Indications seen at the VM support location within rows 8 through 11 may be the result of steam blanketing corrosion; the specific mechanism has yet to be confirmed due to the inability to remove specimens from this region.

ET indications seen in free span areas are typically low magnitude signals. Three tube specimens containing free span indications were removed from SG 11, one in November 1983 and two in November 1986. Investigations of the free span indications showed these indications are manufacturing imperfections. There is no correlation of free span indications with respect to location, elevation, inlet side or outlet side; tube manufacturing imperfections would be expected to produce random occurrences like this.

Corrective measures have been initiated to minimize further degradation to the SG's. During the 1986 outage we completed the removal of all major copper components from the feedwater and condensate systems. We are completing installation of a nitrogen blanketing system on all condensate storage tanks to reduce auxiliary feedwater and condensate makeup oxygen. We are using morpholine which will minimize the ingress of solids from the secondary system into the SG's and promote sludge pile cleaning.

Our current chemistry procedures require action to be taken below the Utility/EPRI Steam Generator Reliability Project (SGRP) PWR Secondary Water Chemistry Guideline Action Levels. This enables us to initiate corrective measures before conditions become degraded in the SG's. During outages steam generators are kept in wet lay-up with a nitrogen blanket as much as possible.

APPENDIX I

EDDY CURRENT TEST RESULTS

STEAM GENERATOR 11

- A. List with Plot of All Indications
- B. List with Plot of <20% Indications
- C. List with Plot of 20%-39% Indications
- D. List with Plot of >39% Indications
- E. List with Plot of Distorted Indications
- F. Lists with Plots of Tubes not Rolled
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During the April/June 1988 Outage

STEAM GENERATOR 11

A. List with Plot of All Indications

SG 11 PLOT OF ALL INDICATIONS, ALL ELEVATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

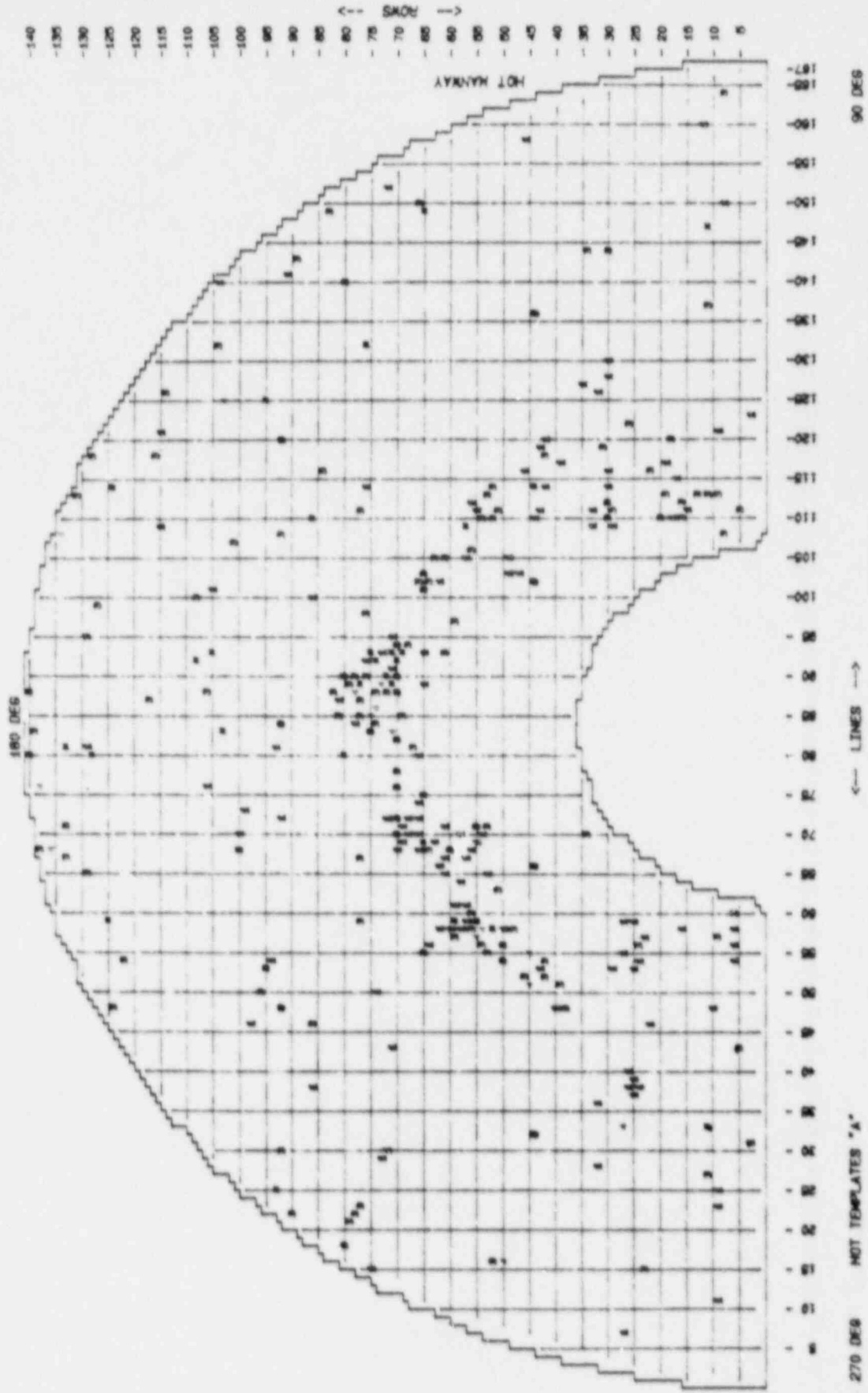
GENERATOR: 11

TOTAL TUBES: 8519
 STAYS (#): 7

L = PD - SPECIAL (0)
 S = 00 - >30 (15)

S = 00 - <20 (120)
 # = MULTIPLE INDICATION (28)

TOTAL TUBES ASSIGNED: 290



SG 11 PLOT OF INDICATIONS ABOVE THE HOT LEG TUBESHEET, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 11

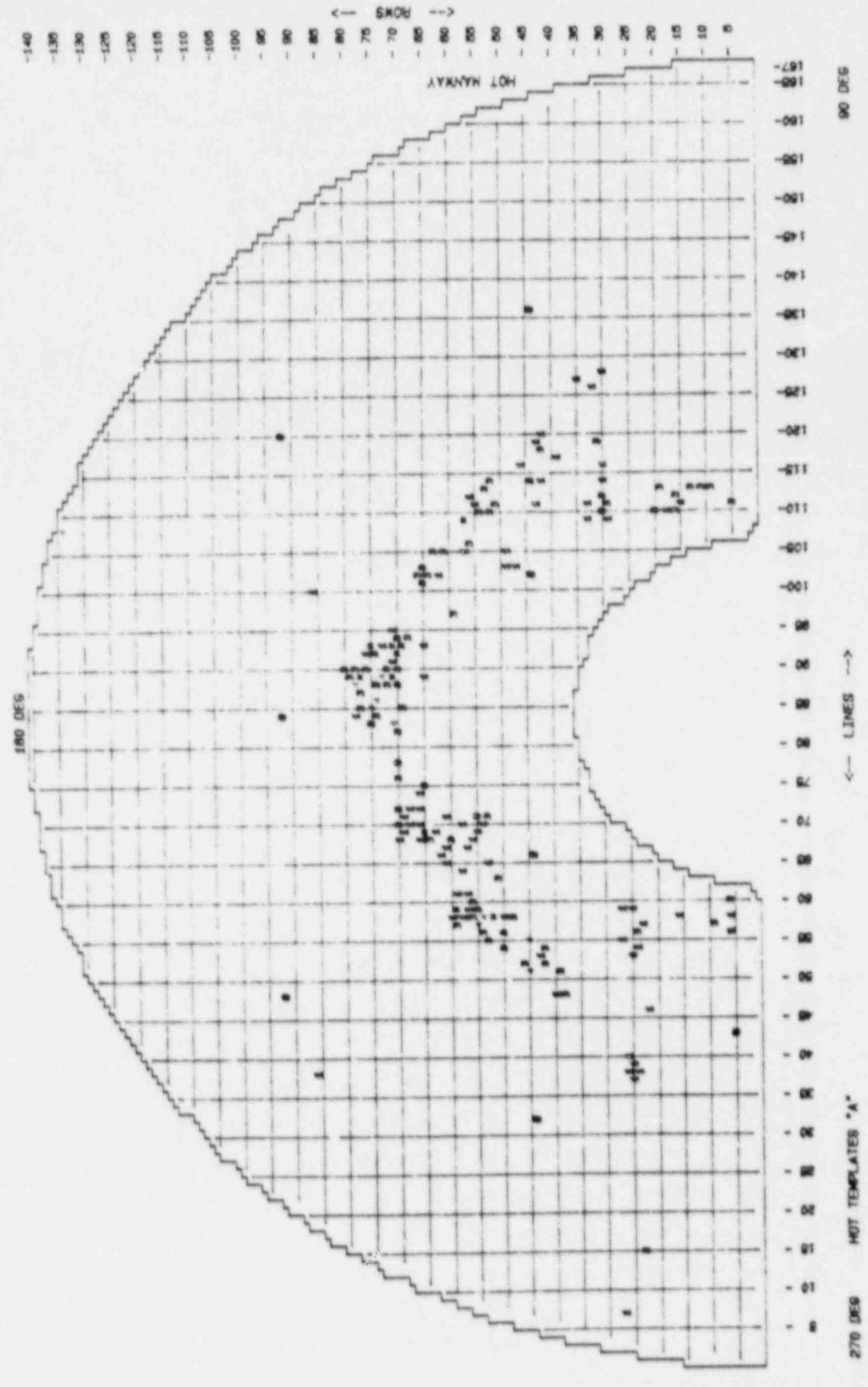
TOTAL TUBES: 8519
 STAYS (#): 7

L - 00 - SPECIAL (0)
 S - 00 - >39 (10)

L - 00 - <20 (77)
 # - MULTIPLE INDICATION (13)

S - 00 - 20-39 (71)

TOTAL TUBES ASSIGNED: 171



Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: OD,ALL & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
57-	67	04/88				0.60
57-	105	04/88				0.77
57-	109	04/88				0.74
58	58	04/88				1.11
58	64	04/88				0.46
58	70	04/88				0.99
59	57	04/88				1.11
59	59	04/88				0.61
59	61	04/88				0.97
60	58	04/88				0.98
60	68	04/88				0.68
61	65	04/88				0.67
61	71	04/88				0.93
61	93	04/88				0.55
61	1	04/88				0.60
61	100	04/88				0.62
61	106	04/88				0.55
61	108	04/88				0.55
61	1	04/88				0.55
61	9	04/88				0.55
61	7	04/88				0.75
61	9	04/88				0.99
61	1	04/88				0.01
61	4	04/88				0.09
61	6	04/88				0.68
61	7	04/88				0.70
61	7	04/88				0.72
61	7	04/88				0.80
61	8	04/88				0.80
61	1	04/88				0.50
61	8	04/88				0.70
61	7	04/88				0.72
61	9	04/88				0.94
61	6	04/88				0.69
61	7	04/88				0.71
61	9	04/88				0.85
61	9	04/88				0.93
70	68	04/88				0.68
70	70	04/88				0.70
70	72	04/88				0.72
70	76	04/88				0.76
70	78	04/88				0.78
70	82	04/88				0.82
70	88	04/88				0.88
70	90	04/88				0.90
70	92	04/88				0.92
70	94	04/88				0.94
71	43	04/88				0.43

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: OD,ALL & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
71-	83	04/			
71-	82	04/			
71-	91	04/			
71-	93	04/			
71-	95	04/			
72-	730	04/			
72-	88	04/			
72-	90	04/			
72-	15	04/			
73-	25	04/			
73-	30	04/			
73-	33	04/			
74-	4	04/			
74-	5	04/			
74-	6	04/			
74-	7	04/			
74-	8	04/			
74-	9	04/			
75-	1	04/			
75-	5	04/			
75-	6	04/			
75-	7	04/			
76-	9	04/			
76-	10	04/			
76-	11	04/			
76-	12	04/			
76-	13	04/			
76-	14	04/			
76-	15	04/			
77-	16	04/			
77-	17	04/			
77-	18	04/			
77-	19	04/			
77-	20	04/			
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77-	22	04/			
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77-	24	04/			
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77-	27	04/			
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77-	29	04/			
77-	30	04/			
77-	31	04/			
77-	32	04/			
77-	33	04/			
77-	34	04/			
77-	35	04/			
77-	36	04/			
77-	37	04/			
77-	38	04/			
77-	39	04/			
77-	40	04/			
77-	41	04/			
77-	42	04/			
77-	43	04/			
77-	44	04/			
77-	45	04/			
77-	46	04/			
77-	47	04/			
77-	48	04/			
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77-	51	04/			
77-	52	04/			
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77-	56	04/			
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77-	79	04/			
77-	80	04/			
77-	81	04/			
77-	82	04/			
77-	83	04/			
77-	84	04/			
77-	85	04/			
77-	86	04/			
77-	87	04/			
77-	88	04/			
77-	89	04/			
77-	90	04/			
77-	91	04/			
77-	92	04/			
77-	93	04/			
77-	94	04/			
77-	95	04/			
77-	96	04/			
77-	97	04/			
77-	98	04/			
77-	99	04/			
77-	100	04/			

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: OD,ALL & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	% TW	VOLTS
00000	11	00000	00000	00000	00000
00001	11	00000	00000	00000	00000
00002	11	00000	00000	00000	00000
00003	11	00000	00000	00000	00000
00004	11	00000	00000	00000	00000
00005	11	00000	00000	00000	00000
00006	11	00000	00000	00000	00000
00007	11	00000	00000	00000	00000
00008	11	00000	00000	00000	00000
00009	11	00000	00000	00000	00000
00010	11	00000	00000	00000	00000
00011	11	00000	00000	00000	00000
00012	11	00000	00000	00000	00000
00013	11	00000	00000	00000	00000
00014	11	00000	00000	00000	00000
00015	11	00000	00000	00000	00000
00016	11	00000	00000	00000	00000
00017	11	00000	00000	00000	00000
00018	11	00000	00000	00000	00000
00019	11	00000	00000	00000	00000
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00022	11	00000	00000	00000	00000
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00027	11	00000	00000	00000	00000
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00030	11	00000	00000	00000	00000
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00051	11	00000	00000	00000	00000
00052	11	00000	00000	00000	00000
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00059	11	00000	00000	00000	00000
00060	11	00000	00000	00000	00000
00061	11	00000	00000	00000	00000
00062	11	00000	00000	00000	00000
00063	11	00000	00000	00000	00000
00064	11	00000	00000	00000	00000
00065	11	00000	00000	00000	00000
00066	11	00000	00000	00000	00000
00067	11	00000	00000	00000	00000
00068	11	00000	00000	00000	00000
00069	11	00000	00000	00000	00000
00070	11	00000	00000	00000	00000
00071	11	00000	00000	00000	00000
00072	11	00000	00000	00000	00000
00073	11	00000	00000	00000	00000
00074	11	00000	00000	00000	00000
00075	11	00000	00000	00000	00000
00076	11	00000	00000	00000	00000
00077	11	00000	00000	00000	00000
00078	11	00000	00000	00000	00000
00079	11	00000	00000	00000	00000
00080	11	00000	00000	00000	00000
00081	11	00000	00000	00000	00000
00082	11	00000	00000	00000	00000
00083	11	00000	00000	00000	00000
00084	11	00000	00000	00000	00000
00085	11	00000	00000	00000	00000
00086	11	00000	00000	00000	00000
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00093	11	00000	00000	00000	00000
00094	11	00000	00000	00000	00000
00095	11	00000	00000	00000	00000
00096	11	00000	00000	00000	00000
00097	11	00000	00000	00000	00000
00098	11	00000	00000	00000	00000
00099	11	00000	00000	00000	00000
00100	11	00000	00000	00000	00000

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: OD,ALL & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	% TW	VOLTS
139-	83 04/88	CTIS-SF + 0.50"	OD	33	1.11
140-	80 04/88	CTIS-SF + 19.60"	OD	33	0.60
140-	88 04/88	CD	OD	33	0.66

TOTAL TUBES: 290

STEAM GENERATOR 11

B. List with Plot of <20% Indications

SG 11 PLOT OF ALL <20% INDICATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
OUTAGE: 04/88

GENERATOR: 11

TOTAL TUBES: 8519
STAYS (#): 7

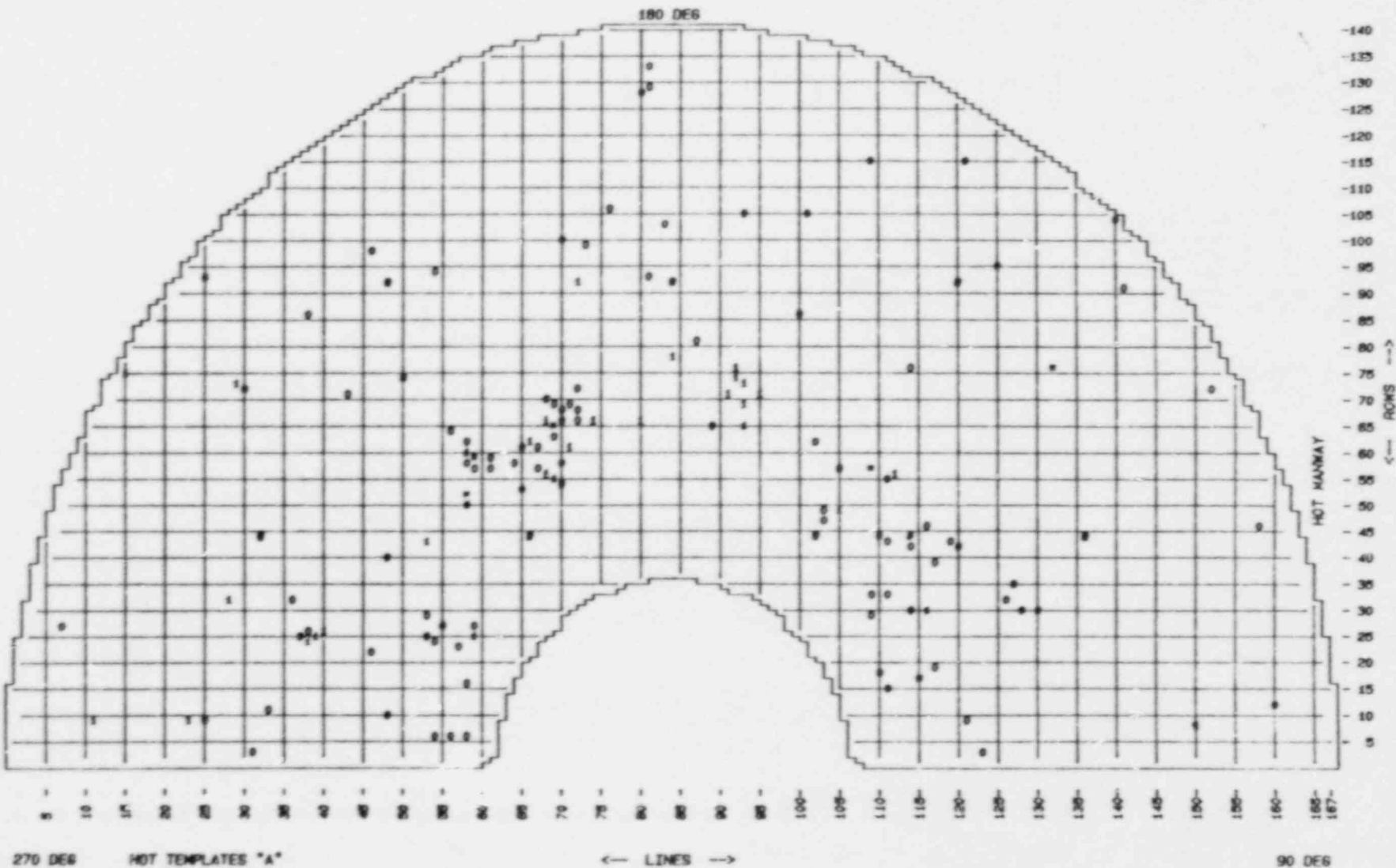
0 = 00 - <1 (98)
= MULTIPLE INDICATION (6)

1 = 00 - 1-5 (31)

5 = 00 - >5 (0)

TOTAL TUBES ASSIGNED: 135

SG 11 PLOT OF ALL <20% INDICATIONS, 4/88 OUTAGE



270 DE6 HOT TEMPLATES "A"

← LINES →

90 DE6

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: OD, 20 & TW, ALL VOLTS, ALL ELEV (ALL TUBES), ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
100	70	04/88	+			0.72
100	70	04/88	+			0.72
100	70	04/88	+			0.72
104	140	04/88	+			0.72
105	93	04/88	+			0.72
106	101	04/88	+			0.72
106	76	04/88	+			0.72
115	109	04/88	+			0.72
115	109	04/88	+			0.72
115	109	04/88	+			0.72
122	80	04/88	+			0.72
122	80	04/88	+			0.72
133	81	04/88	+			0.72
133	81	04/88	+			0.72
133	81	04/88	+			0.72

TOTAL TUBES: 135

STEAM GENERATOR 11

C. List with Plot of 20~~4~~-39~~4~~ Indications

SG 11 PLOT OF ALL 20-39% INDICATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 11

TOTAL TUBES: 8519
 STAYS (#): 7

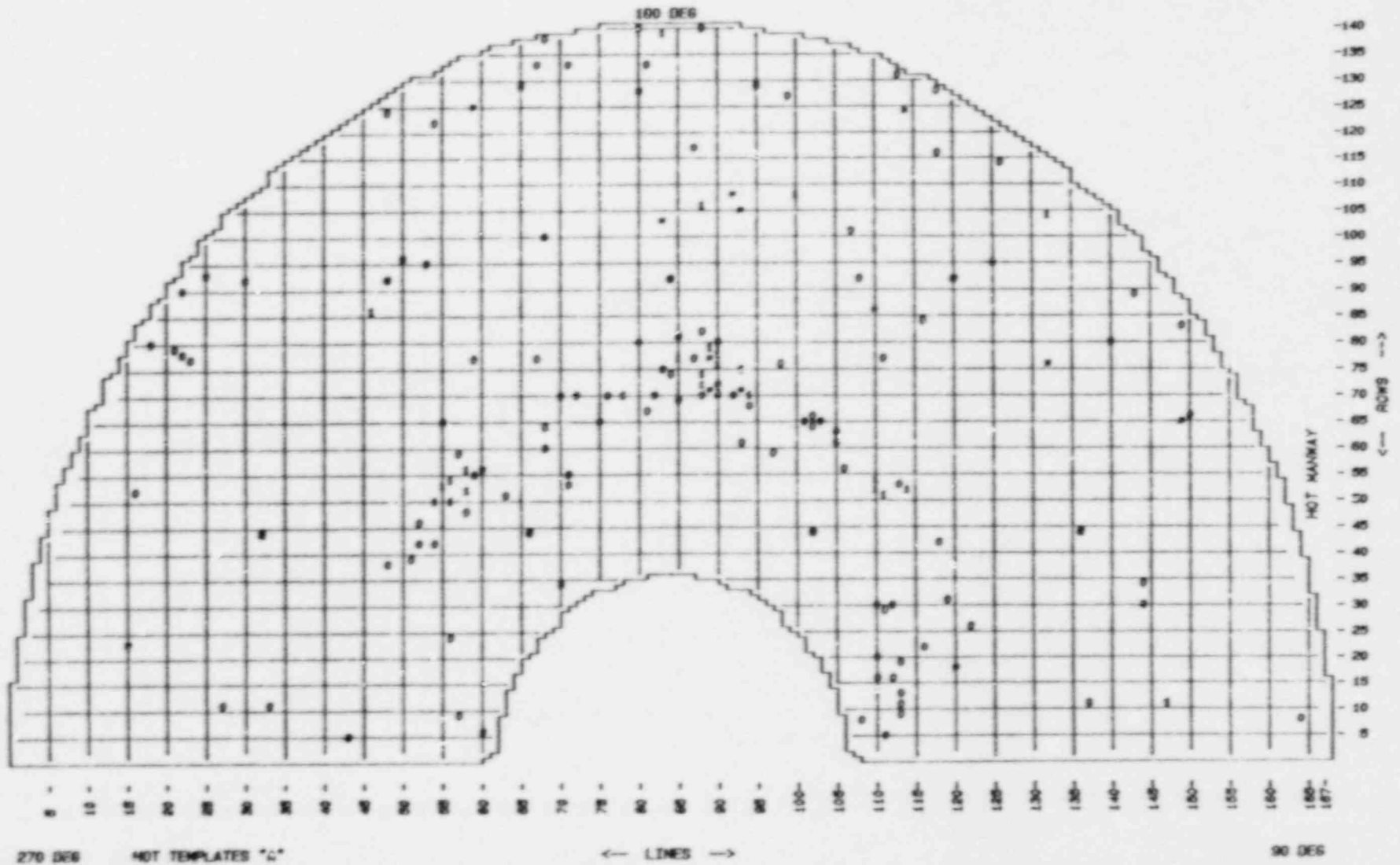
0 - 00 - <1 (113)
 # - MULTIPLE INDICATION (13)

1 - 00 - 1-<5 (25)

6 - 00 - >45 (0)

TOTAL TUBES ASSIGNED: 149

MS BOMB TUBMAN (TUB VER. 3.0 P-1.08) MAY 20, 1988 08:47 AM SA



Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: OD.20-39 * TW.ALL VOLTS.ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	# TW	VOLTS
65-	103				
66-	140				
67-	100				
68-	100				
69-	100				
70-	100				
71-	9				
72-	00				
73-	00				
74-	00				
75-	00				
76-	00				
77-	00				
78-	00				
79-	00				
80-	00				
81-	00				
82-	00				
83-	00				
84-	00				
85-	00				
86-	00				
87-	00				
88-	00				
89-	00				
90-	00				
91-	00				
92-	00				
93-	00				
94-	00				
95-	00				
96-	00				
97-	00				
98-	00				
99-	00				
100-	00				

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: OD,20-39 & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-FL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
1000	04/	00000000000000000000	00000000000000000000	0000
1001	04/	00000000000000000000	00000000000000000000	0000
1002	04/	00000000000000000000	00000000000000000000	0000
1003	04/	00000000000000000000	00000000000000000000	0000
1004	04/	00000000000000000000	00000000000000000000	0000
1005	04/	00000000000000000000	00000000000000000000	0000
1006	04/	00000000000000000000	00000000000000000000	0000
1007	04/	00000000000000000000	00000000000000000000	0000
1008	04/	00000000000000000000	00000000000000000000	0000
1009	04/	00000000000000000000	00000000000000000000	0000
1010	04/	00000000000000000000	00000000000000000000	0000
1011	04/	00000000000000000000	00000000000000000000	0000
1012	04/	00000000000000000000	00000000000000000000	0000
1013	04/	00000000000000000000	00000000000000000000	0000
1014	04/	00000000000000000000	00000000000000000000	0000
1015	04/	00000000000000000000	00000000000000000000	0000
1016	04/	00000000000000000000	00000000000000000000	0000
1017	04/	00000000000000000000	00000000000000000000	0000
1018	04/	00000000000000000000	00000000000000000000	0000
1019	04/	00000000000000000000	00000000000000000000	0000
1020	04/	00000000000000000000	00000000000000000000	0000
1021	04/	00000000000000000000	00000000000000000000	0000
1022	04/	00000000000000000000	00000000000000000000	0000
1023	04/	00000000000000000000	00000000000000000000	0000
1024	04/	00000000000000000000	00000000000000000000	0000
1025	04/	00000000000000000000	00000000000000000000	0000
1026	04/	00000000000000000000	00000000000000000000	0000
1027	04/	00000000000000000000	00000000000000000000	0000
1028	04/	00000000000000000000	00000000000000000000	0000
1029	04/	00000000000000000000	00000000000000000000	0000
1030	04/	00000000000000000000	00000000000000000000	0000
1031	04/	00000000000000000000	00000000000000000000	0000
1032	04/	00000000000000000000	00000000000000000000	0000
1033	04/	00000000000000000000	00000000000000000000	0000
1034	04/	00000000000000000000	00000000000000000000	0000
1035	04/	00000000000000000000	00000000000000000000	0000
1036	04/	00000000000000000000	00000000000000000000	0000
1037	04/	00000000000000000000	00000000000000000000	0000
1038	04/	00000000000000000000	00000000000000000000	0000
1039	04/	00000000000000000000	00000000000000000000	0000
1040	04/	00000000000000000000	00000000000000000000	0000
1041	04/	00000000000000000000	00000000000000000000	0000
1042	04/	00000000000000000000	00000000000000000000	0000
1043	04/	00000000000000000000	00000000000000000000	0000
1044	04/	00000000000000000000	00000000000000000000	0000
1045	04/	00000000000000000000	00000000000000000000	0000
1046	04/	00000000000000000000	00000000000000000000	0000
1047	04/	00000000000000000000	00000000000000000000	0000
1048	04/	00000000000000000000	00000000000000000000	0000
1049	04/	00000000000000000000	00000000000000000000	0000
1050	04/	00000000000000000000	00000000000000000000	0000
1051	04/	00000000000000000000	00000000000000000000	0000
1052	04/	00000000000000000000	00000000000000000000	0000
1053	04/	00000000000000000000	00000000000000000000	0000
1054	04/	00000000000000000000	00000000000000000000	0000
1055	04/	00000000000000000000	00000000000000000000	0000
1056	04/	00000000000000000000	00000000000000000000	0000
1057	04/	00000000000000000000	00000000000000000000	0000
1058	04/	00000000000000000000	00000000000000000000	0000
1059	04/	00000000000000000000	00000000000000000000	0000
1060	04/	00000000000000000000	00000000000000000000	0000

TOTAL TUBES: 146

STEAM GENERATOR 11

D. List with Plot of >39~~4~~ Indications

SG 11 PLOT OF ALL >39% INDICATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 11

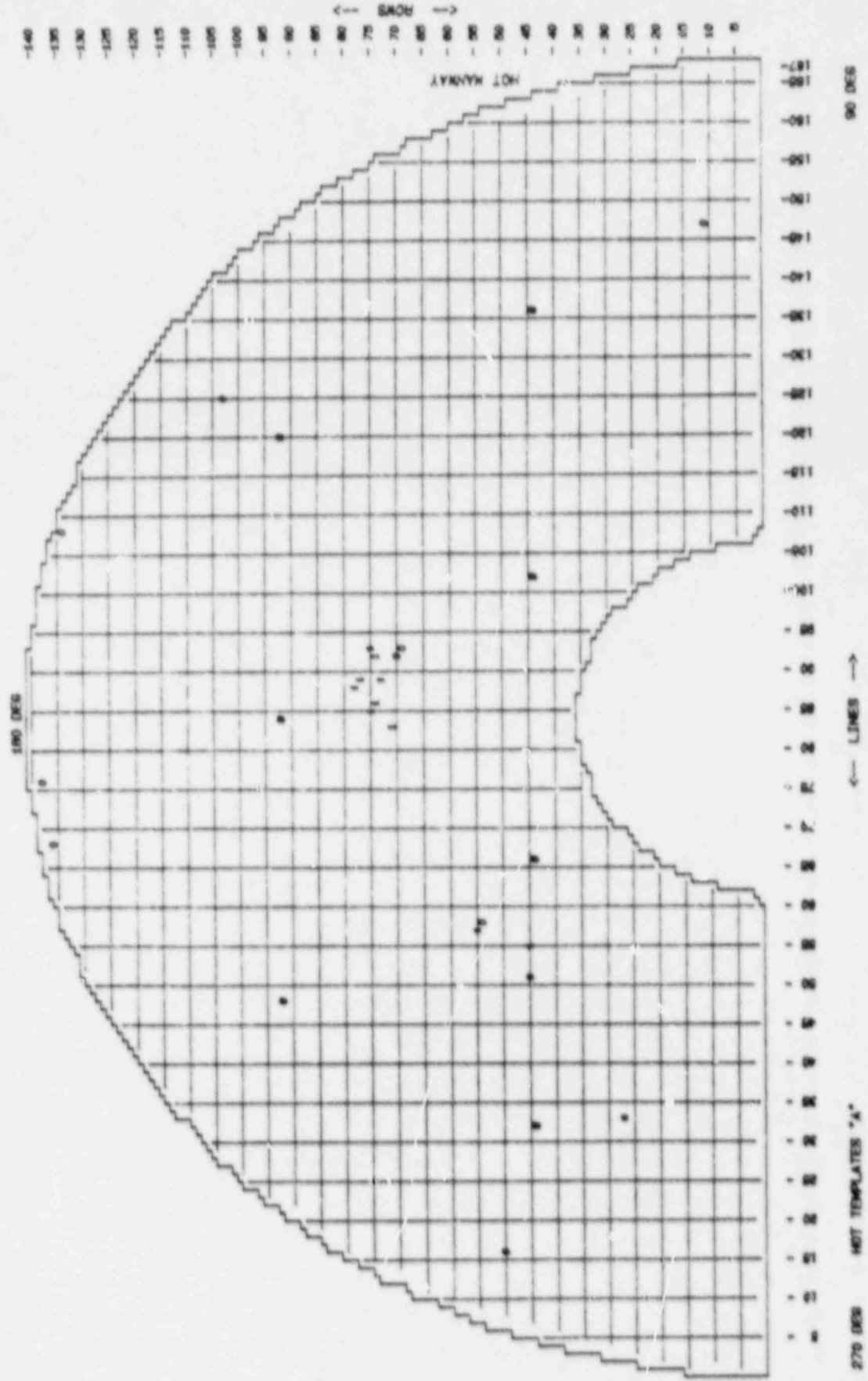
TOTAL TUBES: 8519
 STAYS (#): 7

0 - 00 - <3 (111)
 # - MULTIPLE INDICATION (0)

1 - 00 - 1 - <3 (110)

6 - 00 - >45 (0)

TOTAL TUBES ASSIGNED: 21



Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: OD, >39 & TW, ALL VOLTS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
11- 147	04/88	DN	+	0.10"	0.64
27- 32	04/88	HH	+	0.76"	0.57
45- 51	04/88	HH	+	0.76"	0.77
45- 55	04/88	HH	+	0.03"	1.20
50- 16	04/88	HA	+	0.67"	0.60
54- 58	04/88	HH	+	0.64"	0.67
55- 57	04/88	HH	+	0.82"	0.67
69- 93	04/88	HH	+	1.10"	0.65
70- 92	04/88	HH	+	0.80"	0.99
71- 83	04/88	HH	+	0.70"	1.56
73- 80	04/88	HH	+	0.50"	1.00
74- 86	04/88	HH	+	0.60"	1.17
74- 92	04/88	HH	+	0.60"	1.17
75- 85	04/88	HH	+	0.70"	2.20
75- 93	04/88	HH	+	0.80"	1.40
77- 89	04/88	HH	+	0.60"	1.56
78- 88	04/88	HH	+	1.40"	0.60
103- 125	04/88	VH	+	0.60"	0.60
134- 108	04/88	HH	+	0.60"	0.44
136- 68	04/88	HH	+	0.60"	0.44
138- 76	04/88	HH	+	0.00"	0.74

TOTAL TUBES: 21

STEAM GENERATOR 11

E. List with Plot of Distorted Indications

SG 11 PLOT OF DISTORTED INDICATIONS, 4/88 OUTAGE

PLANT: CAL
 FS UNIT 1
 OUTAGE:

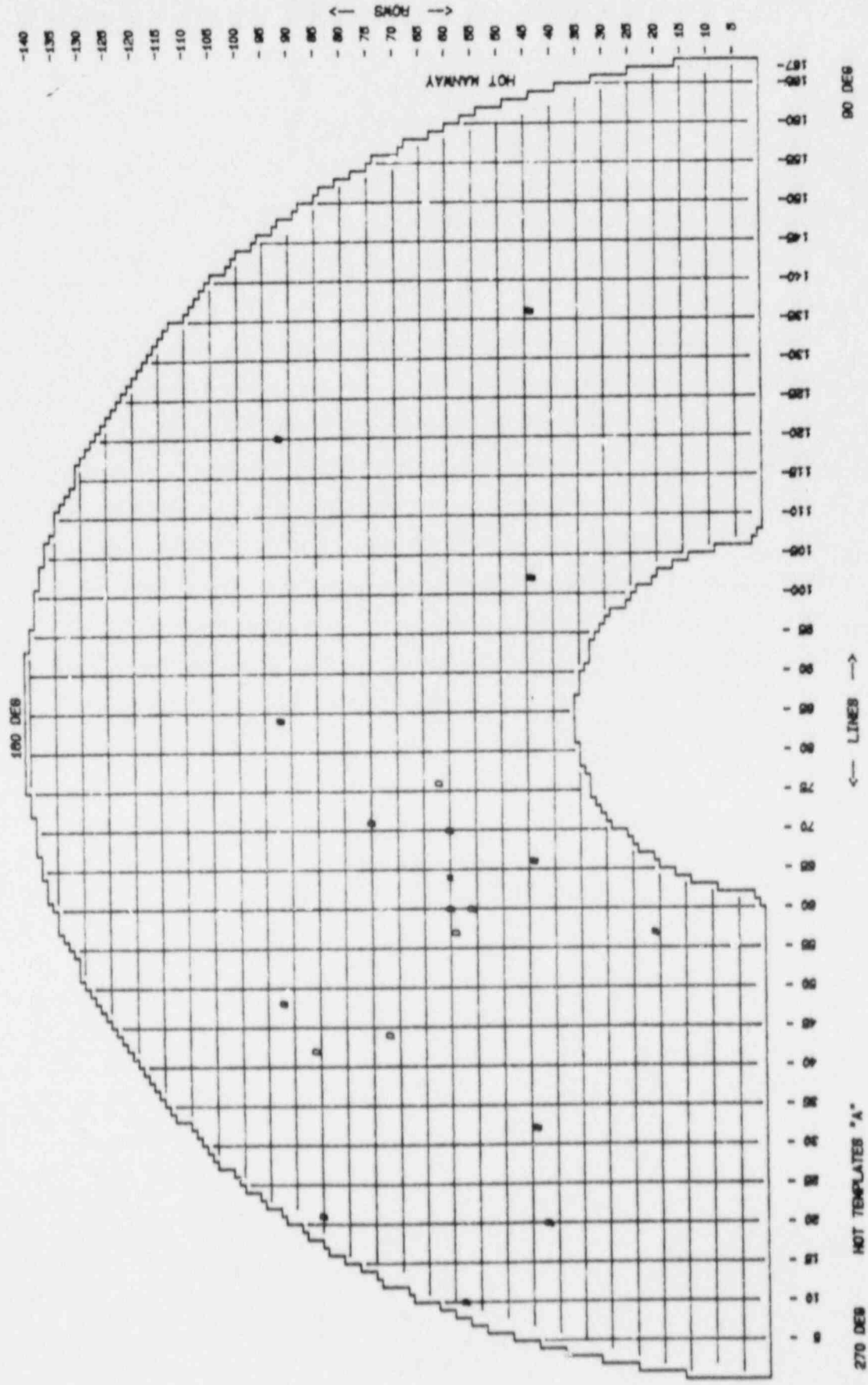
GENERATOR: 11

8519

TOTAL TUBES:
 STAYS (#): 7

- MULTIPLE INDICATION (2)

TOTAL TUBES ASSIGNED: 13



Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: DISTORTD,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION
21-	57 04/88	CT 0.80"	DISTORTED IND
	04/88	HT 0.80"	DISTORTED IND
42-	20 04/88	HG 2.90"	DISTORTED IND
56-	60 04/88	HT 2.90"	DISTORTED IND
58-	10 04/88	CH 14.19"	DISTORTED IND
59-	57 04/88	HT 1.20"	DISTORTED IND
60-	60 04/88	HT 0.70"	DISTORTED IND
60-	64 04/88	HT 2.10"	DISTORTED IND
	04/88	HT 2.60"	DISTORTED IND
60-	70 04/88	HT 1.60"	DISTORTED IND
62-	76 04/88	HT 2.60"	DISTORTED IND
72-	44 04/88	HT 9.84"	DISTORTED IND
75-	71 04/88	VC	DISTORTED IND
85-	21 04/88	CG	DISTORTED IND
86-	42 04/88	H3 29.30"	DISTORTED IND

TOTAL TUBES: 13

STEAM GENERATOR 11

F. Lists with Plots of Tubes not Rolled

Tubes NOT ROLLED at HOT Tubesheet

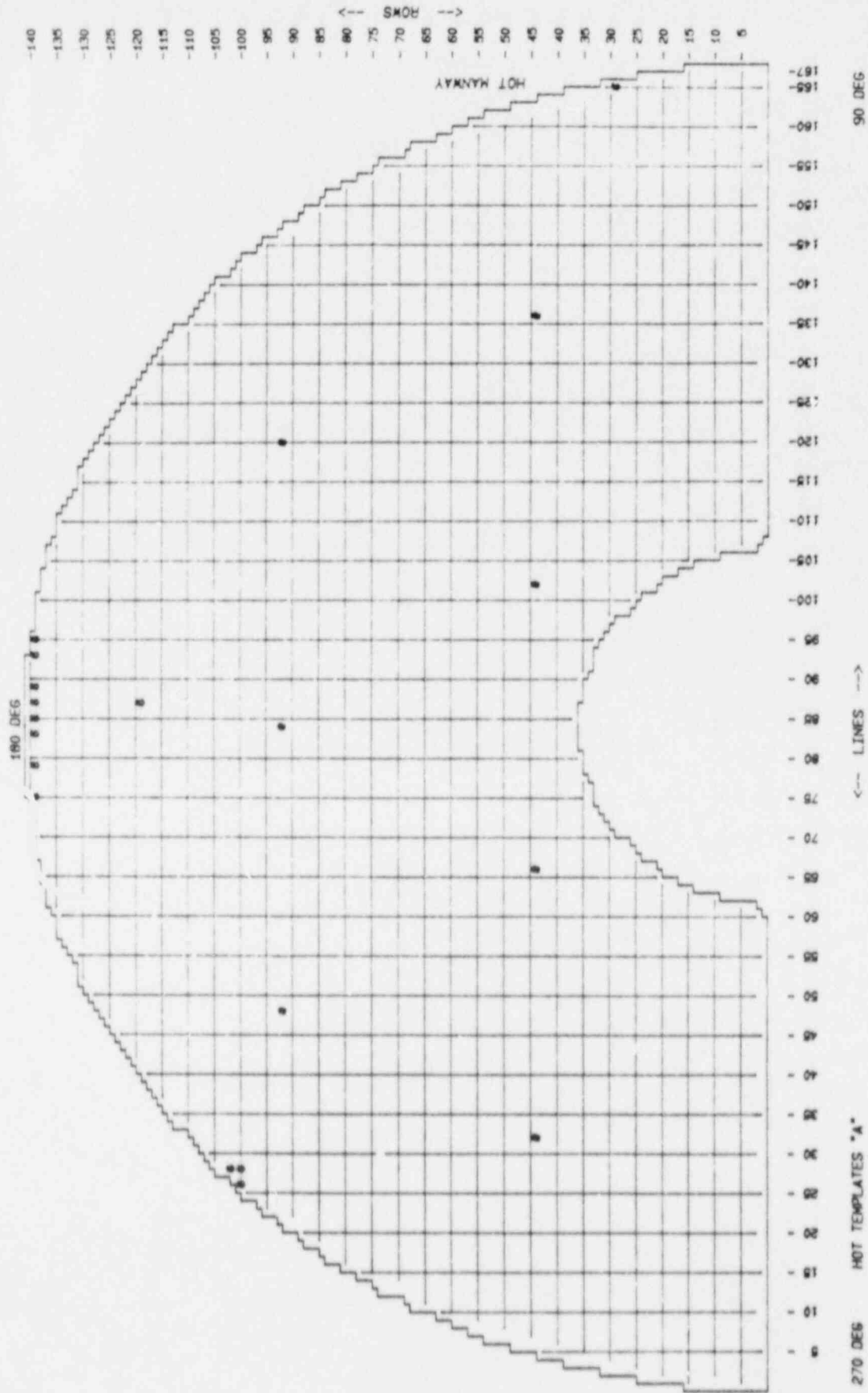
PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 11

TOTAL TUBES: 8519
 STAYS (#): 7

8 - Outage : 04/88 (13)

TOTAL TUBES ASSIGNED: 13



Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

Tubes NOT ROLLED at HOT Tubesheet

<u>ROW</u>	<u>LINE</u>
129	165
100	165
100	165
100	165
119	165
139	165
139	165
139	165
139	165
139	165
139	165
139	165
139	165
139	165
139	165
139	165
139	165
139	165

Outage : 04/88

Total = 13

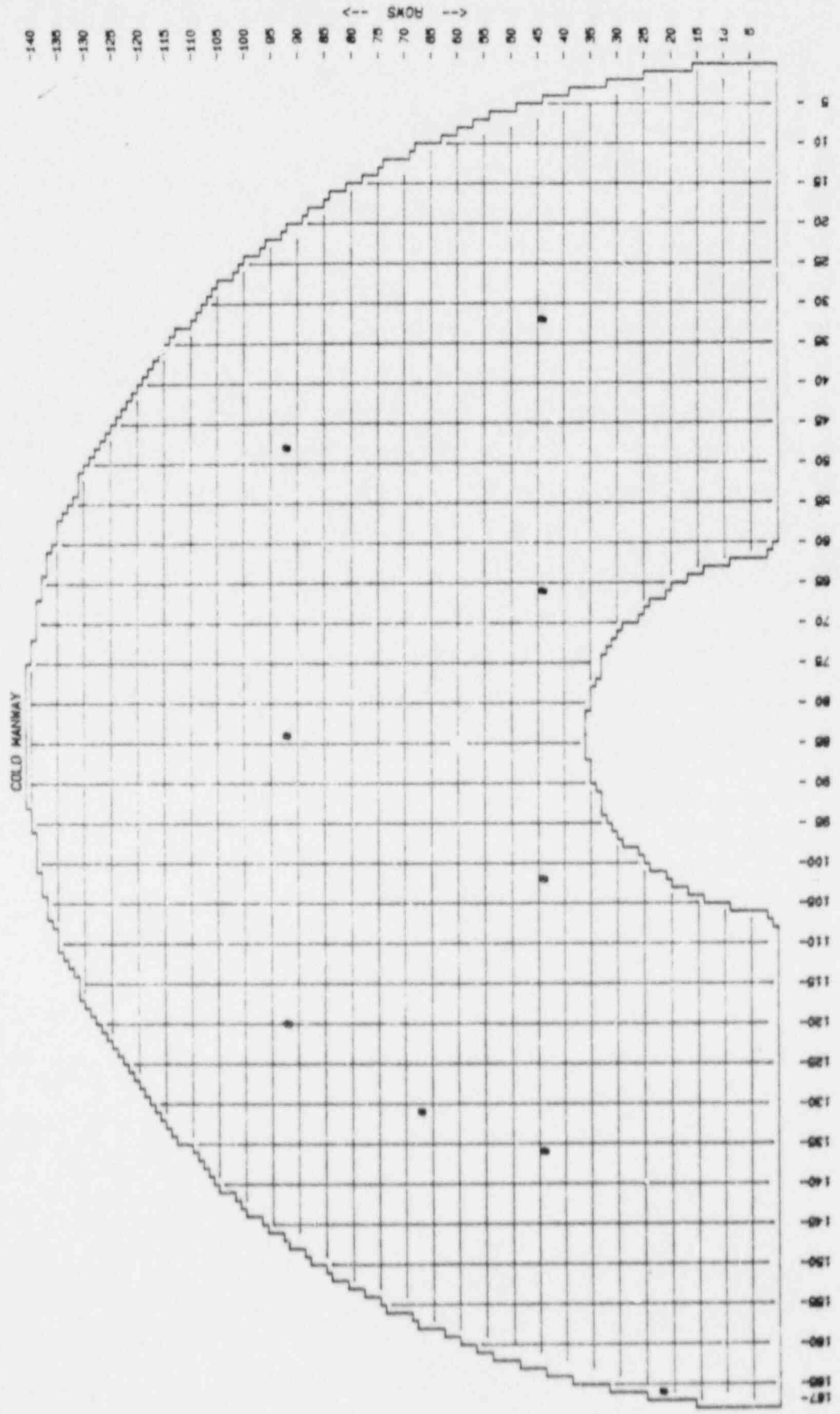
Tubes NOT ROLLED at COLD Tubesheet

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88
 5 - Outage : 04/88 (2)

GENERATOR: 11

TOTAL TUBES: 8519
 STAYS (#): 7

TOTAL TUBES ASSIGNED: 2



90 DEG ← COLD TEMPLATES "B" → 270 DEG

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

Tubes NOT ROLLED at COLD Tubesheet

<u>ROW</u>	<u>LINE</u>
22	166
67	131

Outage 1, 04/88 Total = 2

STEAM GENERATOR 11

G. Lists with Plots of Sludge Data

SLUDGE HEIGHT IN SG 11 HOT LEG, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 11

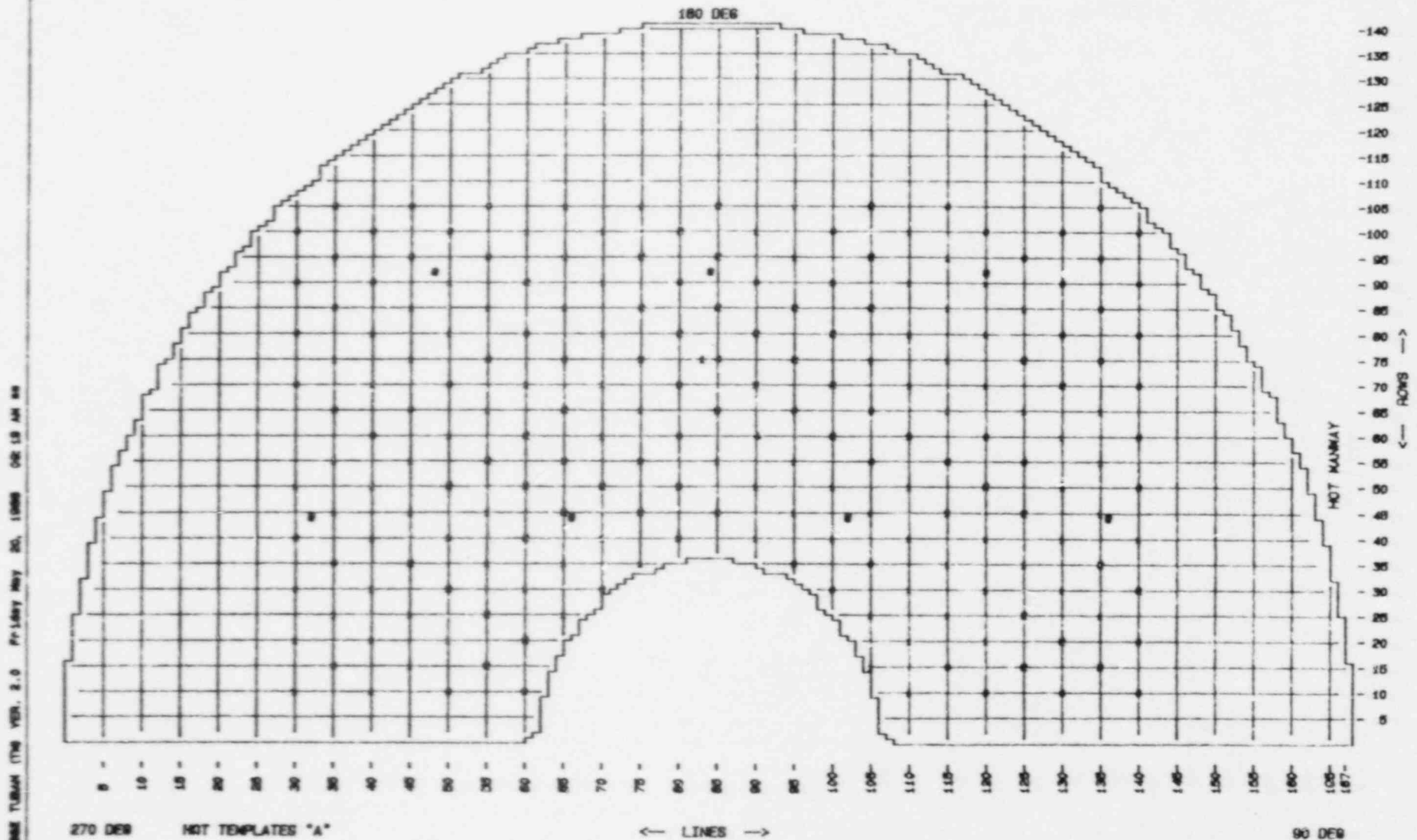
TOTAL TUBES: 8519
 STAYS (Ø): 7

0 = SLUDGE - <1 (80)
 3 = SLUDGE - 3 (13)
 # = MULTIPLE INDICATION (0)

1 = SLUDGE - 1 (94)
 4 = SLUDGE - 4 (2)

2 = SLUDGE - 2 (42)
 5 = SLUDGE - >4 (0)

TOTAL TUBES ASSIGNED: 211



NO. 88888 TUBES (THE VER. 2.0 Pr Libary May 80, 1988 08 18 AM 88)

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: SLUDGE, ALL INCHES, HTS-SF (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
110 -	30	04/08		
110 -	40	04/08		
110 -	50	04/08		
110 -	60	04/08		
110 -	110	04/08		
110 -	120	04/08		
110 -	130	04/08		
110 -	140	04/08		
115 -	35	04/08		
115 -	45	04/08		
115 -	55	04/08		
115 -	105	04/08		
115 -	115	04/08		
115 -	125	04/08		
115 -	135	04/08		
115 -	140	04/08		
120 -	40	04/08		
120 -	50	04/08		
120 -	60	04/08		
120 -	70	04/08		
120 -	80	04/08		
120 -	90	04/08		
120 -	100	04/08		
120 -	110	04/08		
120 -	120	04/08		
120 -	140	04/08		
125 -	45	04/08		
125 -	55	04/08		

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: SLUDGE, ALL INCHES, HTS-5F (ALL TUBES), ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	INCHES
70	-	140	04/88	SLUDGE	0
75	-	35	04/88	SLUDGE	0
75	-	45	04/88	SLUDGE	0
75	-	55	04/88	SLUDGE	0
75	-	65	04/88	SLUDGE	0
75	-	75	04/88	SLUDGE	0
75	-	83	04/88	SLUDGE	0
75	-	85	04/88	SLUDGE	0
75	-	95	04/88	SLUDGE	0
75	-	105	04/88	SLUDGE	0
75	-	115	04/88	SLUDGE	0
75	-	125	04/88	SLUDGE	0
75	-	135	04/88	SLUDGE	0
80	-	30	04/88	SLUDGE	0
80	-	40	04/88	SLUDGE	0
80	-	50	04/88	SLUDGE	0
80	-	60	04/88	SLUDGE	0
80	-	70	04/88	SLUDGE	0
80	-	80	04/88	SLUDGE	0
80	-	90	04/88	SLUDGE	0
80	-	100	04/88	SLUDGE	0
80	-	110	04/88	SLUDGE	0
80	-	120	04/88	SLUDGE	0
80	-	130	04/88	SLUDGE	0
80	-	140	04/88	SLUDGE	0
85	-	35	04/88	SLUDGE	0
85	-	45	04/88	SLUDGE	0
85	-	55	04/88	SLUDGE	0
85	-	65	04/88	SLUDGE	0
85	-	75	04/88	SLUDGE	0
85	-	85	04/88	SLUDGE	0
85	-	95	04/88	SLUDGE	0
85	-	105	04/88	SLUDGE	0
85	-	115	04/88	SLUDGE	0
85	-	125	04/88	SLUDGE	0
85	-	135	04/88	SLUDGE	0
85	-	145	04/88	SLUDGE	0
90	-	30	04/88	SLUDGE	0
90	-	40	04/88	SLUDGE	0
90	-	50	04/88	SLUDGE	0
90	-	60	04/88	SLUDGE	0
90	-	70	04/88	SLUDGE	0
90	-	80	04/88	SLUDGE	0
90	-	90	04/88	SLUDGE	0
90	-	100	04/88	SLUDGE	0
90	-	110	04/88	SLUDGE	0
90	-	120	04/88	SLUDGE	0
90	-	130	04/88	SLUDGE	0
90	-	140	04/88	SLUDGE	0
95	-	35	04/88	SLUDGE	0
95	-	45	04/88	SLUDGE	0
95	-	55	04/88	SLUDGE	0
95	-	65	04/88	SLUDGE	0
95	-	75	04/88	SLUDGE	0
95	-	85	04/88	SLUDGE	0
95	-	95	04/88	SLUDGE	0
95	-	105	04/88	SLUDGE	0
95	-	115	04/88	SLUDGE	0
95	-	125	04/88	SLUDGE	0
95	-	135	04/88	SLUDGE	0
95	-	145	04/88	SLUDGE	0
100	-	30	04/88	SLUDGE	0
100	-	40	04/88	SLUDGE	0
100	-	50	04/88	SLUDGE	0
100	-	60	04/88	SLUDGE	0
100	-	70	04/88	SLUDGE	0
100	-	80	04/88	SLUDGE	0

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: SLUDGE, ALL INCHES, HTS-SF (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
100 - 90	04/88	H H	SLUDGE	1
100 - 100	04/88	H H	SLUDGE	0
100 - 110	04/88	H H	SLUDGE	1
100 - 120	04/88	H H	SLUDGE	0
100 - 130	04/88	H H	SLUDGE	0
100 - 140	04/88	H H	SLUDGE	0
105 - 35	04/88	H H	SLUDGE	0
105 - 45	04/88	H H	SLUDGE	0
105 - 55	04/88	H H	SLUDGE	0
105 - 65	04/88	H H	SLUDGE	1
105 - 75	04/88	H H	SLUDGE	1
105 - 85	04/88	H H	SLUDGE	2
105 - 95	04/88	H H	SLUDGE	1
105 - 105	04/88	H H	SLUDGE	2
105 - 115	04/88	H H	SLUDGE	0
105 - 135	04/88	H H	SLUDGE	0

TOTAL TUBES: 211

SLUDGE HEIGHT IN SG 11 COLD LEG, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 11

TOTAL TUBES: 8519
 STAYS (#): 7

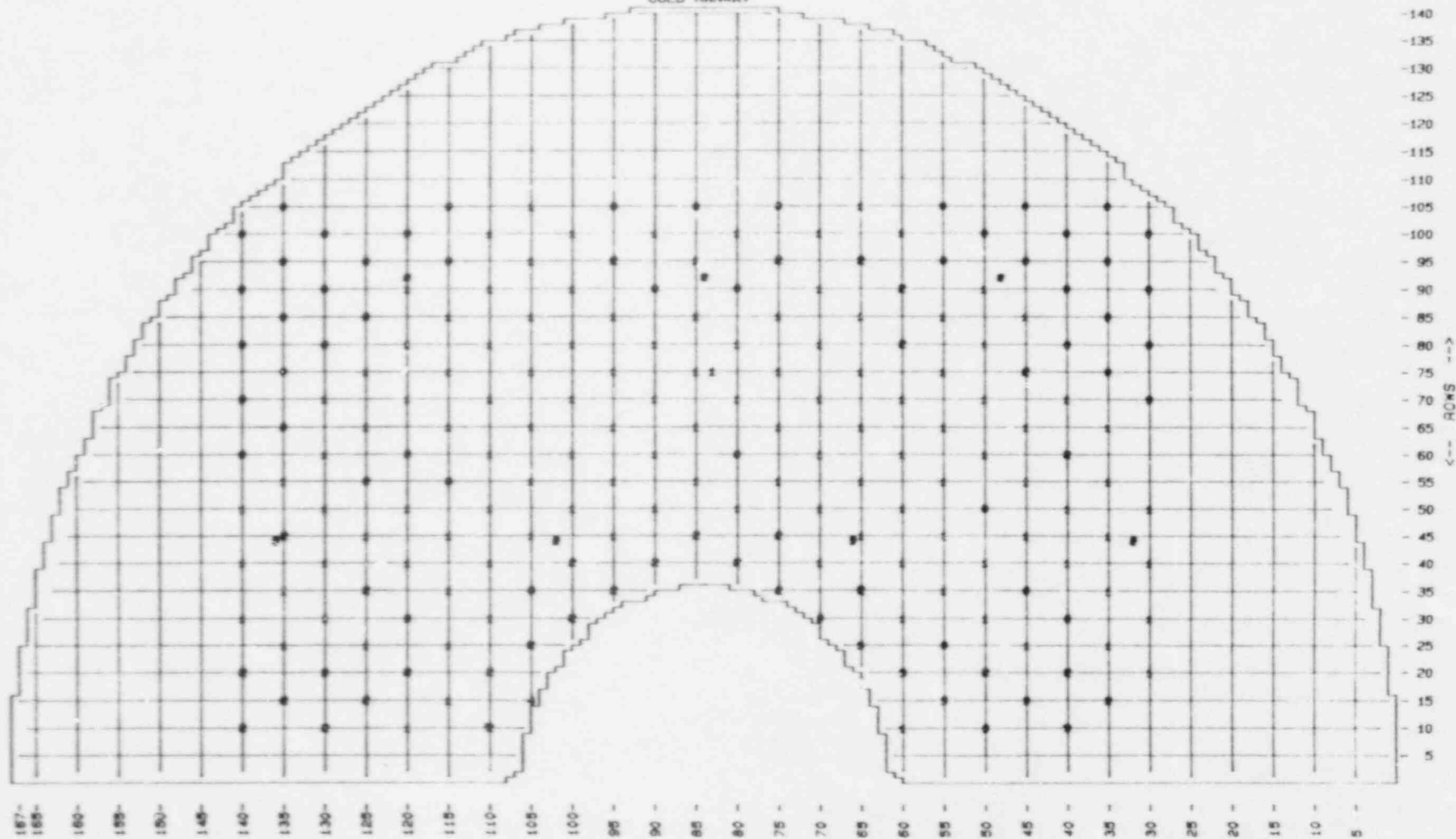
0 - SLUDGE - <1 (51)
 3 - SLUDGE - 3 (7)
 * - MULTIPLE INDICATION (0)

1 - SLUDGE - 1 (122)
 4 - SLUDGE - 4 (1)

2 - SLUDGE - 2 (29)
 5 - SLUDGE - >4 (0)

TOTAL TUBES ASSIGNED: 210

COLD MANWAY



** 8888 TUBAN (TM) VER. 2.0 FRISKY MAY 20, 1988 09:37 AM **

90 DEG

COLD TEMPLATES "B"

← LINES →

270 DEG

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: SLUDGE, ALL INCHES, CTS-SF (ALL TUBES), ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	INCHES
10	-	40	04/88	SLUDGE	
10	-	50	04/88	SLUDGE	
10	-	60	04/88	SLUDGE	
10	-	110	04/88	SLUDGE	
10	-	120	04/88	SLUDGE	
10	-	130	04/88	SLUDGE	
10	-	140	04/88	SLUDGE	
11	-	35	04/88	SLUDGE	
11	-	45	04/88	SLUDGE	
11	-	55	04/88	SLUDGE	
11	-	105	04/88	SLUDGE	
11	-	115	04/88	SLUDGE	
11	-	125	04/88	SLUDGE	
11	-	135	04/88	SLUDGE	
11	-	145	04/88	SLUDGE	
11	-	155	04/88	SLUDGE	
11	-	165	04/88	SLUDGE	
11	-	175	04/88	SLUDGE	
11	-	185	04/88	SLUDGE	
11	-	195	04/88	SLUDGE	
11	-	205	04/88	SLUDGE	
11	-	215	04/88	SLUDGE	
11	-	225	04/88	SLUDGE	
11	-	235	04/88	SLUDGE	
11	-	245	04/88	SLUDGE	
11	-	255	04/88	SLUDGE	
11	-	265	04/88	SLUDGE	
11	-	275	04/88	SLUDGE	
11	-	285	04/88	SLUDGE	
11	-	295	04/88	SLUDGE	
11	-	305	04/88	SLUDGE	
11	-	315	04/88	SLUDGE	
11	-	325	04/88	SLUDGE	
11	-	335	04/88	SLUDGE	
11	-	345	04/88	SLUDGE	
11	-	355	04/88	SLUDGE	
11	-	365	04/88	SLUDGE	
11	-	375	04/88	SLUDGE	
11	-	385	04/88	SLUDGE	
11	-	395	04/88	SLUDGE	
11	-	405	04/88	SLUDGE	
11	-	415	04/88	SLUDGE	
11	-	425	04/88	SLUDGE	
11	-	435	04/88	SLUDGE	
11	-	445	04/88	SLUDGE	
11	-	455	04/88	SLUDGE	
11	-	465	04/88	SLUDGE	
11	-	475	04/88	SLUDGE	
11	-	485	04/88	SLUDGE	
11	-	495	04/88	SLUDGE	
11	-	505	04/88	SLUDGE	
11	-	515	04/88	SLUDGE	
11	-	525	04/88	SLUDGE	
11	-	535	04/88	SLUDGE	
11	-	545	04/88	SLUDGE	
11	-	555	04/88	SLUDGE	
11	-	565	04/88	SLUDGE	
11	-	575	04/88	SLUDGE	
11	-	585	04/88	SLUDGE	
11	-	595	04/88	SLUDGE	
11	-	605	04/88	SLUDGE	
11	-	615	04/88	SLUDGE	
11	-	625	04/88	SLUDGE	
11	-	635	04/88	SLUDGE	
11	-	645	04/88	SLUDGE	
11	-	655	04/88	SLUDGE	
11	-	665	04/88	SLUDGE	
11	-	675	04/88	SLUDGE	
11	-	685	04/88	SLUDGE	
11	-	695	04/88	SLUDGE	
11	-	705	04/88	SLUDGE	
11	-	715	04/88	SLUDGE	
11	-	725	04/88	SLUDGE	
11	-	735	04/88	SLUDGE	
11	-	745	04/88	SLUDGE	
11	-	755	04/88	SLUDGE	
11	-	765	04/88	SLUDGE	
11	-	775	04/88	SLUDGE	
11	-	785	04/88	SLUDGE	
11	-	795	04/88	SLUDGE	
11	-	805	04/88	SLUDGE	
11	-	815	04/88	SLUDGE	
11	-	825	04/88	SLUDGE	
11	-	835	04/88	SLUDGE	
11	-	845	04/88	SLUDGE	
11	-	855	04/88	SLUDGE	
11	-	865	04/88	SLUDGE	
11	-	875	04/88	SLUDGE	
11	-	885	04/88	SLUDGE	
11	-	895	04/88	SLUDGE	
11	-	905	04/88	SLUDGE	
11	-	915	04/88	SLUDGE	
11	-	925	04/88	SLUDGE	
11	-	935	04/88	SLUDGE	
11	-	945	04/88	SLUDGE	
11	-	955	04/88	SLUDGE	
11	-	965	04/88	SLUDGE	
11	-	975	04/88	SLUDGE	
11	-	985	04/88	SLUDGE	
11	-	995	04/88	SLUDGE	
11	-	1005	04/88	SLUDGE	

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: SLUDGE, ALL INCHES, CTS-SF (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
75 -	35	04/88	SLUDGE	0
75 -	45	04/88	SLUDGE	0
75 -	55	04/88	SLUDGE	0
75 -	65	04/88	SLUDGE	0
75 -	75	04/88	SLUDGE	0
75 -	83	04/88	SLUDGE	0
75 -	85	04/88	SLUDGE	0
75 -	95	04/88	SLUDGE	0
75 -	105	04/88	SLUDGE	0
75 -	115	04/88	SLUDGE	0
75 -	125	04/88	SLUDGE	0
75 -	135	04/88	SLUDGE	0
800 -	140	04/88	SLUDGE	0
800 -	150	04/88	SLUDGE	0
800 -	160	04/88	SLUDGE	0
800 -	170	04/88	SLUDGE	0
800 -	180	04/88	SLUDGE	0
800 -	190	04/88	SLUDGE	0
800 -	200	04/88	SLUDGE	0
800 -	210	04/88	SLUDGE	0
800 -	220	04/88	SLUDGE	0
800 -	230	04/88	SLUDGE	0
800 -	240	04/88	SLUDGE	0
800 -	250	04/88	SLUDGE	0
800 -	260	04/88	SLUDGE	0
800 -	270	04/88	SLUDGE	0
800 -	280	04/88	SLUDGE	0
800 -	290	04/88	SLUDGE	0
800 -	300	04/88	SLUDGE	0
800 -	310	04/88	SLUDGE	0
800 -	320	04/88	SLUDGE	0
800 -	330	04/88	SLUDGE	0
800 -	340	04/88	SLUDGE	0
800 -	350	04/88	SLUDGE	0
800 -	365	04/88	SLUDGE	0
800 -	375	04/88	SLUDGE	0
800 -	385	04/88	SLUDGE	0
800 -	395	04/88	SLUDGE	0
800 -	405	04/88	SLUDGE	0
800 -	415	04/88	SLUDGE	0
800 -	425	04/88	SLUDGE	0
800 -	435	04/88	SLUDGE	0
1000 -	30	04/88	SLUDGE	0
1000 -	40	04/88	SLUDGE	0
1000 -	50	04/88	SLUDGE	0
1000 -	60	04/88	SLUDGE	0
1000 -	70	04/88	SLUDGE	0
1000 -	80	04/88	SLUDGE	0
1000 -	90	04/88	SLUDGE	0

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: SLUDGE, ALL INCHES, CTS-SF (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
100 - 100	04/88	CT 100 - SF	SLUDGE	1
100 - 110	04/88	CT 110 - SF	SLUDGE	1
100 - 120	04/88	CT 120 - SF	SLUDGE	0
100 - 130	04/88	CT 130 - SF	SLUDGE	0
100 - 140	04/88	CT 140 - SF	SLUDGE	0
105 - 35	04/88	CT 35 - SF	SLUDGE	0
105 - 45	04/88	CT 45 - SF	SLUDGE	0
105 - 55	04/88	CT 55 - SF	SLUDGE	0
105 - 65	04/88	CT 65 - SF	SLUDGE	1
105 - 75	04/88	CT 75 - SF	SLUDGE	0
105 - 85	04/88	CT 85 - SF	SLUDGE	0
105 - 95	04/88	CT 95 - SF	SLUDGE	0
105 - 105	04/88	CT 105 - SF	SLUDGE	1
105 - 115	04/88	CT 115 - SF	SLUDGE	0
105 - 135	04/88	CT 135 - SF	SLUDGE	0

TOTAL TUBES: 210

STEAM GENERATOR 11

H. List of Tubes Dented

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
148	04/0000	VM		2.3
149	04/0000	VM		2.3
150	04/0000	VM		2.3
151	04/0000	VM		2.3
152	04/0000	VM		2.3
153	04/0000	VM		2.3
154	04/0000	VM		2.3
155	04/0000	VM		2.3
156	04/0000	VM		2.3
157	04/0000	VM		2.3
158	04/0000	VM		2.3
159	04/0000	VM		2.3
160	04/0000	VM		2.3
161	04/0000	VM		2.3
162	04/0000	VM		2.3
163	04/0000	VM		2.3
164	04/0000	VM		2.3
165	04/0000	VM		2.3
166	04/0000	VM		2.3
167	04/0000	VM		2.3
168	04/0000	VM		2.3
169	04/0000	VM		2.3
170	04/0000	VM		2.3
171	04/0000	VM		2.3
172	04/0000	VM		2.3
173	04/0000	VM		2.3
174	04/0000	VM		2.3
175	04/0000	VM		2.3
176	04/0000	VM		2.3
177	04/0000	VM		2.3
178	04/0000	VM		2.3
179	04/0000	VM		2.3
180	04/0000	VM		2.3
181	04/0000	VM		2.3
182	04/0000	VM		2.3
183	04/0000	VM		2.3
184	04/0000	VM		2.3
185	04/0000	VM		2.3
186	04/0000	VM		2.3
187	04/0000	VM		2.3
188	04/0000	VM		2.3
189	04/0000	VM		2.3
190	04/0000	VM		2.3
191	04/0000	VM		2.3
192	04/0000	VM		2.3
193	04/0000	VM		2.3
194	04/0000	VM		2.3
195	04/0000	VM		2.3
196	04/0000	VM		2.3
197	04/0000	VM		2.3
198	04/0000	VM		2.3
199	04/0000	VM		2.3
200	04/0000	VM		2.3
201	04/0000	VM		2.3
202	04/0000	VM		2.3
203	04/0000	VM		2.3
204	04/0000	VM		2.3
205	04/0000	VM		2.3
206	04/0000	VM		2.3
207	04/0000	VM		2.3
208	04/0000	VM		2.3
209	04/0000	VM		2.3
210	04/0000	VM		2.3
211	04/0000	VM		2.3
212	04/0000	VM		2.3
213	04/0000	VM		2.3
214	04/0000	VM		2.3
215	04/0000	VM		2.3
216	04/0000	VM		2.3
217	04/0000	VM		2.3
218	04/0000	VM		2.3
219	04/0000	VM		2.3
220	04/0000	VM		2.3
221	04/0000	VM		2.3
222	04/0000	VM		2.3
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224	04/0000	VM		2.3
225	04/0000	VM		2.3
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227	04/0000	VM		2.3
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230	04/0000	VM		2.3
231	04/0000	VM		2.3
232	04/0000	VM		2.3
233	04/0000	VM		2.3
234	04/0000	VM		2.3
235	04/0000	VM		2.3
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239	04/0000	VM		2.3
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241	04/0000	VM		2.3
242	04/0000	VM		2.3
243	04/0000	VM		2.3
244	04/0000	VM		2.3
245	04/0000	VM		2.3
246	04/0000	VM		2.3
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251	04/0000	VM		2.3
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253	04/0000	VM		2.3
254	04/0000	VM		2.3
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256	04/0000	VM		2.3
257	04/0000	VM		2.3
258	04/0000	VM		2.3
259	04/0000	VM		2.3
260	04/0000	VM		2.3
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264	04/0000	VM		2.3
265	04/0000	VM		2.3
266	04/0000	VM		2.3
267	04/0000	VM		2.3
268	04/0000	VM		2.3
269	04/0000	VM		2.3
270	04/0000	VM		2.3
271	04/0000	VM		2.3
272	04/0000	VM		2.3
273	04/0000	VM		2.3
274	04/0000	VM		2.3
275	04/0000	VM		2.3
276	04/0000	VM		2.3
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279	04/0000	VM		2.3
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281	04/0000	VM		2.3
282	04/0000	VM		2.3
283	04/0000	VM		2.3
284	04/0000	VM		2.3
285	04/0000	VM		2.3
286	04/0000	VM		2.3
287	04/0000	VM		2.3
288	04/0000	VM		2.3
289	04/0000	VM		2.3
290	04/0000	VM		2.3
291	04/0000	VM		2.3
292	04/0000	VM		2.3
293	04/0000	VM		2.3
294	04/0000	VM		2.3
295	04/0000	VM		2.3
296	04/0000	VM		2.3
297	04/0000	VM		2.3
298	04/0000	VM		2.3
299	04/0000	VM		2.3
300	04/0000	VM		2.3

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	VULTS	
54	-	04/88	C5	+ 23.10"	DENT	11
55	-	04/88	VM		DENT	10
56	-	04/88	DH		DENT	15
57	-	04/88	CC2	+ 37.200"	DENT	4
58	-	04/88	H7	+ 25.700"	DENT	13
59	-	04/88	CC6	+ 25.300"	DENT	11
60	-	04/88	H7		DENT	15
61	-	04/88	DH	+ 23.600"	DENT	7
62	-	04/88	CC1	+ 23.000"	DENT	7
63	-	04/88	CC1	+ 27.000"	DENT	8
64	-	04/88	DH	+ 27.000"	DENT	8
65	-	04/88	H4	+ 12.000"	DENT	6
66	-	04/88	VM		DENT	6
67	-	04/88	C7		DENT	6
68	-	04/88	H7		DENT	6
69	-	04/88	VM		DENT	6
70	-	04/88	DH		DENT	6
71	-	04/88	VM		DENT	6
72	-	04/88	VM		DENT	6
73	-	04/88	VM		DENT	6
74	-	04/88	VM		DENT	6
75	-	04/88	VM		DENT	6
76	-	04/88	VM		DENT	6
77	-	04/88	VM		DENT	6
78	-	04/88	VM		DENT	6
79	-	04/88	VM		DENT	6
80	-	04/88	H8		DENT	6
81	-	04/88	DD		DENT	6
82	-	04/88	VM		DENT	6
83	-	04/88	H8		DENT	6
84	-	04/88	VM		DENT	6
85	-	04/88	VM		DENT	6
86	-	04/88	VM		DENT	6
87	-	04/88	VM		DENT	6
88	-	04/88	VM		DENT	6
89	-	04/88	VM		DENT	6
90	-	04/88	VM		DENT	6
91	-	04/88	VM		DENT	6
92	-	04/88	VM		DENT	6
93	-	04/88	VM		DENT	6
94	-	04/88	VM		DENT	6
95	-	04/88	VM		DENT	6
96	-	04/88	VM		DENT	6
97	-	04/88	VM		DENT	6
98	-	04/88	VM		DENT	6
99	-	04/88	VM		DENT	6
100	-	04/88	VM		DENT	6
101	-	04/88	VM		DENT	6
102	-	04/88	VM		DENT	6
103	-	04/88	VM		DENT	6
104	-	04/88	VM		DENT	6
105	-	04/88	VM		DENT	6
106	-	04/88	VM		DENT	6
107	-	04/88	VM		DENT	6
108	-	04/88	VM		DENT	6
109	-	04/88	VM		DENT	6
110	-	04/88	VM		DENT	6
111	-	04/88	VM		DENT	6
112	-	04/88	VM		DENT	6
113	-	04/88	VM		DENT	6
114	-	04/88	VM		DENT	6
115	-	04/88	VM		DENT	6
116	-	04/88	VM		DENT	6
117	-	04/88	VM		DENT	6
118	-	04/88	VM		DENT	6
119	-	04/88	VM		DENT	6
120	-	04/88	VM		DENT	6
121	-	04/88	VM		DENT	6
122	-	04/88	VM		DENT	6
123	-	04/88	VM		DENT	6
124	-	04/88	VM		DENT	6
125	-	04/88	VM		DENT	6
126	-	04/88	VM		DENT	6
127	-	04/88	VM		DENT	6
128	-	04/88	VM		DENT	6
129	-	04/88	VM		DENT	6
130	-	04/88	VM		DENT	6
131	-	04/88	VM		DENT	6
132	-	04/88	VM		DENT	6
133	-	04/88	VM		DENT	6
134	-	04/88	VM		DENT	6
135	-	04/88	VM		DENT	6
136	-	04/88	VM		DENT	6
137	-	04/88	VM		DENT	6
138	-	04/88	VM		DENT	6
139	-	04/88	VM		DENT	6
140	-	04/88	VM		DENT	6
141	-	04/88	VM		DENT	6
142	-	04/88	VM		DENT	6
143	-	04/88	VM		DENT	6
144	-	04/88	VM		DENT	6
145	-	04/88	VM		DENT	6
146	-	04/88	VM		DENT	6
147	-	04/88	VM		DENT	6
148	-	04/88	VM		DENT	6
149	-	04/88	VM		DENT	6
150	-	04/88	VM		DENT	6
151	-	04/88	VM		DENT	6
152	-	04/88	VM		DENT	6
153	-	04/88	VM		DENT	6
154	-	04/88	VM		DENT	6
155	-	04/88	VM		DENT	6
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157	-	04/88	VM		DENT	6
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160	-	04/88	VM		DENT	6
161	-	04/88	VM		DENT	6
162	-	04/88	VM		DENT	6
163	-	04/88	VM		DENT	6
164	-	04/88	VM		DENT	6
165	-	04/88	VM		DENT	6
166	-	04/88	VM		DENT	6
167	-	04/88	VM		DENT	6
168	-	04/88	VM		DENT	6
169	-	04/88	VM		DENT	6
170	-	04/88	VM		DENT	6
171	-	04/88	VM		DENT	6
172	-	04/88	VM		DENT	6
173	-	04/88	VM		DENT	6
174	-	04/88	VM		DENT	6
175	-	04/88	VM		DENT	6
176	-	04/88	VM		DENT	6
177	-	04/88	VM		DENT	6
178	-	04/88	VM		DENT	6
179	-	04/88	VM		DENT	6
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181	-	04/88	VM		DENT	6
182	-	04/88	VM		DENT	6
183	-	04/88	VM		DENT	6
184	-	04/88	VM		DENT	6
185	-	04/88	VM		DENT	6
186	-	04/88	VM		DENT	6
187	-	04/88	VM		DENT	6
188	-	04/88	VM		DENT	6
189	-	04/88	VM		DENT	6
190	-	04/88	VM		DENT	6
191	-	04/88	VM		DENT	6
192	-	04/88	VM		DENT	6
193	-	04/88	VM		DENT	6
194	-	04/88	VM		DENT	6
195	-	04/88	VM		DENT	6
196	-	04/88	VM		DENT	6
197	-	04/88	VM		DENT	6
198	-	04/88	VM		DENT	6
199	-	04/88	VM		DENT	6
200	-	04/88	VM		DENT	6

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
91 - 67	04/88	HH	+ 2.10"	DENT
91 - 69	04/88	HH		DENT
91 - 71	04/88	HH		DENT
91 - 73	04/88	HH		DENT
91 - 75	04/88	HH		DENT
91 - 77	04/88	HH		DENT
91 - 79	04/88	HH		DENT
91 - 81	04/88	HH		DENT
91 - 83	04/88	HH		DENT
91 - 85	04/88	HH	+ 4.80"	DENT
91 - 87	04/88	HH		DENT
91 - 89	04/88	HH	+ 1.70"	DENT
91 - 91	04/88	HH	+ 1.60"	DENT
91 - 93	04/88	HH		DENT
91 - 95	04/88	HH		DENT
91 - 97	04/88	HH		DENT
91 - 99	04/88	HH		DENT
91 - 101	04/88	HH		DENT
91 - 103	04/88	HH		DENT
91 - 105	04/88	HH		DENT
91 - 107	04/88	HH		DENT
91 - 109	04/88	HH		DENT
91 - 111	04/88	HH		DENT
91 - 113	04/88	HH		DENT
91 - 115	04/88	HH		DENT
91 - 117	04/88	HH		DENT
91 - 119	04/88	HH		DENT
91 - 121	04/88	HH	+ 2.00"	DENT
91 - 123	04/88	HH		DENT
91 - 125	04/88	HH	+ 1.30"	DENT
91 - 127	04/88	HH	+ 1.00"	DENT
91 - 129	04/88	HH	+ 2.10"	DENT
91 - 131	04/88	HH		DENT
91 - 133	04/88	HH	+ 2.30"	DENT
91 - 135	04/88	HH		DENT
91 - 137	04/88	HH		DENT
91 - 139	04/88	HH		DENT
91 - 141	04/88	HH		DENT
91 - 143	04/88	HH		DENT
91 - 145	04/88	HH		DENT
91 - 147	04/88	HH		DENT
91 - 149	04/88	HH		DENT
91 - 151	04/88	HH		DENT
91 - 153	04/88	HH		DENT
91 - 155	04/88	HH		DENT
91 - 157	04/88	HH		DENT
91 - 159	04/88	HH		DENT
91 - 161	04/88	HH		DENT
91 - 163	04/88	HH		DENT
91 - 165	04/88	HH		DENT
91 - 167	04/88	HH		DENT
91 - 169	04/88	HH		DENT
91 - 171	04/88	HH		DENT
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91 - 177	04/88	HH		DENT
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91 - 181	04/88	HH		DENT
91 - 183	04/88	HH		DENT
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91 - 321	04/88	HH		DENT
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91 - 327	04/88	HH		DENT
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91 - 331	04/88	HH		DENT
91 - 333	04/88	HH		DENT
91 - 335	04/88	HH		DENT
91 - 337	04/88	HH		DENT
91 - 339	04/88	HH		DENT
91 - 341	04/88	HH		DENT
91 - 343	04/88	HH		DENT
91 - 345	04/88	HH		DENT
91 - 347	04/88	HH		DENT
91 - 349	04/88	HH		DENT
91 - 351	04/88	HH		DENT
91 - 353	04/88	HH		DENT
91 - 355	04/88	HH		DENT
91 - 357	04/88	HH		DENT
91 - 359	04/88	HH		DENT
91 - 361	04/88	HH		DENT
91 - 363	04/88	HH		DENT
91 - 365	04/88	HH		DENT
91 - 367	04/88	HH		DENT
91 - 369	04/88	HH		DENT
91 - 371	04/88	HH		DENT
91 - 373	04/88	HH		DENT
91 - 375	04/88	HH		DENT
91 - 377	04/88	HH		DENT
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91 - 387	04/88	HH		DENT
91 - 389	04/88	HH		DENT
91 - 391	04/88	HH		DENT
91 - 393	04/88	HH		DENT
91 - 395	04/88	HH		DENT
91 - 397	04/88	HH		DENT
91 - 399	04/88	HH		DENT
91 - 401	04/88	HH		DENT
91 - 403	04/88	HH		DENT
91 - 405	04/88	HH		DENT
91 - 407	04/88	HH		DENT
91 - 409	04/88	HH		DENT
91 - 411	04/88	HH		DENT
91 - 413	04/88	HH		DENT
91 - 415	04/88	HH		DENT
91 - 417	04/88	HH		DENT
91 - 419	04/88	HH		DENT
91 - 421	04/88	HH		DENT
91 - 423	04/88	HH		DENT
91 - 425	04/88	HH		DENT
91 - 427	04/88	HH		DENT
91 - 429	04/88	HH		DENT
91 - 431	04/88	HH		DENT
91 - 433	04/88	HH		DENT
91 - 435	04/88	HH		DENT
91 - 437	04/88	HH		DENT
91 - 439	04/88	HH		DENT
91 - 441	04/88	HH		DENT
91 - 443	04/88	HH		DENT
91 - 445	04/88	HH		DENT
91 - 447	04/88	HH		DENT
91 - 449	04/88	HH		DENT
91 - 451	04/88	HH		DENT
91 - 453	04/88	HH		DENT
91 - 455	04/88	HH		DENT
91 - 457	04/88	HH		DENT
91 - 459	04/88	HH		DENT
91 - 461	04/88	HH		DENT
91 - 463	04/88	HH		DENT
91 - 465	04/88	HH		DENT
91 - 467	04/88	HH		DENT
91 - 469	04/88	HH		DENT
91 - 471	04/88	HH		DENT
91 - 473	04/88	HH		DENT
91 - 475	04/88	HH		DENT
91 - 477	04/88	HH		DENT
91 - 479	04/88	HH		DENT
91 - 481	04/88	HH		DENT
91 - 483	04/88	HH		DENT
91 - 485	04/88	HH		DENT
91 - 487	04/88	HH		DENT
91 - 489	04/88	HH		DENT
91 - 491	04/88	HH		DENT
91 - 493	04/88	HH		DENT
91 - 495	04/88	HH		DENT
91 - 497	04/88	HH		DENT
91 - 499	04/88	HH		DENT
91 - 501	04/88	HH		DENT
91 - 503	04/88	HH		DENT
91 - 505	04/88	HH		DENT
91 - 507	04/88	HH		DENT
91 - 509	04/88	HH		DENT
91 - 511	04/88	HH		DENT
91 - 513	04/88	HH		DENT
91 - 515	04/88	HH		DENT
91 - 517	04/88	HH		DENT
91 - 519	04/88	HH		DENT
91 - 521	04/88	HH		DENT
91 - 523	04/88	HH		DENT
91 - 525	04/88	HH		DENT
91 - 527	04/88	HH		DENT
91 - 529	04/88	HH		DENT
91 - 531	04/88	HH		DENT
91 - 533	04/88	HH		DENT
91 - 535	04/88	HH		DENT
91 - 537	04/88	HH		DENT
91 - 539	04/88	HH		DENT
91 - 541	04/88	HH		DENT
91 - 543	04/88	HH		DENT
91 - 545	04/88	HH		DENT
91 - 547	04/88	HH		DENT
91 - 549	04/88	HH		DENT
91 - 551	04/88	HH		DENT
91 - 553	04/88	HH		DENT
91 - 555	04/88	HH		DENT
91 - 557	04/88	HH		DENT
91 - 559	04/88	HH		DENT
91 - 561	04/88	HH		DENT
91 - 563	04/88	HH		DENT
91 - 565	04/88	HH		DENT
91 - 567	04/88	HH		DENT
91 - 569	04/88	HH		DENT
91 - 571	04/88	HH		DENT
91 - 573	04/88	HH		DENT
91 - 575	04/88	HH		DENT
91 - 577	04/88	HH		DENT
91 - 579	04/88	HH		DENT
91 - 581	04/88	HH		DENT
91 - 583	04/88	HH		DENT
91 - 585	04/88	HH		DENT
91 - 587	04/88	HH		DENT
91 - 589	04/88	HH		DENT
91 - 591	04/88	HH		DENT
91 - 593	04/88	HH		DENT
91 - 595	04/88	HH		DENT
91 - 597	04/88	HH		DENT
91 - 599	04/88	HH		DENT
91 - 601	04/88	HH		DENT
91 - 603	04/88	HH		DENT
91 - 605	04/88	HH		DENT
91 - 607	04/88	HH		DENT
91 - 609	04/88	HH		DENT
91 - 611	04/88	HH		DENT
91 - 613	04/88	HH		DENT
91 - 615	04/88	HH		DENT
91 - 617	04/88	HH		DENT
91 - 619	04/88	HH		DENT
91 - 621	04/88	HH		DENT
91 - 623	04/88	HH		DENT
91 - 625				

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: DENTS,ALL MILS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS	
95 -	93	04/88	H9	DENT	51
95 -	95	04/88	H9	DENT	33
95 -	97	04/88	H9	DENT	77
95 -	99	04/88	H9	DENT	77
95 -	101	04/88	H9	DENT	60
95 -	103	04/88	H9	DENT	23
95 -	105	04/88	H9	DENT	55
95 -	107	04/88	H9	DENT	44
95 -	109	04/88	H9	DENT	55
95 -	111	04/88	H9	DENT	60
95 -	113	04/88	H9	DENT	66
95 -	115	04/88	H9	DENT	26
95 -	123	04/88	H9	DENT	11
95 -	127	04/88	H9	DENT	10
96 -	24	04/88	C3	DENT	8
96 -	42	04/88	H9	DENT	35
96 -	44	04/88	H9	DENT	34
96 -	46	04/88	H9	DENT	00
96 -	54	04/88	H9	DENT	75
96 -	58	04/88	H9	DENT	44
96 -	60	04/88	H9	DENT	47
96 -	62	04/88	H9	DENT	44
96 -	70	04/88	H9	DENT	44
96 -	72	04/88	H9	DENT	7
96 -	76	04/88	H9	DENT	7
96 -	88	04/88	H9	DENT	00
96 -	90	04/88	H9	DENT	44
96 -	94	04/88	H9	DENT	44
96 -	98	04/88	H9	DENT	7
96 -	100	04/88	H9	DENT	36
96 -	102	04/88	H9	DENT	36
96 -	104	04/88	H9	DENT	44
96 -	106	04/88	H9	DENT	44
96 -	108	04/88	H9	DENT	44
96 -	110	04/88	H9	DENT	7
96 -	112	04/88	H9	DENT	13
96 -	114	04/88	H9	DENT	11
96 -	116	04/88	H9	DENT	8
96 -	118	04/88	H9	DENT	5
96 -	120	04/88	H9	DENT	11
96 -	24	04/88	VH	DENT	14.80"
96 -	38	04/88	H9	DENT	70
97 -	33	04/88	H7	DENT	58
97 -	37	04/88	H7	DENT	8
97 -	41	04/88	H9	DENT	11
97 -	43	04/88	H9	DENT	7
97 -	45	04/88	H9	DENT	00
97 -	47	04/88	H9	DENT	00
97 -	55	04/88	H9	DENT	00
97 -	57	04/88	H9	DENT	00
97 -	59	04/88	H9	DENT	00
97 -	61	04/88	H9	DENT	00
97 -	65	04/88	H9	DENT	00
97 -	67	04/88	H9	DENT	00
97 -	69	04/88	H9	DENT	00

+ 12.00"
+ 12.00"

+ 14.80"

+ 3.90"

11

11

11

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
97-	71	04/88		DENT	1480
97-	73	04/88		DENT	1480
97-	77	04/88		DENT	1480
97-	79	04/88		DENT	1480
97-	81	04/88		DENT	1480
97-	83	04/88		DENT	1480
97-	85	04/88		DENT	1480
97-	87	04/88		DENT	1480
97-	89	04/88		DENT	1480
97-	91	04/88		DENT	1480
97-	93	04/88		DENT	1480
97-	95	04/88		DENT	1480
97-	97	04/88		DENT	1480
97-	99	04/88		DENT	1480
97-	001	04/88		DENT	1480
97-	003	04/88		DENT	1480
97-	005	04/88		DENT	1480
97-	007	04/88		DENT	1480
97-	000	04/88	+ 15.50"	DENT	1480
97-	100	04/88		DENT	1480
97-	101	04/88		DENT	1480
97-	102	04/88		DENT	1480
97-	103	04/88		DENT	1480
97-	104	04/88		DENT	1480
97-	105	04/88		DENT	1480
97-	106	04/88		DENT	1480
97-	107	04/88		DENT	1480
97-	108	04/88		DENT	1480
97-	109	04/88		DENT	1480
97-	110	04/88		DENT	1480
97-	111	04/88		DENT	1480
97-	112	04/88		DENT	1480
97-	113	04/88		DENT	1480
97-	114	04/88		DENT	1480
97-	115	04/88		DENT	1480
97-	116	04/88		DENT	1480
97-	117	04/88		DENT	1480
97-	118	04/88		DENT	1480
97-	119	04/88		DENT	1480
97-	120	04/88		DENT	1480
97-	121	04/88		DENT	1480
97-	122	04/88		DENT	1480
97-	123	04/88		DENT	1480
97-	124	04/88		DENT	1480
97-	125	04/88		DENT	1480
97-	126	04/88		DENT	1480
97-	127	04/88		DENT	1480
97-	128	04/88		DENT	1480
97-	129	04/88		DENT	1480
97-	130	04/88		DENT	1480
97-	131	04/88		DENT	1480
97-	132	04/88		DENT	1480
97-	133	04/88		DENT	1480
97-	134	04/88		DENT	1480
97-	135	04/88		DENT	1480
97-	136	04/88		DENT	1480
97-	137	04/88		DENT	1480
97-	138	04/88		DENT	1480
97-	139	04/88		DENT	1480
97-	140	04/88		DENT	1480
97-	141	04/88		DENT	1480
97-	142	04/88		DENT	1480
97-	143	04/88		DENT	1480
97-	144	04/88		DENT	1480
97-	145	04/88		DENT	1480
97-	146	04/88		DENT	1480
97-	147	04/88		DENT	1480
97-	148	04/88		DENT	1480
97-	149	04/88		DENT	1480
97-	150	04/88		DENT	1480
97-	151	04/88		DENT	1480
97-	152	04/88		DENT	1480
97-	153	04/88		DENT	1480
97-	154	04/88		DENT	1480
97-	155	04/88		DENT	1480
97-	156	04/88		DENT	1480
97-	157	04/88		DENT	1480
97-	158	04/88		DENT	1480
97-	159	04/88		DENT	1480
97-	160	04/88		DENT	1480

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 11

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
100 -	92	04/88	DENT	38
100 -	96	04/88	DENT	11
100 -	98	04/88	DENT	11
1000	1000	04/88	DENT	11
100	1002	04/88	DENT	68
1000	1008	04/88	DENT	99
1000	114	04/88	DENT	99
101	41	04/88	DENT	77
101	45	04/88	DENT	77
101	49	04/88	DENT	70
101	51	04/88	DENT	43
101	53	04/88	DENT	44
101	55	04/88	DENT	11
101	57	04/88	DENT	11
101	61	04/88	DENT	11
101	63	04/88	DENT	11
101	66	04/88	DENT	11
101	77	04/88	DENT	11
101	88	04/88	DENT	11
101	99	04/88	DENT	11
101	103	04/88	DENT	11
101	109	04/88	DENT	11
101	119	04/88	DENT	11
101	130	04/88	DENT	11
101	140	04/88	DENT	11
101	150	04/88	DENT	11
101	160	04/88	DENT	11
101	170	04/88	DENT	11
101	180	04/88	DENT	11
101	190	04/88	DENT	11
101	200	04/88	DENT	11
101	210	04/88	DENT	11
101	220	04/88	DENT	11
101	230	04/88	DENT	11
101	240	04/88	DENT	11
101	250	04/88	DENT	11
101	260	04/88	DENT	11
101	270	04/88	DENT	11
101	280	04/88	DENT	11
101	290	04/88	DENT	11
101	300	04/88	DENT	11
101	310	04/88	DENT	11
101	320	04/88	DENT	11
101	330	04/88	DENT	11
101	340	04/88	DENT	11
101	350	04/88	DENT	11
101	360	04/88	DENT	11
101	370	04/88	DENT	11
101	380	04/88	DENT	11
101	390	04/88	DENT	11
101	400	04/88	DENT	11
101	410	04/88	DENT	11
101	420	04/88	DENT	11
101	430	04/88	DENT	11
101	440	04/88	DENT	11
101	450	04/88	DENT	11
101	460	04/88	DENT	11
101	470	04/88	DENT	11
101	480	04/88	DENT	11
101	490	04/88	DENT	11
101	500	04/88	DENT	11
101	510	04/88	DENT	11
101	520	04/88	DENT	11
101	530	04/88	DENT	11
101	540	04/88	DENT	11
101	550	04/88	DENT	11
101	560	04/88	DENT	11
101	570	04/88	DENT	11
101	580	04/88	DENT	11
101	590	04/88	DENT	11
101	600	04/88	DENT	11
101	610	04/88	DENT	11
101	620	04/88	DENT	11
101	630	04/88	DENT	11
101	640	04/88	DENT	11
101	650	04/88	DENT	11
101	660	04/88	DENT	11
101	670	04/88	DENT	11
101	680	04/88	DENT	11
101	690	04/88	DENT	11
101	700	04/88	DENT	11
101	710	04/88	DENT	11
101	720	04/88	DENT	11
101	730	04/88	DENT	11
101	740	04/88	DENT	11
101	750	04/88	DENT	11
101	760	04/88	DENT	11
101	770	04/88	DENT	11
101	780	04/88	DENT	11
101	790	04/88	DENT	11
101	800	04/88	DENT	11
101	810	04/88	DENT	11
101	820	04/88	DENT	11
101	830	04/88	DENT	11
101	840	04/88	DENT	11
101	850	04/88	DENT	11
101	860	04/88	DENT	11
101	870	04/88	DENT	11
101	880	04/88	DENT	11
101	890	04/88	DENT	11
101	900	04/88	DENT	11
101	910	04/88	DENT	11
101	920	04/88	DENT	11
101	930	04/88	DENT	11
101	940	04/88	DENT	11
101	950	04/88	DENT	11
101	960	04/88	DENT	11
101	970	04/88	DENT	11
101	980	04/88	DENT	11
101	990	04/88	DENT	11
101	1000	04/88	DENT	11
101	1004	04/88	DENT	11
101	1008	04/88	DENT	11
101	1012	04/88	DENT	11
101	1016	04/88	DENT	11
101	1020	04/88	DENT	11
101	1024	04/88	DENT	11
101	1028	04/88	DENT	11
101	1032	04/88	DENT	11
101	1036	04/88	DENT	11
101	1040	04/88	DENT	11
101	1044	04/88	DENT	11
101	1048	04/88	DENT	11
101	1052	04/88	DENT	11
101	1056	04/88	DENT	11
101	1060	04/88	DENT	11
101	1064	04/88	DENT	11
101	1068	04/88	DENT	11
101	1072	04/88	DENT	11
101	1076	04/88	DENT	11
101	1080	04/88	DENT	11
101	1084	04/88	DENT	11
101	1088	04/88	DENT	11
101	1092	04/88	DENT	11
101	1096	04/88	DENT	11
101	1100	04/88	DENT	11
101	1104	04/88	DENT	11
101	1108	04/88	DENT	11
101	1112	04/88	DENT	11
101	1116	04/88	DENT	11
101	1120	04/88	DENT	11
101	1124	04/88	DENT	11
101	1128	04/88	DENT	11
101	1132	04/88	DENT	11
101	1136	04/88	DENT	11
101	1140	04/88	DENT	11
101	1144	04/88	DENT	11
101	1148	04/88	DENT	11
101	1152	04/88	DENT	11
101	1156	04/88	DENT	11
101	1160	04/88	DENT	11
101	1164	04/88	DENT	11
101	1168	04/88	DENT	11
101	1172	04/88	DENT	11
101	1176	04/88	DENT	11
101	1180	04/88	DENT	11
101	1184	04/88	DENT	11
101	1188	04/88	DENT	11
101	1192	04/88	DENT	11
101	1196	04/88	DENT	11
101	1200	04/88	DENT	11
101	1204	04/88	DENT	11
101	1208	04/88	DENT	11
101	1212	04/88	DENT	11
101	1216	04/88	DENT	11
101	1220	04/88	DENT	11
101	1224	04/88	DENT	11
101	1228	04/88	DENT	11
101	1232	04/88	DENT	11
101	1236	04/88	DENT	11
101	1240	04/88	DENT	11
101	1244	04/88	DENT	11
101	1248	04/88	DENT	11
101	1252	04/88	DENT	11
101	1256	04/88	DENT	11
101	1260	04/88	DENT	11
101	1264	04/88	DENT	11
101	1268	04/88	DENT	11
101	1272	04/88	DENT	11
101	1276	04/88	DENT	11
101	1280	04/88	DENT	11
101	1284	04/88	DENT	11
101	1288	04/88	DENT	11
101	1292	04/88	DENT	11
101	1296	04/88	DENT	11
101	1300	04/88	DENT	11
101	1304	04/88	DENT	11
101	1308	04/88	DENT	11
101	1312	04/88	DENT	11
101	1316	04/88	DENT	11
101	1320	04/88	DENT	11
101	1324	04/88	DENT	11
101	1328	04/88	DENT	11
101	1332	04/88	DENT	11
101	1336	04/88	DENT	11
101	1340	04/88	DENT	11
101	1344	04/88	DENT	11
101	1348	04/88	DENT	11
101	1352	04/88	DENT	11
101	1356	04/88	DENT	11
101	1360	04/88	DENT	11
101	1364	04/88	DENT	11
101	1368	04/88	DENT	11
101	1372	04/88	DENT	11
101	1376	04/88	DENT	11
101	1380	04/88	DENT	11
101	1384	04/88	DENT	11
101	1388	04/88	DENT	11
101	1392	04/88	DENT	11
101	1396	04/88	DENT	11
101	1400	04/88	DENT	11
101	1404	04/88	DENT	11
101	1408	04/88	DENT	11
101	1412	04/88	DENT	11
101	1416	04/88	DENT	11
101	1420	04/88	DENT	11
101	1424	04/88	DENT	11
101	1428	04/88	DENT	11
101	1432	04/88	DENT	11
101	1436	04/88	DENT	11
101	1440	04/88	DENT	11
101	1444	04/88	DENT	11
101	1448	04/88	DENT	11
101	1452	04/88	DENT	11
101	1456	04/88	DENT	11
101	1460	04/88	DENT	11
101	1464	04/88	DENT	11
101	1468	04/88	DENT	11
101	1472	04/88	DENT	11
101	1476	04/88	DENT	11
101	1480	04/88	DENT	11
101	1484	04/88	DENT	11
101	1488	04/88	DENT	11
101	1492	04/88	DENT	11
101	1496	04/88	DENT	11
101	1500	04/88	DENT	11
101	1504	04/88	DENT	11
101	1508	04/88	DENT	11
101	1512	04/88	DENT	11
101	1516	04/88	DENT	11
101	1520	04/88	DENT	11
101	1524	04/88	DENT	11
101	1528	04/88	DENT	11
101	1532	04/88	DENT	11
101	1536	04/88	DENT	11
101	1540	04/88	DENT	11
101	1544	04/88	DENT	11
101	1548	04/88	DENT	11
101	1552	04/88	DENT	11
101	1556	04/88	DENT	11
101	1560	04/88	DENT	11
101	1564	04/88	DENT	11
101	1568	04/88	DENT	11
101	1572	04/88	DENT	11
101	1576	04/88	DENT	11
101	1580	04/88	DENT	11
101	1584	04/88	DENT	11
101	1588	04/88	DENT	11
101	1592	04/88	DENT	11
101	1596	04/88	DENT	11
101	1600	04/88	DENT	11
101	1604	04/88	DENT	11
101	1608	04/88	DENT	11
101	1612	04/88	DENT	11
101	1616	04/88	DENT	11
101	1620	04/88	DENT	11
101	1624	04/88	DENT	11
101	1628	04/88	DENT	11
101	1632	04/88	DENT	11
101				

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 11'

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
121- 101	04/88	H10	DENT	27
	04/88	H2	DENT	7
121- 105	04/88	H10	DENT	15
121- 109	04/88	H10	DENT	11
121- 125	04/88	H6	DENT	14
121- 102	04/88	H10	DENT	11
121- 106	04/88	H10	DENT	9
121- 112	04/88	H10	DENT	17
121- 105	04/88	H10	DENT	6
121- 107	04/88	H10	DENT	14
121- 111	04/88	H7	DENT	14
	04/88	H10	DENT	20
121- 113	04/88	H10	DENT	20
121- 89	04/88	H9	DENT	5
121- 110	04/88	H9	DENT	5
	04/88	H10	DENT	5
121- 69	04/88	H8	DENT	4
121- 78	04/88	H8	DENT	4
121- 101	04/88	H10	DENT	4
121- 79	04/88	H10	DENT	4
121- 68	04/88	H10	DENT	3

TOTAL TUBES: 784

STEAM GENERATOR 11

- I. List with Plot of Tubes Plugged during
the April/June 1988 Outage

SG 11 PLOT OF TUBES PLUGGED, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 11

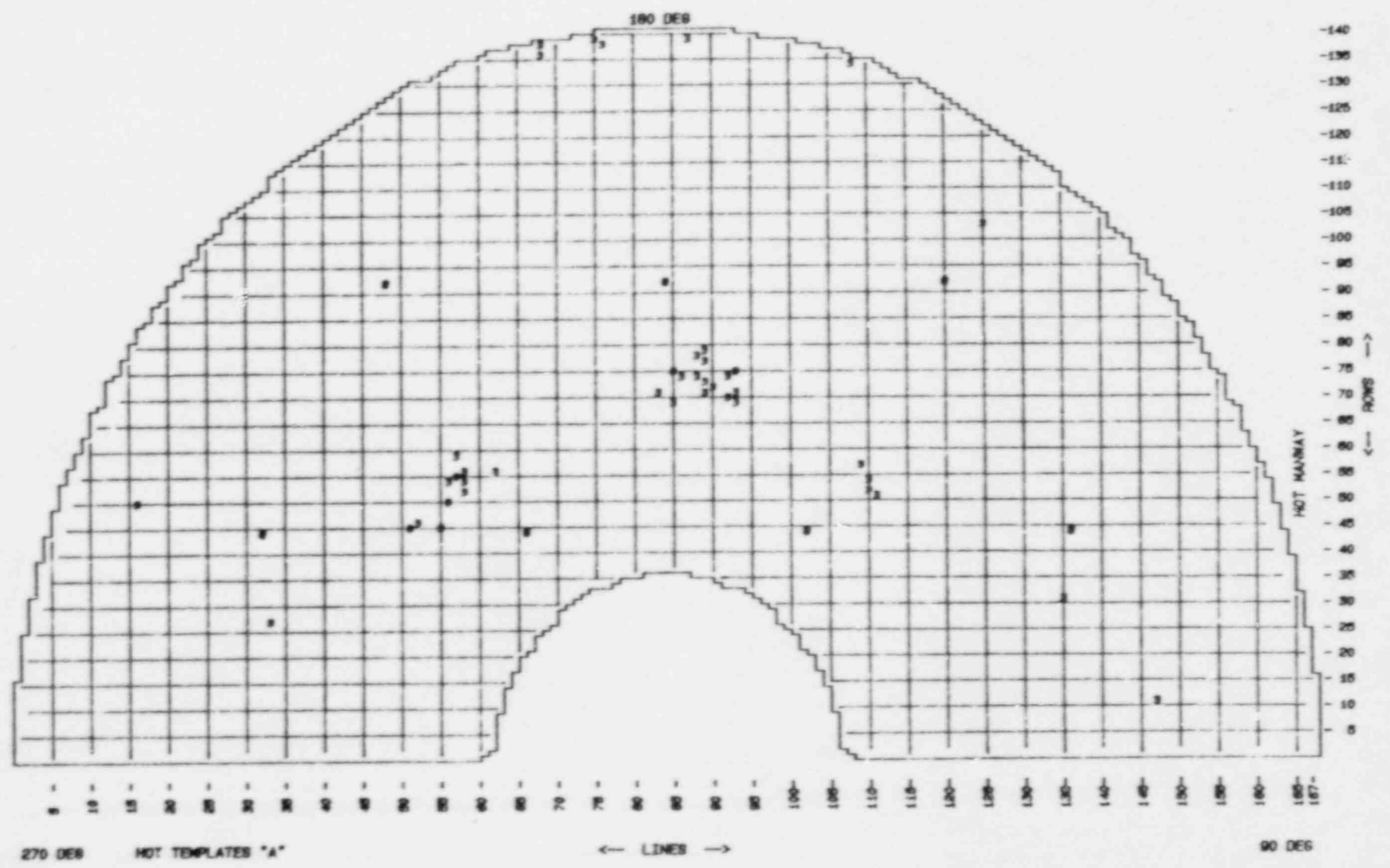
TOTAL TUBES: 8519
 STAYS (Ø): 7

3 - PLUGGED - MED-H (42)

- MULTIPLE INDICATION (0)

TOTAL TUBES ASSIGNED: 42

48 88888 TUBMAN (TNG VER), S.O. Friday May 20, 1988 08:03 AM 88



Steam Generator #11 Tubes Plugged During the April 1988
Outage:

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
11	147	Eddy Current Testing Indication of 57% wall loss originating on the outside diameter of the tube at DH+2.10 inches.
27	33	Eddy Current Testing Indication of 59% wall loss originating on the outside diameter of the tube at C2+33.80 inches.
45	51	Eddy Current Testing Indication of 48% wall loss originating on the outside diameter of the tube at HTS-SF+0.76 inches.
45	55	Eddy Current Testing Indication of 52% wall loss originating on the outside diameter of the tube at HTS-SF+1.03 inches.
50	16	Eddy Current Testing Indication of 47% wall loss originating on the outside diameter of the tube at H4+8.67 inches.
54	58	Eddy Current Testing Indication of 64% wall loss originating on the outside diameter of the tube at HTS-SF+0.64 inches.
55	57	Eddy Current Testing Indication of 48% wall loss originating on the outside diameter of the tube at HTS-SF+0.82 inches.
69	93	Eddy Current Testing Indication of 61% wall loss originating on the outside diameter of the tube at HTS-SF+1.10 inches.
70	92	Eddy Current Testing Indication of 48% wall loss originating on the outside diameter of the tube at HTS-SF+0.80 inches.
71	83	Eddy Current Testing Indication of 44% wall loss originating on the outside diameter of the tube at HTS-SF+0.70 inches.

Steam Generator #11 Tubes Plugged During the April 1988
Outage:

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
73	89	Eddy Current Testing Indication of 47% wall loss originating on the outside diameter of the tube at HTS-SF+0.50 inches.
74	86	Eddy Current Testing Indication of 49% wall loss originating on the outside diameter of the tube at HTS-SF+0.60 inches.
74	92	Eddy Current Testing Indication of 62% wall loss originating on the outside diameter of the tube at HTS-SF+0.60 inches.
75	85	Eddy Current Testing Indication of 46% wall loss originating on the outside diameter of the tube at HTS-SF+0.70 inches.
75	93	Eddy Current Testing Indication of 41% wall loss originating on the outside diameter of the tube at HTS-SF+2.80 inches.
77	89	Eddy Current Testing Indication of 43% wall loss originating on the outside diameter of the tube at HTS-SF+1.80 inches.
78	88	Eddy Current Testing Indication of 42% wall loss originating on the outside diameter of the tube at HTS-SF+1.40 inches.
103	125	Eddy Current Testing Indication of 54% wall loss originating on the outside diameter of the tube at VH+0.00 inches.
134	108	Eddy Current Testing Indication of 48% wall loss originating on the outside diameter of the tube at HTS-SF+12.60 inches.
136	68	Eddy Current Testing Indication of 56% wall loss originating on the outside diameter of the tube at CTS-SF+10.60 inches.

Steam Generator #11 Tubes Plugged During the April 1988
Outage:

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
138	76	Eddy Current Testing Indication of 48% wall loss originating on the outside diameter of the tube at CTS-SF+11.00 inches.
31	135	Eddy Current Testing Indication of a bulge above the tubesheet from CTS-SF+0.00 inches to CTS-SF+23.70 inches.
46	52	Eddy Current Testing Indication of 38% wall loss originating on the outside diameter of the tube at HTS-SF+2.20 inches.
50	56	Eddy Current Testing Indication of 23% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+0.64 inches.
51	111	Eddy Current Testing Indication of 39% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+0.80 inches.
52	58	Multiple Eddy Current Testing Indications of 22%, 12% and 16% wall loss originating on the outside diameter of the tube at HTS-SF+2.55, +1.79 and +1.09 inches, respectively.
52	110	Eddy Current Testing Indication of 23% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+0.70 inches.
54	56	Eddy Current Testing Indication of 37% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+0.64 inches.
54	110	Eddy Current Testing Indication of 34% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+0.80 inches.

Steam Generator #11 Tubes Plugged During the April 1988 Outage:

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
56	58	Eddy Current Testing Indication of 35% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+0.79 inches.
57	109	Eddy Current Testing Indication of 17% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+2.70 inches.
59	57	Eddy Current Testing Indication of 38% wall loss originating on the outside diameter of the tube at HTS-SF+1.20 inches.
56	62	Eddy Current Testing Indication of a bulge above the tubesheet from HTS-SF+0.00 inches to HTS-SF+2.00 inches.
69	85	Eddy Current Testing Indication of 38% wall loss originating on the outside diameter of the tube at HTS-SF+1.70 inches.
71	89	Multiple Eddy Current Testing Indications of 35% and 31% wall loss originating on the outside diameter of the tube at HTS-SF+0.90 and +0.60 inches, respectively.
71	93	Multiple Eddy Current Testing Indications of 31%, 28% and 23% wall loss originating on the outside diameter of the tube at HTS-SF+1.10, +1.80 and +0.60 inches, respectively.
72	90	Multiple Eddy Current Testing Indications of 38% and 34% wall loss originating on the outside diameter of the tube at HTS-SF+0.60 and +1.20 inches respectively.

Steam Generator #11 Tubes Plugged During the April 1988
Outage:

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
74	88	Eddy Current Testing Indication of 23% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+1.00 inches.
79	89	Eddy Current Testing Indication of 31% wall loss originating on the outside diameter of the tube at HTS-SF+1.70 inches.
138	68	Eddy Current Testing Indication of 36% wall loss originating on the outside diameter of the tube at CTS-SF+10.40 inches.
139	75	Eddy Current Testing Tube Sheet Crevice Squirrel (SQR) Indication showing wall loss originating on the outside diameter of the tube at HTS-SF-2.00 inches.
139	87	Eddy Current Testing Tube Sheet Crevice SQR Indication showing wall loss originating on the outside diameter of the tube at HTS-SF-1.00 inches.

APPENDIX II

EDDY CURRENT TEST RESULTS

STEAM GENERATOR 12

- A. List with Plot of All Indications
- B. List with Plot of <20% Indications
- C. List with Plot of 20%-39% Indications
- D. List with Plot of >39% Indications
- E. List with Plot of Distorted Indications
- F. Lists with Plots of Tubes not Rolled
- G. Lists with Plots of Sludge Data
- H. List of Tubes Dented
- I. List with Plot of Tubes Plugged
During the April/June 1988 Outage

STEAM GENERATOR 12

A. List with Plot of All Indications

SG 12 PLOT OF ALL INDICATIONS, ALL ELEVATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 12

TOTAL TUBES: 8519
 STAYS (#): 7

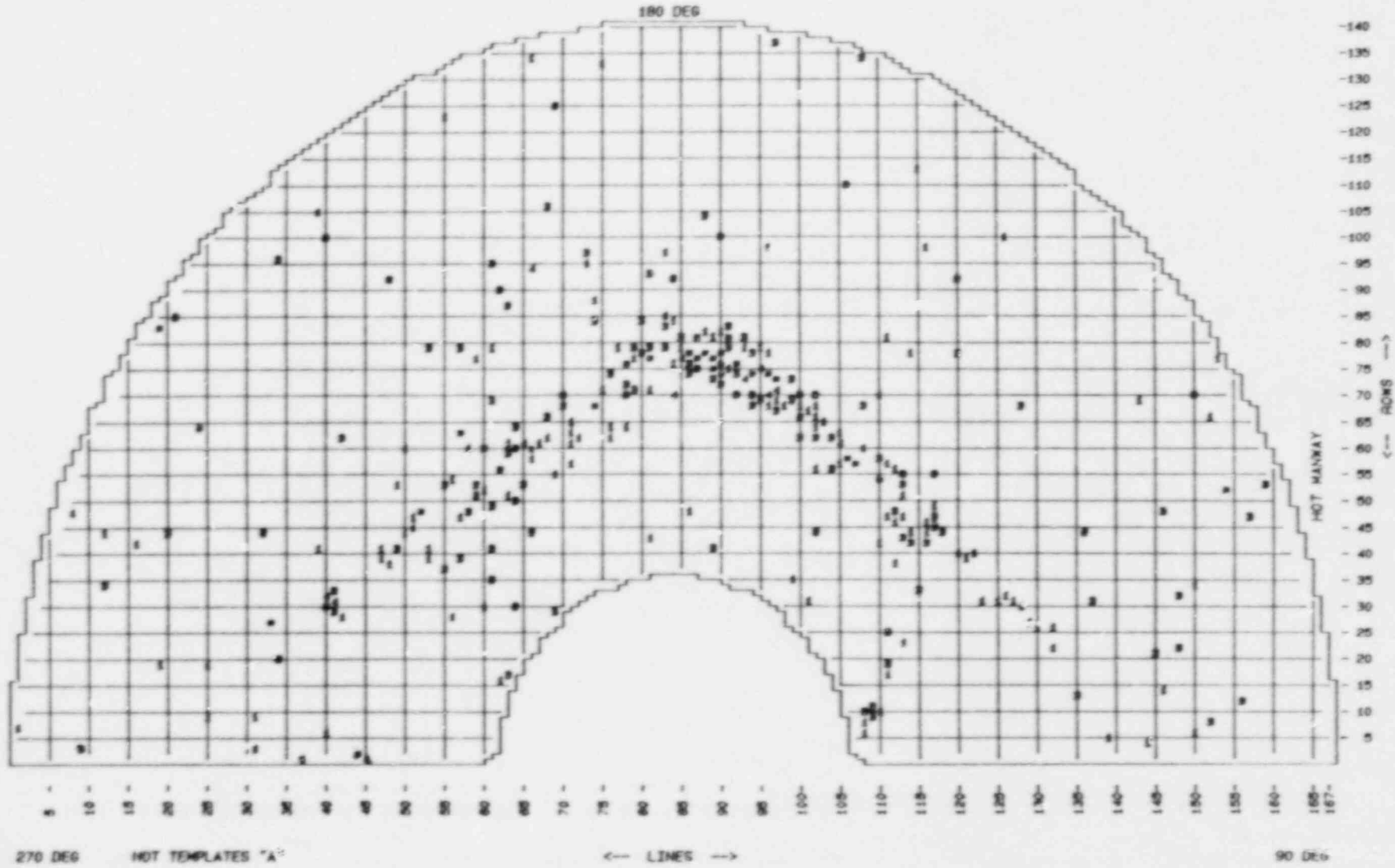
1 - 00 - SPECIAL (0)
 4 - 00 - >39 (12)

1 - 00 - <20 (130)
 * - MULTIPLE INDICATION (29)

3 - 00 - 20-39 (115)

TOTAL TUBES ASSIGNED: 286

*** BOMB TURBAN (7)N VER. 2.0 P1-1084 MAY 20, 1988 01:05 PM **



HOT TEMPLATES "A"

90 DEG

SG 12 PLOT OF INDICATIONS ABOVE HOT LEG TUBESHEET, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 12

TOTAL TUBES: 8519
 STAYS (#): 7

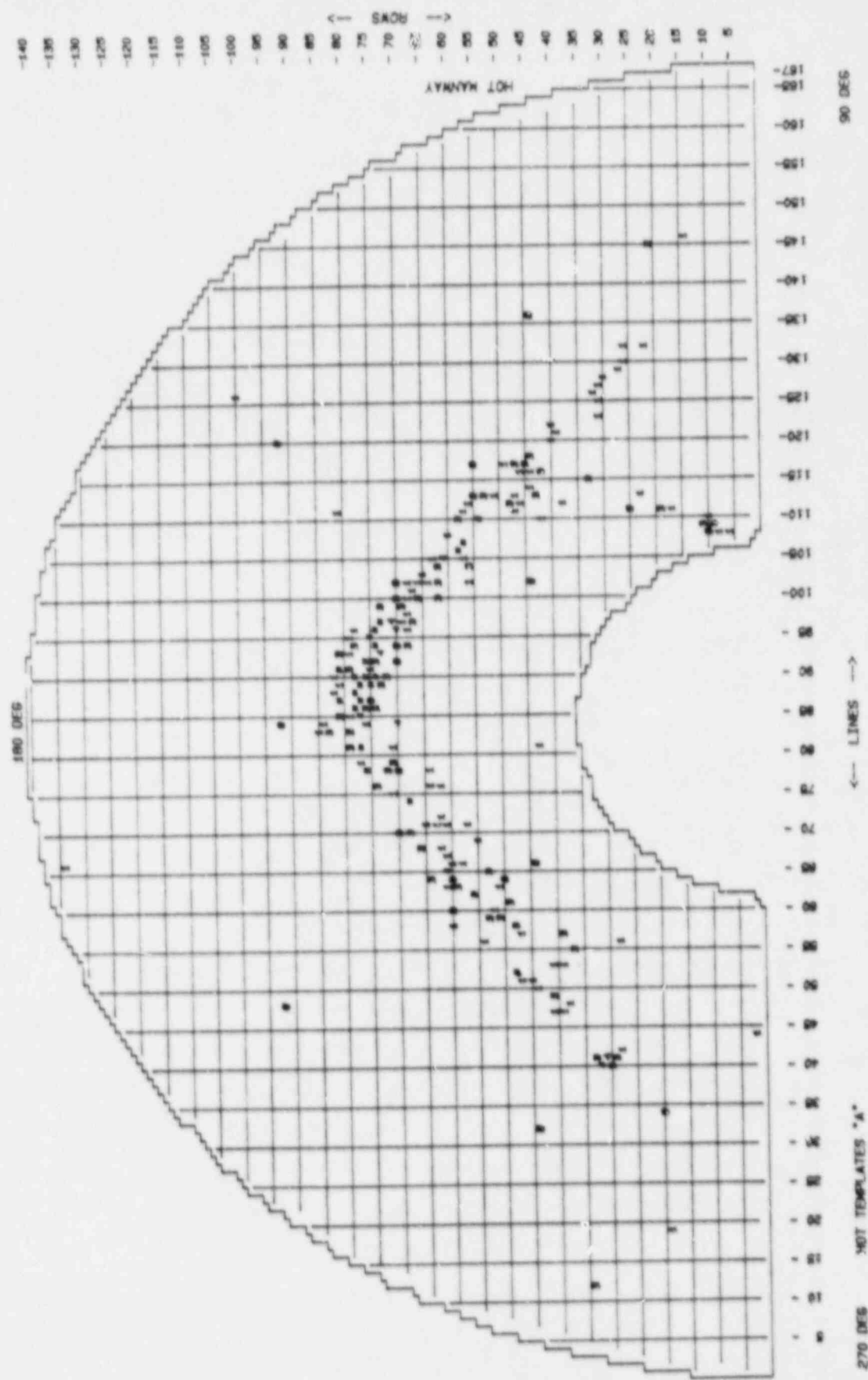
1 - 00 - <20 (802)
 2 - 00 - >20 (600)

TOTAL TUBES ASSIGNED: 192

1 - 00 - SPECIAL (0)
 4 - 00 - >20 (10)

1 - 00 - <20 (802)
 2 - 00 - >20 (600)

MULTIPLE INDICATION (22)



Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 12

QUERY: OD, ALL & TW, ALL VOLTS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
1	04/00000000	H H H H H	+	10.00	0.98
2	04/00000000	H H H H H	+	10.00	0.48
3	04/00000000	H H H H H	+	10.00	0.61
4	04/00000000	H H H H H	+	10.00	0.60
5	04/00000000	H H H H H	+	10.00	0.27
6	04/00000000	H H H H H	+	10.00	0.61
7	04/00000000	H H H H H	+	10.00	0.54
8	04/00000000	H H H H H	+	10.00	0.76
9	04/00000000	H H H H H	+	10.00	0.52
10	04/00000000	H H H H H	+	10.00	0.81
11	04/00000000	H H H H H	+	10.00	0.73
12	04/00000000	H H H H H	+	10.00	0.66
13	04/00000000	H H H H H	+	10.00	0.00
14	04/00000000	H H H H H	+	10.00	0.17
15	04/00000000	H H H H H	+	10.00	0.49
16	04/00000000	H H H H H	+	10.00	0.49
17	04/00000000	H H H H H	+	10.00	0.66
18	04/00000000	H H H H H	+	10.00	0.77
19	04/00000000	H H H H H	+	10.00	0.77
20	04/00000000	H H H H H	+	10.00	0.44
21	04/00000000	H H H H H	+	10.00	0.77
22	04/00000000	H H H H H	+	10.00	0.55
23	04/00000000	H H H H H	+	10.00	0.55
24	04/00000000	H H H H H	+	10.00	0.66
25	04/00000000	H H H H H	+	10.00	0.66
26	04/00000000	H H H H H	+	10.00	0.66
27	04/00000000	H H H H H	+	10.00	0.66
28	04/00000000	H H H H H	+	10.00	0.66
29	04/00000000	H H H H H	+	10.00	0.66
30	04/00000000	H H H H H	+	10.00	0.66
31	04/00000000	H H H H H	+	10.00	0.66
32	04/00000000	H H H H H	+	10.00	0.66
33	04/00000000	H H H H H	+	10.00	0.66
34	04/00000000	H H H H H	+	10.00	0.66
35	04/00000000	H H H H H	+	10.00	0.66
36	04/00000000	H H H H H	+	10.00	0.66
37	04/00000000	H H H H H	+	10.00	0.66
38	04/00000000	H H H H H	+	10.00	0.66
39	04/00000000	H H H H H	+	10.00	0.66
40	04/00000000	H H H H H	+	10.00	0.66
41	04/00000000	H H H H H	+	10.00	0.66
42	04/00000000	H H H H H	+	10.00	0.66
43	04/00000000	H H H H H	+	10.00	0.66
44	04/00000000	H H H H H	+	10.00	0.66
45	04/00000000	H H H H H	+	10.00	0.66
46	04/00000000	H H H H H	+	10.00	0.66
47	04/00000000	H H H H H	+	10.00	0.66
48	04/00000000	H H H H H	+	10.00	0.66
49	04/00000000	H H H H H	+	10.00	0.66
50	04/00000000	H H H H H	+	10.00	0.66
51	04/00000000	H H H H H	+	10.00	0.66
52	04/00000000	H H H H H	+	10.00	0.66
53	04/00000000	H H H H H	+	10.00	0.66
54	04/00000000	H H H H H	+	10.00	0.66
55	04/00000000	H H H H H	+	10.00	0.66
56	04/00000000	H H H H H	+	10.00	0.66
57	04/00000000	H H H H H	+	10.00	0.66
58	04/00000000	H H H H H	+	10.00	0.66
59	04/00000000	H H H H H	+	10.00	0.66
60	04/00000000	H H H H H	+	10.00	0.66
61	04/00000000	H H H H H	+	10.00	0.66
62	04/00000000	H H H H H	+	10.00	0.66
63	04/00000000	H H H H H	+	10.00	0.66
64	04/00000000	H H H H H	+	10.00	0.66
65	04/00000000	H H H H H	+	10.00	0.66
66	04/00000000	H H H H H	+	10.00	0.66
67	04/00000000	H H H H H	+	10.00	0.66
68	04/00000000	H H H H H	+	10.00	0.66
69	04/00000000	H H H H H	+	10.00	0.66
70	04/00000000	H H H H H	+	10.00	0.66
71	04/00000000	H H H H H	+	10.00	0.66
72	04/00000000	H H H H H	+	10.00	0.66
73	04/00000000	H H H H H	+	10.00	0.66
74	04/00000000	H H H H H	+	10.00	0.66
75	04/00000000	H H H H H	+	10.00	0.66
76	04/00000000	H H H H H	+	10.00	0.66
77	04/00000000	H H H H H	+	10.00	0.66
78	04/00000000	H H H H H	+	10.00	0.66
79	04/00000000	H H H H H	+	10.00	0.66
80	04/00000000	H H H H H	+	10.00	0.66
81	04/00000000	H H H H H	+	10.00	0.66
82	04/00000000	H H H H H	+	10.00	0.66
83	04/00000000	H H H H H	+	10.00	0.66
84	04/00000000	H H H H H	+	10.00	0.66
85	04/00000000	H H H H H	+	10.00	0.66
86	04/00000000	H H H H H	+	10.00	0.66
87	04/00000000	H H H H H	+	10.00	0.66
88	04/00000000	H H H H H	+	10.00	0.66
89	04/00000000	H H H H H	+	10.00	0.66
90	04/00000000	H H H H H	+	10.00	0.66
91	04/00000000	H H H H H	+	10.00	0.66
92	04/00000000	H H H H H	+	10.00	0.66
93	04/00000000	H H H H H	+	10.00	0.66
94	04/00000000	H H H H H	+	10.00	0.66
95	04/00000000	H H H H H	+	10.00	0.66
96	04/00000000	H H H H H	+	10.00	0.66
97	04/00000000	H H H H H	+	10.00	0.66
98	04/00000000	H H H H H	+	10.00	0.66
99	04/00000000	H H H H H	+	10.00	0.66
100	04/00000000	H H H H H	+	10.00	0.66

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 12

QUERY: OD,ALL & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
56-	102	04/88	HT	1.00"	32	1.00
56-	104	04/88	HT	0.60"	22	0.60
56-	112	04/88	HT	1.00"	22	1.00
57-	71	04/88	HT	1.40"	11	1.40
57-	105	04/88	HT	0.00"	11	0.00
57-	107	04/88	HT	0.20"	11	0.20
57-	111	04/88	HT	0.00"	11	0.00
58-	66	04/88	HT	1.30"	11	1.30
58-	106	04/88	HT	2.20"	11	2.20
58-	110	04/88	HT	2.20"	11	2.20
59-	63	04/88	HT	1.10"	22	1.10
60-	50	04/88	C2	1.10"	22	1.10
60-	58	04/88	HT	0.00"	22	0.00
60-	60	04/88	HT	0.00"	22	0.00
60-	64	04/88	HT	1.00"	22	1.00
60-	66	04/88	HT	1.00"	22	1.00
60-	108	04/88	HT	1.00"	22	1.00
61-	63	04/88	HT	1.00"	22	1.00
61-	65	04/88	HT	0.70"	22	0.70
61-	67	04/88	HT	1.10"	22	1.10
61-	71	04/88	HT	1.10"	22	1.10
61-	105	04/88	HT	1.10"	22	1.10
62-	42	04/88	C4	1.10"	49	1.10
62-	68	04/88	HT	1.10"	10	1.10
62-	72	04/88	HT	1.10"	11	1.10
62-	76	04/88	HT	1.10"	17	1.10
62-	100	04/88	HT	0.00"	35	0.00
62-	102	04/88	HT	1.10"	21	1.10
63-	104	04/88	HT	1.10"	26	1.10
63-	57	04/88	C3	3.70"	10	3.70
63-	71	04/88	C4	3.70"	37	3.70
63-	105	04/88	HT	1.10"	18	1.10
64-	24	04/88	H5	1.10"	10	1.10
64-	24	04/88	H6	1.10"	15	1.10
64-	64	04/88	H6	1.90"	11	1.90
64-	76	04/88	HT	1.10"	16	1.10
64-	76	04/88	HT	1.10"	34	1.10
64-	78	04/88	HT	2.20"	10	2.20
64-	102	04/88	HT	2.20"	15	2.20
65-	71	04/88	HT	0.30"	10	0.30
65-	71	04/88	HT	0.60"	10	0.60
65-	103	04/88	HT	0.70"	16	0.70
66-	68	04/88	HT	1.40"	13	1.40
66-	100	04/88	HT	1.10"	24	1.10
66-	102	04/88	C3	2.30"	17	2.30
66-	102	04/88	HT	2.30"	18	2.30
66-	152	04/88	C4	3.10"	15	3.10
67-	97	04/88	HT	1.10"	31	1.10
67-	101	04/88	HT	0.00"	6	0.00
68-	70	04/88	HT	0.00"	28	0.00
68-	74	04/88	HT	0.00"	28	0.00
68-	94	04/88	HT	1.10"	9	1.10
68-	96	04/88	HT	0.00"	5	0.00
68-	98	04/88	HT	0.40"	5	0.40
68-	100	04/88	HT	0.60"	9	0.60
68-	102	04/88	HT	0.70"	9	0.70
68-	108	04/88	C4	0.00"	28	0.00
68-	128	04/88	C4	0.00"	9	0.00
69-	61	04/88	DH	0.00"	3	0.00
69-	95	04/88	H5	0.00"	3	0.00
69-	97	04/88	HT	0.00"	4	0.00

QUERY: OD,ALL & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
69-	99	04/88	HTS - US	26	0.99
69-	143	04/88	C4	15	1.08
70-	70	04/88	HTS - US	55	0.42
70-	78	04/88	HTS - US	55	0.62
70-	84	04/88	HTS - US	45	0.46
70-	92	04/88	HTS - US	33	0.54
70-	94	04/88	HTS - US	33	0.44
70-	96	04/88	HTS - US	64	0.22
70-	100	04/88	HTS - US	22	0.99
70-	102	04/88	HTS - US	22	0.66
70-	110	04/88	HTS - US	00	0.55
70-	150	04/88	C3	00	0.22
71-	75	04/88	HTS - US	11	0.77
71-	79	04/88	HTS - US	11	0.44
71-	81	04/88	HTS - US	11	0.54
71-	97	04/88	HTS - US	47	0.94
72-	78	04/88	HTS - US	29	0.40
72-	90	04/88	HTS - US	22	0.43
73-	89	04/88	HTS - US	44	0.33
73-	93	04/88	HTS - US	64	0.51
73-	97	04/88	HTS - US	39	1.19
73-	99	04/88	HTS - US	66	0.85
74-	76	04/88	HTS - US	26	1.03
74-	86	04/88	HTS - US	58	1.38
74-	90	04/88	HTS - US	18	0.42
74-	92	04/88	HTS - US	21	0.76
74-	94	04/88	HTS - US	13	1.99
74-	96	04/88	HTS - US	33	0.88
74-	98	04/88	HTS - US	45	3.06
75-	87	04/88	HTS - US	38	1.89
75-	89	04/88	HTS - US	19	0.71
75-	91	04/88	HTS - US	31	0.41
75-	95	04/88	HTS - US	19	1.39
76-	78	04/88	HTS - US	67	0.82
76-	84	04/88	HTS - US	12	0.97
76-	86	04/88	HTS - US	16	0.96
76-	88	04/88	HTS - US	18	0.46
76-	90	04/88	HTS - US	33	0.48
76-	92	04/88	HTS - US	34	1.91
76-	94	04/88	HTS - US	33	0.58
76-	96	04/88	HTS - US	33	1.34
77-	59	04/88	H2	11	0.77
77-	79	04/88	HTS - US	10	0.77
77-	81	04/88	HTS - US	10	0.71
77-	85	04/88	HTS - US	33	1.02
77-	87	04/88	HTS - US	28	0.48
77-	89	04/88	HTS - US	28	0.55
77-	91	04/88	HTS - US	28	0.89
77-	93	04/88	HTS - US	28	0.80
77-	95	04/88	HTS - US	43	0.90
77-	97	04/88	HTS - US	43	0.67
77-	99	04/88	HTS - US	25	0.46
77-	153	04/88	H4	13	0.99
78-	80	04/88	C5	13	1.01
78-	86	04/88	HTS - US	28	0.79
78-	88	04/88	HTS - US	44	1.23
78-	90	04/88	HTS - US	31	0.80
78-	92	04/88	HTS - US	49	1.02
78-	94	04/88	HTS - US	13	0.88

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 12

QUERY: OD,ALL & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	& TW	VOLTS			
78-	90	04/888	HT	+	6.10"	OD	222	0.49
		04/888	HT	+	0.00"	OD	222	0.45
		04/888	HT	+	1.3700"	OD	477	1.14
78-	94	04/888	HT	+	0.00"	OD	366	0.00
78-	96	04/888	HT	+	0.7000"	OD	177	0.53
78-	114	04/888	VH	+	0.00"	OD	100	0.00
78-	120	04/888	H2	+	1.7700"	OD	333	0.55
79-	53	04/888	C4	+	2.5500"	OD	111	0.00
79-	57	04/888	C5	+	2.5500"	OD	111	0.00
79-	61	04/888	H8	+	1.3300"	OD	133	0.51
79-	77	04/888	H1	+	6.2500"	OD	333	0.52
79-	79	04/888	C2	+	1.6200"	OD	333	0.55
79-	81	04/888	HT	+	0.00"	OD	222	0.00
79-	83	04/888	HT	+	0.00"	OD	222	0.00
79-	85	04/888	HT	+	0.00"	OD	166	0.00
79-	91	04/888	HT	+	0.00"	OD	333	0.44
79-	93	04/888	HT	+	0.00"	OD	100	0.00
79-	95	04/888	HT	+	0.00"	OD	111	0.00
81-	85	04/888	HT	+	0.00"	OD	111	0.00
81-	87	04/888	HT	+	0.00"	OD	111	0.00
		04/888	HT	+	0.00"	OD	111	0.00
		04/888	HT	+	0.00"	OD	111	0.00
81-	89	04/888	HT	+	0.00"	OD	111	0.00
81-	91	04/888	HT	+	0.00"	OD	111	0.00
		04/888	HT	+	0.00"	OD	111	0.00
81-	93	04/888	HT	+	0.00"	OD	111	0.00
81-	111	04/888	HT	+	3.7000"	OD	111	0.40
82-	88	04/888	HT	+	0.00"	OD	111	0.00
82-	90	04/888	HT	+	0.00"	OD	111	0.00
83-	19	04/888	H6	+	0.00"	OD	111	0.00
		04/888	H7	+	1.0000"	OD	111	0.00
83-	83	04/888	HT	+	0.00"	OD	111	0.00
83-	91	04/888	H7	+	1.3000"	OD	111	0.00
84-	74	04/888	VH	+	1.9400"	OD	444	0.00
84-	80	04/888	H3	+	3.4600"	OD	555	0.00
84-	84	04/888	HT	+	1.1400"	OD	666	0.00
85-	21	04/888	H5	+	1.0800"	OD	666	0.00
85-	83	04/888	HT	+	0.00"	OD	666	0.00
87-	63	04/888	H7	+	1.3800"	OD	666	0.00
88-	74	04/888	VH	+	0.00"	OD	666	0.00
90-	62	04/888	C4	+	2.4300"	OD	666	0.00
93-	81	04/888	C5	+	8.10"	OD	666	0.00
94-	66	04/888	VH	+	0.00"	OD	666	0.00
95-	61	04/888	H7	+	9.90"	OD	666	0.00
95-	73	04/888	VH	+	0.00"	OD	666	0.00
96-	34	04/888	C7	+	1.4400"	OD	666	0.00
97-	73	04/888	VH	+	2.1140"	OD	666	0.00
97-	83	04/888	H5	+	1.1380"	OD	666	0.00
98-	96	04/888	CT	+	0.00"	OD	666	0.00
98-	116	04/888	C4	+	10.0000"	OD	666	0.00
100-	40	04/888	C5	+	1.5000"	OD	666	0.00
100-	90	04/888	H3	+	2.9440"	OD	666	0.00
100-	126	04/888	HT	+	8.9000"	OD	666	0.00
104-	88	04/888	VH	+	0.00"	OD	666	0.00
105-	99	04/888	H1	+	3.1100"	OD	666	0.00
106-	88	04/888	H5	+	1.7200"	OD	666	0.00
110	106	04/888	H7	+	2.1100"	OD	666	0.00
113-	115	04/888	H1	+	3.9300"	OD	666	0.00
123-	55	04/888	H1	+	3.1100"	OD	666	0.00
123-	69	04/888	VH	+	0.00"	OD	666	0.00
123-	75	04/888	VH	+	1.7900"	OD	666	0.00
134-	66	04/888	HT	+	0.00"	OD	666	0.00
134-	108	04/888	CC	+	1.0000"	OD	666	0.00
137-	97	04/888	Cl	+	0.00"	OD	666	0.00

TOTAL TUBES: 286

STEAM GENERATOR 12

B. List with Plot of <20% Indications

SG 12 PLOT OF <20% INDICATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 12

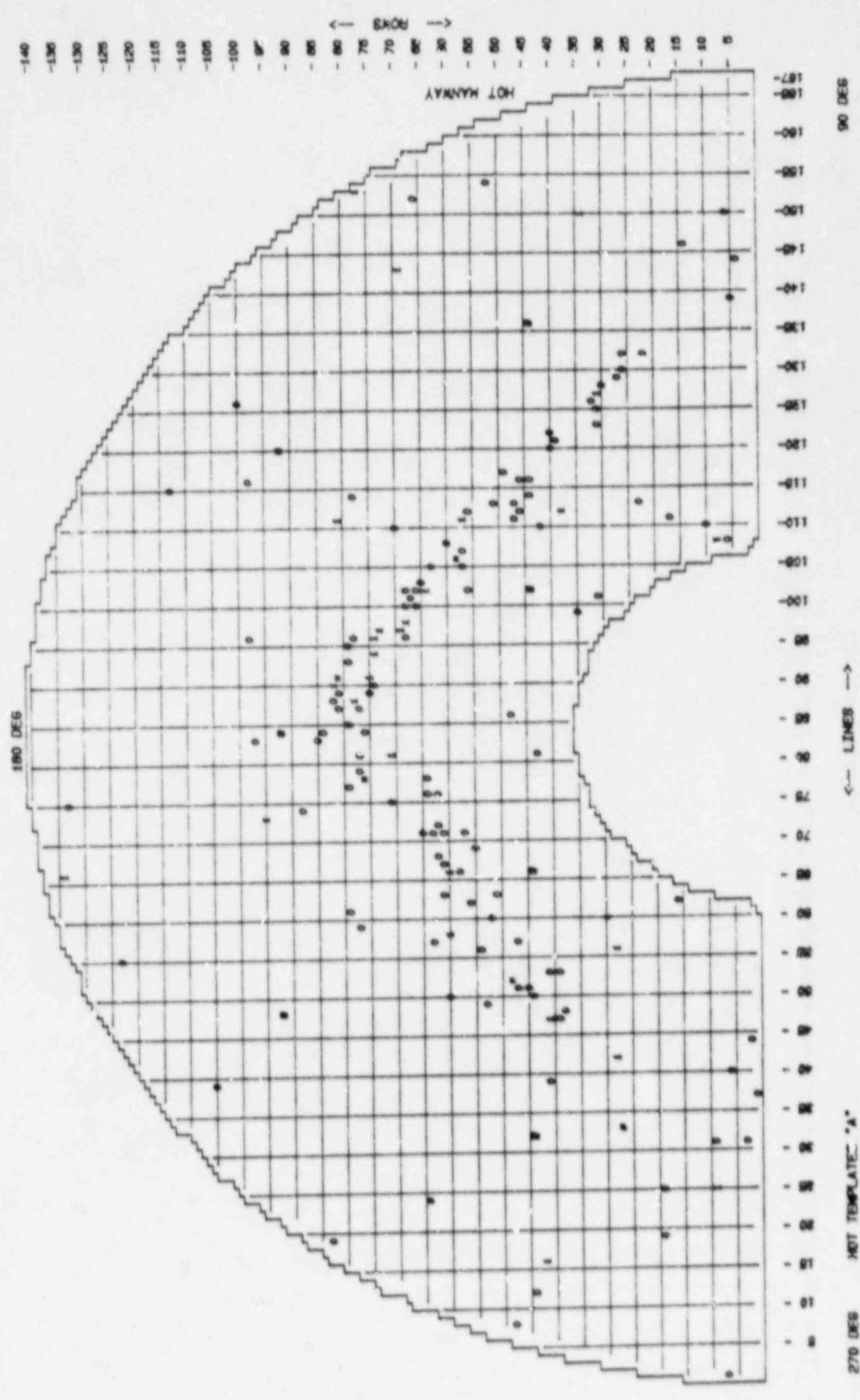
TOTAL TUBES: 8513
 STAYS (#): 7

0 - 00 - <5 (117)
 # - MULTIPLE INDICATION (7)

1 - 00 - 1-3 (20)

5 - 00 - >=5 (0)

TOTAL TUBES ASSIGNED: 152



QUERY: OD, < 20 * TW, ALL VOLTS, ALL ELEV (ALL TUBES), ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	* TW	VOLTS
4	4	00	00	00	00	00
5	4	00	00	00	00	00
6	4	00	00	00	00	00
7	4	00	00	00	00	00
8	4	00	00	00	00	00
9	4	00	00	00	00	00
10	4	00	00	00	00	00
11	4	00	00	00	00	00
12	4	00	00	00	00	00
13	4	00	00	00	00	00
14	4	00	00	00	00	00
15	4	00	00	00	00	00
16	4	00	00	00	00	00
17	4	00	00	00	00	00
18	4	00	00	00	00	00
19	4	00	00	00	00	00
20	4	00	00	00	00	00
21	4	00	00	00	00	00
22	4	00	00	00	00	00
23	4	00	00	00	00	00
24	4	00	00	00	00	00
25	4	00	00	00	00	00
26	4	00	00	00	00	00
27	4	00	00	00	00	00
28	4	00	00	00	00	00
29	4	00	00	00	00	00
30	4	00	00	00	00	00
31	4	00	00	00	00	00
32	4	00	00	00	00	00
33	4	00	00	00	00	00
34	4	00	00	00	00	00
35	4	00	00	00	00	00
36	4	00	00	00	00	00
37	4	00	00	00	00	00
38	4	00	00	00	00	00
39	4	00	00	00	00	00
40	4	00	00	00	00	00
41	4	00	00	00	00	00
42	4	00	00	00	00	00
43	4	00	00	00	00	00
44	4	00	00	00	00	00
45	4	00	00	00	00	00
46	4	00	00	00	00	00
47	4	00	00	00	00	00
48	4	00	00	00	00	00
49	4	00	00	00	00	00
50	4	00	00	00	00	00
51	4	00	00	00	00	00
52	4	00	00	00	00	00
53	4	00	00	00	00	00
54	4	00	00	00	00	00
55	4	00	00	00	00	00
56	4	00	00	00	00	00
57	4	00	00	00	00	00
58	4	00	00	00	00	00
59	4	00	00	00	00	00
60	4	00	00	00	00	00
61	4	00	00	00	00	00
62	4	00	00	00	00	00
63	4	00	00	00	00	00
64	4	00	00	00	00	00
65	4	00	00	00	00	00
66	4	00	00	00	00	00
67	4	00	00	00	00	00
68	4	00	00	00	00	00
69	4	00	00	00	00	00
70	4	00	00	00	00	00
71	4	00	00	00	00	00
72	4	00	00	00	00	00
73	4	00	00	00	00	00
74	4	00	00	00	00	00
75	4	00	00	00	00	00
76	4	00	00	00	00	00
77	4	00	00	00	00	00
78	4	00	00	00	00	00
79	4	00	00	00	00	00
80	4	00	00	00	00	00
81	4	00	00	00	00	00
82	4	00	00	00	00	00
83	4	00	00	00	00	00
84	4	00	00	00	00	00
85	4	00	00	00	00	00
86	4	00	00	00	00	00
87	4	00	00	00	00	00
88	4	00	00	00	00	00
89	4	00	00	00	00	00
90	4	00	00	00	00	00
91	4	00	00	00	00	00
92	4	00	00	00	00	00
93	4	00	00	00	00	00
94	4	00	00	00	00	00
95	4	00	00	00	00	00
96	4	00	00	00	00	00
97	4	00	00	00	00	00
98	4	00	00	00	00	00
99	4	00	00	00	00	00
100	4	00	00	00	00	00

STEAM GENERATOR 12

C. List with Plot of 20~~1~~-39~~1~~ Indications

SG 12 PLOT OF 20-39% INDICATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 12

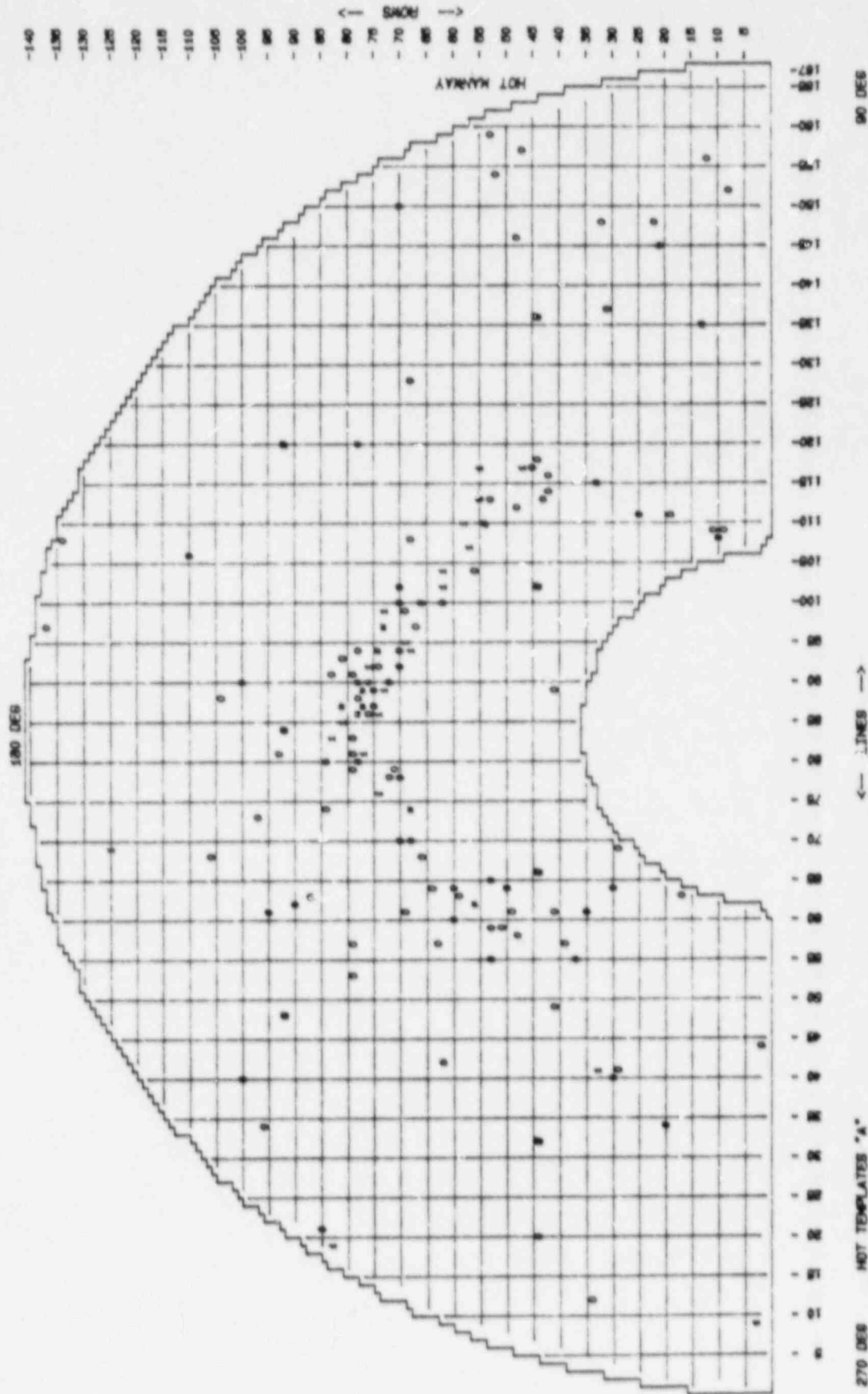
TOTAL TUBES: 8519
 STAYS (#): 7

0 = 00 - <1 (100)
 P = MULTIPLE INDICATION (10)

1 = 00 - 1-5 (20)

5 = 00 - >5 (0)

TOTAL TUBES ASSIGNED: 136



QUERY: OD,20-39 & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS	
44	04/88	CT S - SF	+	0.50"	OD	0.60
9	04/88	CS	+	4.10"	OD	1.27
152	04/88	VM			OD	0.90
109	04/88	HT	+	0.90"	OD	0.49
108	04/88	HT S	+	1.40"	OD	0.22
109	04/88	HT S	+	1.60"	OD	0.76
156	04/88	CS	+	2.50"	OD	0.76
135	04/88	CS	+	11.80"	OD	0.58
63	04/88	CS	+	24.80"	OD	0.52
111	04/88	HT	+	1.40"	OD	0.55
34	04/88	HT	+	3.70"	OD	0.59
145	04/88	HT	+	6.10"	OD	0.59
148	04/88	HT	+	6.10"	OD	0.59
111	04/88	HT	+	6.90"	OD	0.53
41	04/88	HT	+	0.00"	OD	0.55
69	04/88	HT	+	4.00"	OD	0.50
40	04/88	HT	+	2.00"	OD	0.52
64	04/88	CS	+	2.00"	OD	0.51
137	04/88	HT	+	1.00"	OD	0.73
148	04/88	HT	+	1.00"	OD	0.99
41	04/88	HT	+	0.00"	OD	1.04
115	04/88	HT	+	0.00"	OD	0.41
12	04/88	HT	+	1.30"	OD	0.58
61	04/88	HT	+	1.10"	OD	0.44
55	04/88	HT	+	0.00"	OD	0.43
55	04/88	HT	+	0.00"	OD	0.42
74	04/88	HT	+	0.00"	OD	0.60
99	04/88	HT	+	0.00"	OD	0.52
114	04/88	HT	+	0.00"	OD	0.64
111	04/88	HT	+	0.00"	OD	0.64
113	04/88	HT	+	0.00"	OD	0.57
20	04/88	HT	+	0.00"	OD	0.66
117	04/88	HT	+	0.00"	OD	0.41
77	04/88	HT	+	0.00"	OD	0.49
77	04/88	HT	+	0.00"	OD	0.49
57	04/88	HT	+	0.00"	OD	0.55
112	04/88	HT	+	0.00"	OD	0.55
46	04/88	HT	+	0.00"	OD	0.56
61	04/88	HT	+	0.00"	OD	0.47
59	04/88	HT	+	0.00"	OD	0.41
54	04/88	HT	+	0.00"	OD	0.56
55	04/88	HT	+	0.00"	OD	0.58
55	04/88	HT	+	0.00"	OD	0.44
55	04/88	HT	+	0.00"	OD	0.50
113	04/88	HT	+	0.00"	OD	0.51
119	04/88	HT	+	0.00"	OD	0.76
110	04/88	HT	+	0.00"	OD	0.63
60	04/88	HT	+	0.00"	OD	0.50
64	04/88	HT	+	0.00"	OD	0.62
42	04/88	CS	+	0.00"	OD	1.07
100	04/88	HT	+	0.00"	OD	0.37
102	04/88	HT	+	0.00"	OD	0.66
04	04/88	HT	+	0.00"	OD	0.69
104	04/88	HT	+	0.00"	OD	1.11
107	04/88	HT	+	0.00"	OD	1.11
110	04/88	HT	+	0.00"	OD	1.11
63	04/88	HT	+	0.00"	OD	0.58
60	04/88	HT	+	0.00"	OD	0.50
64	04/88	HT	+	0.00"	OD	0.77
100	04/88	HT	+	0.00"	OD	0.68
102	04/88	HT	+	0.00"	OD	0.68
04	04/88	HT	+	0.00"	OD	0.55

QUERY: OD,20-39 & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW	LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
63-	57	04/88	C4	+	6.70"	0.73
64-	64	04/88	HT	+	1.70"	0.50
66-	68	04/88	HT	+	2.10"	0.92
66-	100	04/88	HT	+	1.40"	0.77
67-	97	04/88	HT	+	0.80"	0.65
68-	70	04/88	HT	+	0.50"	0.65
68-	74	04/88	HT	+	0.80"	0.44
		04/88	HT	+	0.20"	0.53
68-	94	04/88	HT	+	0.70"	1.35
68-	108	04/88	CC	+	0.20"	0.46
68-	128	04/88	C4	+	0.50"	0.88
69-	61	04/88	DH	+	0.30"	0.62
69-	95	04/88	H5	+	0.10"	1.05
69-	99	04/88	HT	+	0.00"	0.99
70-	70	04/88	HT	+	1.10"	0.42
70-	78	04/88	HT	+	0.80"	0.54
70-	92	04/88	HT	+	1.10"	0.42
70-	94	04/88	HT	+	2.60"	0.69
70-	100	04/88	HT	+	1.50"	0.61
70-	102	04/88	HT	+	1.60"	0.52
70-	150	04/88	C5	+	2.70"	0.52
71-	79	04/88	HT	+	1.30"	0.44
72-	78	04/88	HT	+	0.00"	0.40
72-	90	04/88	HT	+	0.20"	0.43
73-	89	04/88	HT	+	0.80"	1.13
73-	97	04/88	HT	+	0.00"	1.21
		04/88	HT	+	1.70"	0.85
73-	99	04/88	HT	+	1.10"	1.03
74-	76	04/88	HT	+	0.60"	1.38
74-	86	04/88	HT	+	1.40"	1.42
74-	42	04/88	HT	+	1.70"	0.76
74-	94	04/88	HT	+	1.10"	0.72
		04/88	HT	+	1.40"	0.88
75-	87	04/88	HT	+	1.40"	0.67
75-	89	04/88	HT	+	1.90"	0.41
76-	86	04/88	HT	+	0.00"	0.48
76-	90	04/88	HT	+	0.50"	1.91
		04/88	HT	+	0.00"	0.58
76-	92	04/88	HT	+	0.60"	1.34
77-	81	04/88	HT	+	0.60"	1.02
77-	87	04/88	HT	+	0.70"	0.55
		04/88	HT	+	0.00"	0.80
77-	89	04/88	HT	+	0.70"	0.90
		04/88	HT	+	0.20"	0.46
		04/88	HT	+	0.00"	0.79
78-	80	04/88	C5	+	0.00"	0.80
78-	86	04/88	HT	+	1.60"	1.02
		04/88	HT	+	0.60"	0.49
78-	88	04/88	HT	+	0.10"	0.45
78-	90	04/88	HT	+	0.70"	0.93
78-	94	04/88	HT	+	0.80"	0.51
78-	120	04/88	H2	+	0.80"	0.50
79-	53	04/88	C4	+	0.50"	0.68
79-	57	04/88	C5	+	0.50"	0.62
79-	79	04/88	C2	+	0.20"	0.55
79-	81	04/88	HT	+	0.00"	0.87
79-	83	04/88	HT	+	0.50"	0.44
79-	81	04/88	HT	+	0.70"	1.43
81-	85	04/88	HT	+	0.40"	0.51
81-	87	04/88	HT	+	0.90"	0.78
		04/88	HT	+	0.00"	0.75
81-	93	04/88	HT	+	2.40"	1.09
83-	19	04/88	HT	+	0.00"	1.28
83-	83	04/88	HT	+	2.70"	0.54
83-	91	04/88	HJ	+	0.00"	0.54

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 12

QUERY: OD,20-39 & TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	& TW	VOLTS		
84-	74	04/88	VH	+ 19.40"	OD	24	0.64
84-	80	04/88	H3	+ 34.60"	OD	35	0.54
85-	21	04/88	H5	+ 10.80"	OD	38	0.73
87-	63	04/88	H7	+ 13.80"	OD	38	0.60
90-	62	04/88	C4	+ 24.30"	OD	33	0.65
93-	81	04/88	C5	+ 8.10"	OD	11	0.51
95-	61	04/88	H7	+ 9.90"	OD	33	0.75
96-	34	04/88	C7	+ 1.40"	OD	55	0.67
97-	73	04/88	VM	+ 21.40"	OD	34	0.61
100-	40	04/88	C5	+ 1.50"	OD	68	0.69
100-	90	04/88	H3	+ 29.40"	OD	35	0.88
104-	88	04/88	VM		OD		0.58
106-	68	04/88	H5	+ 22.10"	OD	33	0.66
110-	106	04/88	H7	+ 17.20"	OD	11	0.52
125-	69	04/88	VC	+ 9.50"	OD	11	0.41
134-	108	04/88	CTS-SF	+ 0.80"	OD	32	0.44
137-	97	04/88	C10	+ 11.20"	OD	22	0.88

TOTAL TUBES: 136

STEAM GENERATOR 12

D. List with Plot of >39~~8~~ Indications

SG 12 PLOT OF >39% INDICATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 12

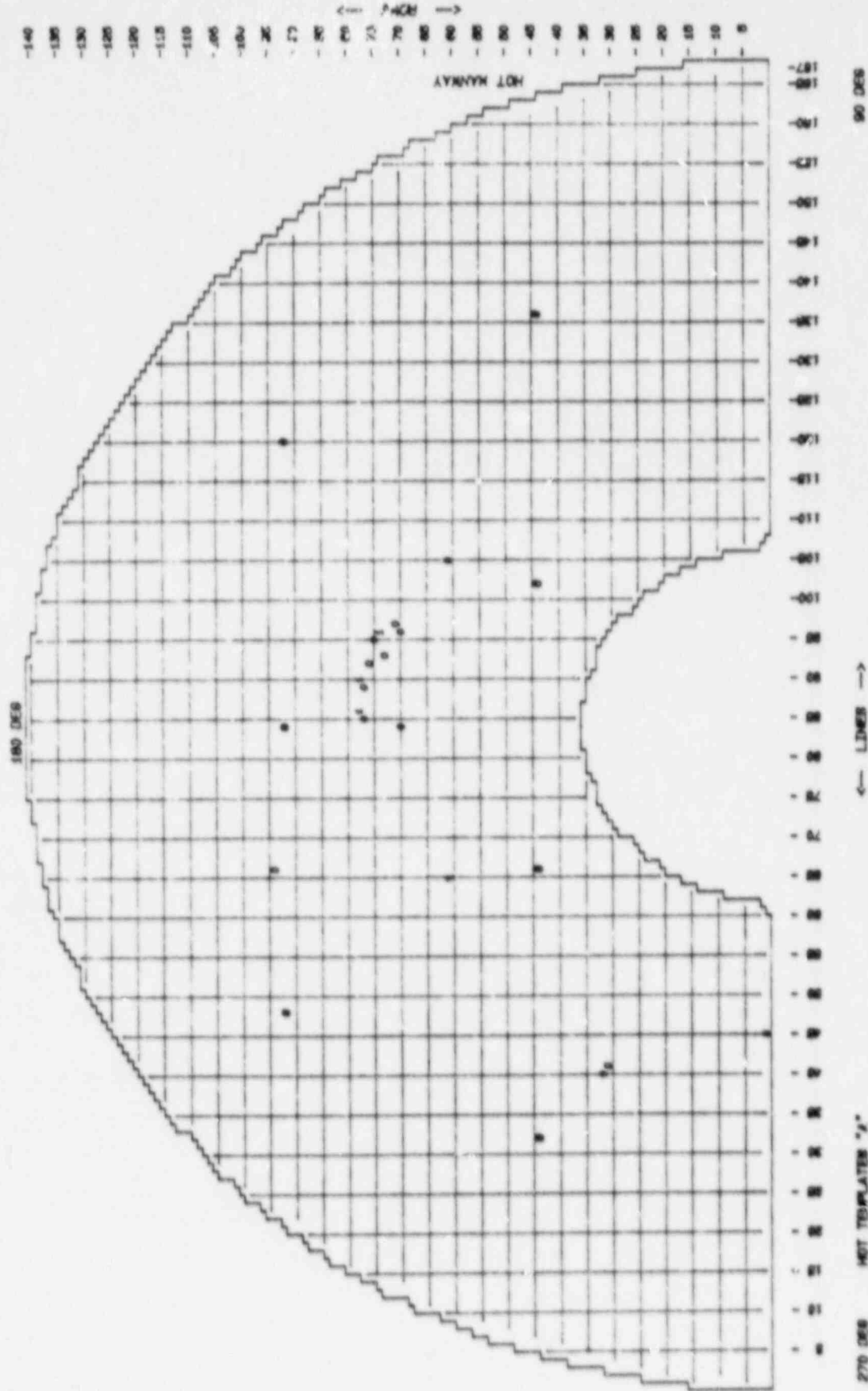
TOTAL TUBES: 8519
 STAYS (S): 7

0 = 00 - 41 (118)
 # = MULTIPLE INDICATION (6)

1 = 00 - 1-05 (4)

6 = 00 - >46 (0)

TOTAL TUBES ASSIGNED: 17



QUERY: OD, 39 & TW, ALL VOLTS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	9 TW	VOLTS
1-	45	04/88	0	4.45	0.45
31-	41	04/88	0	4.41	0.41
32-	40	04/88	0	4.40	0.40
61-	65	04/88	0	4.65	0.65
61-	105	04/88	0	4.105	0.105
70-	84	04/88	0	4.84	0.84
70-	96	04/88	0	4.96	0.96
71-	97	04/88	0	4.97	0.97
73-	93	04/88	0	4.93	0.93
74-	96	04/88	0	4.96	0.96
75-	95	04/88	0	4.95	0.95
76-	92	04/88	0	4.92	0.92
77-	85	04/88	0	4.85	0.85
77-	89	04/88	0	4.89	0.89
78-	86	04/88	0	4.86	0.86
78-	90	04/88	0	4.90	0.90
94-	66	04/88	0	4.66	0.66

TOTAL TUBES: 17

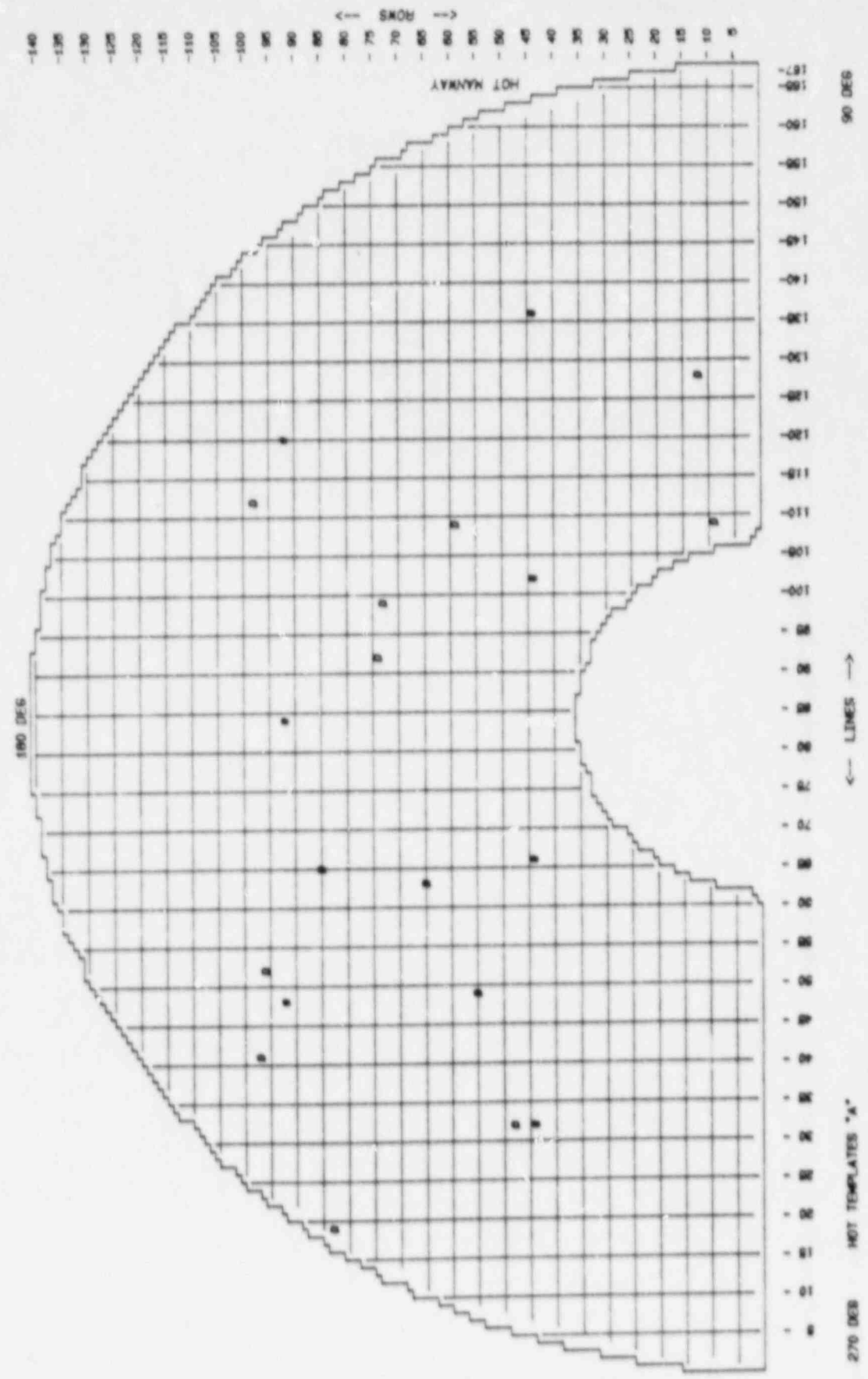
STEAM GENERATOR 12

E. List with Plot of Distorted Indications

SG 12 PLOT OF DISTORTED INDICATIONS, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88
 D - DISTORTED IMD (13)
 # - MULTIPLE INDICATION (0)

GENERATOR: 12
 TOTAL TUBES: 8519
 STAYS (#): 7
 TOTAL TUBES ASSIGNED: 13



STEAM GENERATOR 12

F. Lists with Plots of Tubes not Rolled

Tubes NOT ROLLED at HOT Tubesheet

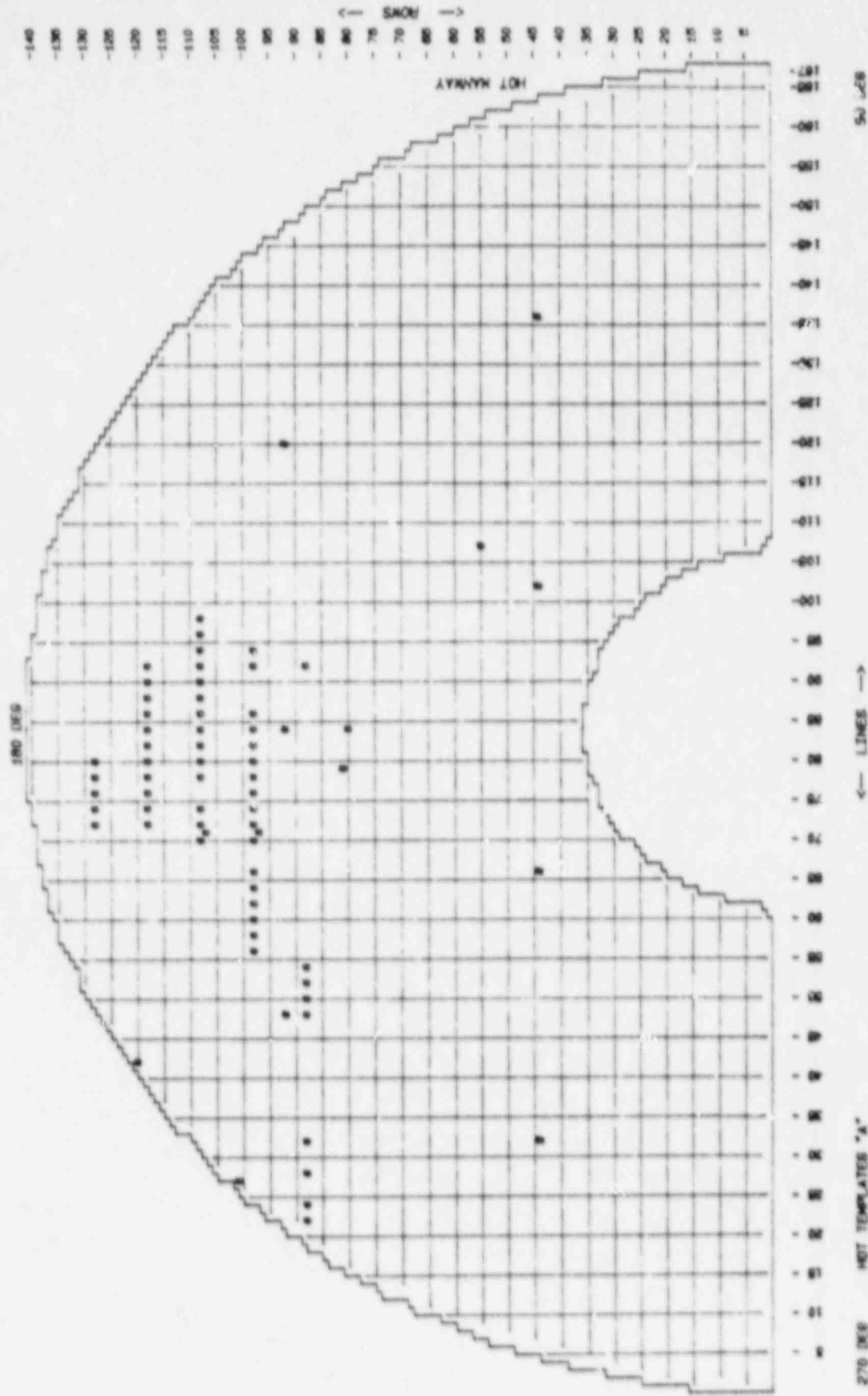
PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 12

TOTAL TUBES: 8519
 STAYS (#): 7

6 - Outage : 04/88 (83)

TOTAL TUBES ASSIGNED: 63



Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 10

Tubes NOT ROLLED at HOT Tubesheet

<u>ROW</u>	<u>LINE</u>
1	72
2	74
3	76
4	78
5	80

Outage : 04/88

Total = 63

Tubes NOT ROLLED at COLD Tubesheet

PLANT: CALVERT CLIFFS UNIT 1
OUTAGE: 04/88

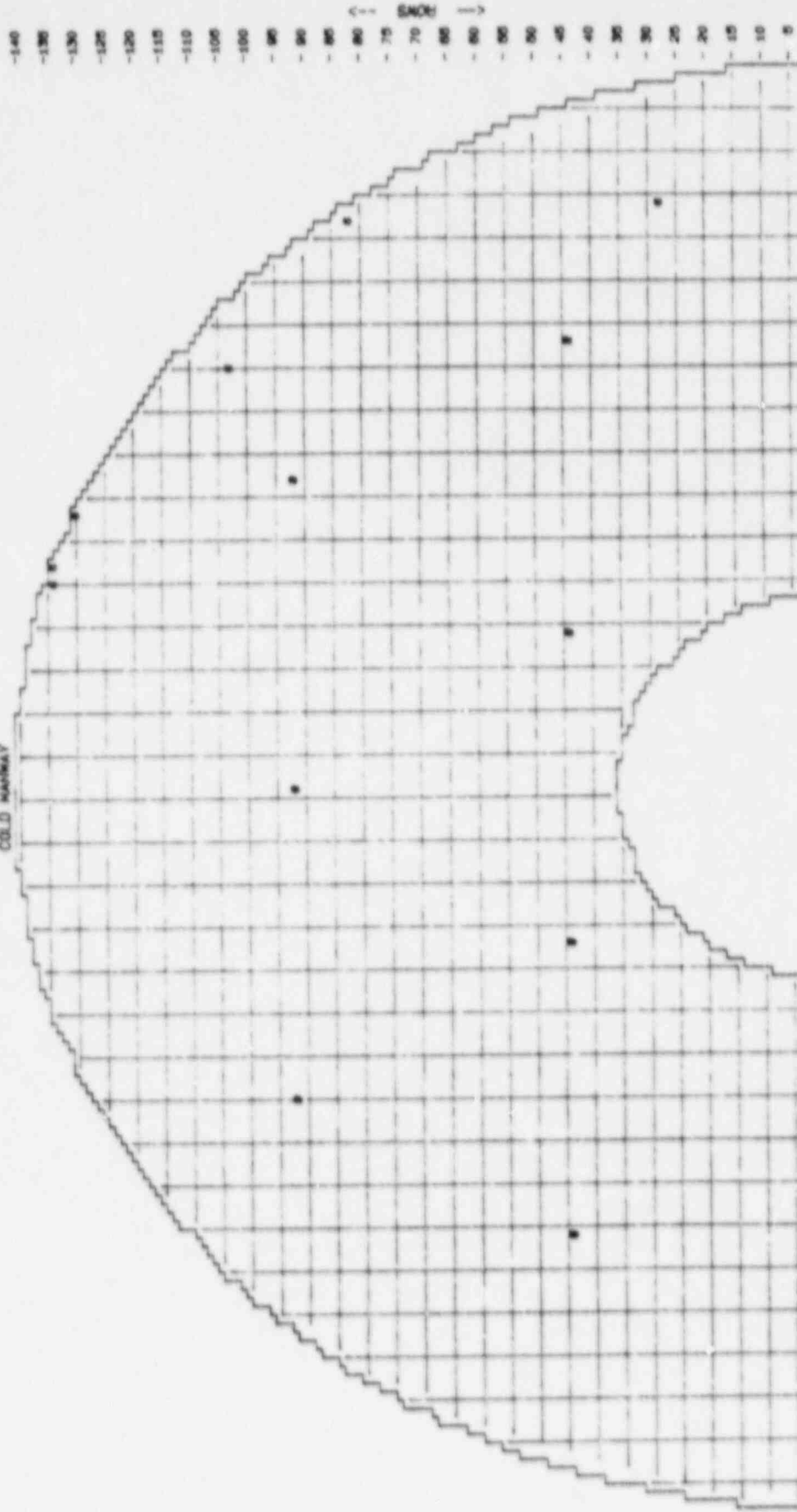
GENERATOR: 12

TOTAL TUBES: 8519
STAYS (#): 7

6 - Outage : 04/88 (6)

TOTAL TUBES ASSIGNED: 6

COLD MAINWAY



60 DEG COLD TEMPLATES "B"

← LINES →

270 DEG

Tubes NOT ROLLED at COLD Tubesheet

<u>ROW</u>	<u>LINE</u>
4	5
4	5

Outage : 04/88

Total * 6

STEAM GENERATOR 12

G. Lists with Plots of Sludge Data

SLUDGE HEIGHT IN SG 12 HOT I.E.G. 4/88 OUTAGE

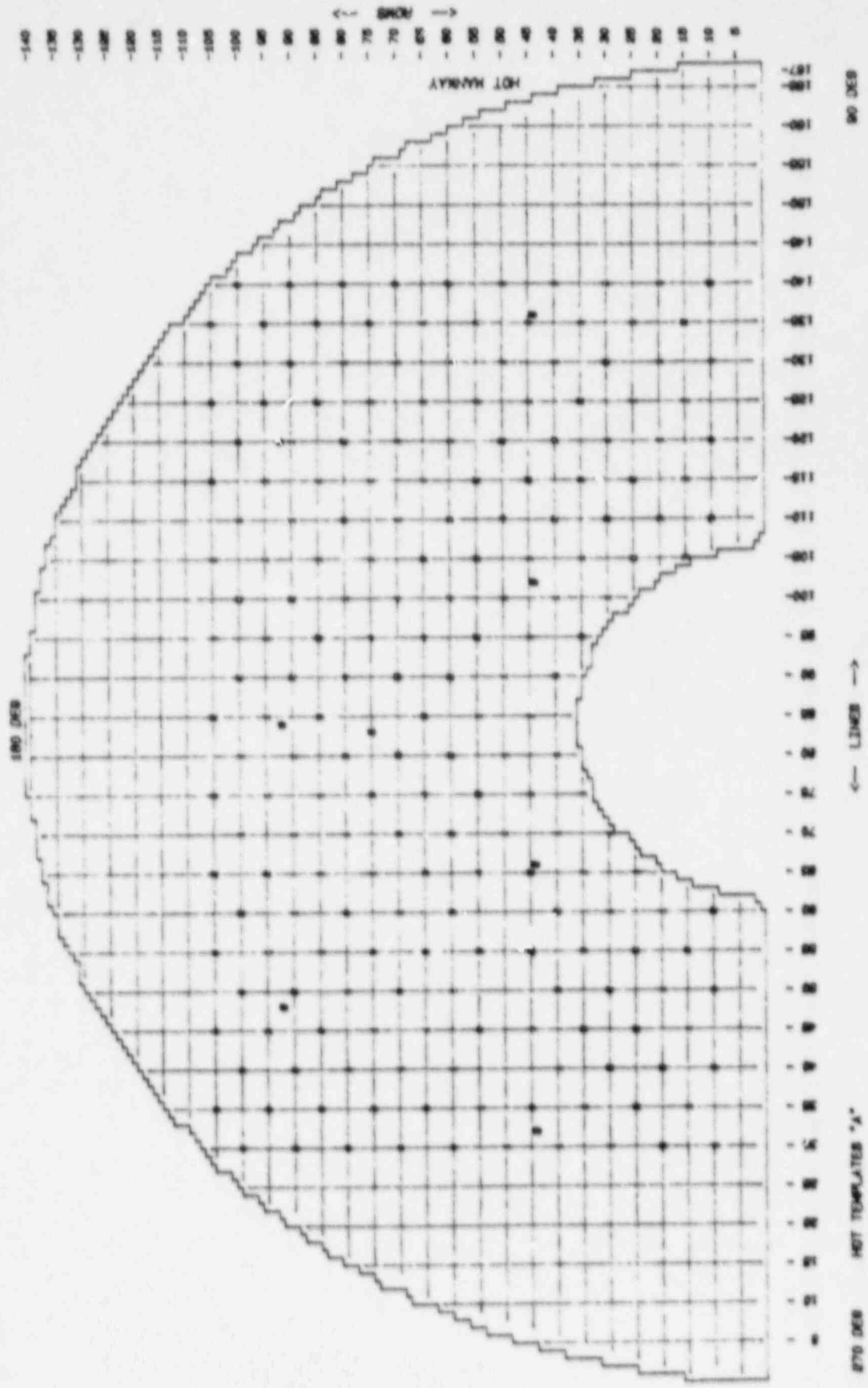
PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88
 GENERATOR 12
 TOTAL TUBES: R519
 STAYS (S): 7

0 = SLUDGE - <1 (AS)
 1 = SLUDGE - 3 (SC)
 * = MULTIPLE INDICATION (S)

1 = SLUDGE - 1 (M-4)
 4 = SLUDGE - C (S)

2 = SLUDGE - 2 (MS)
 6 = SLUDGE - >4 (S)

TOTAL TUBES ASSIGNED: 200



SLUDGE HEIGHT IN SG 12 COLD LEG, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

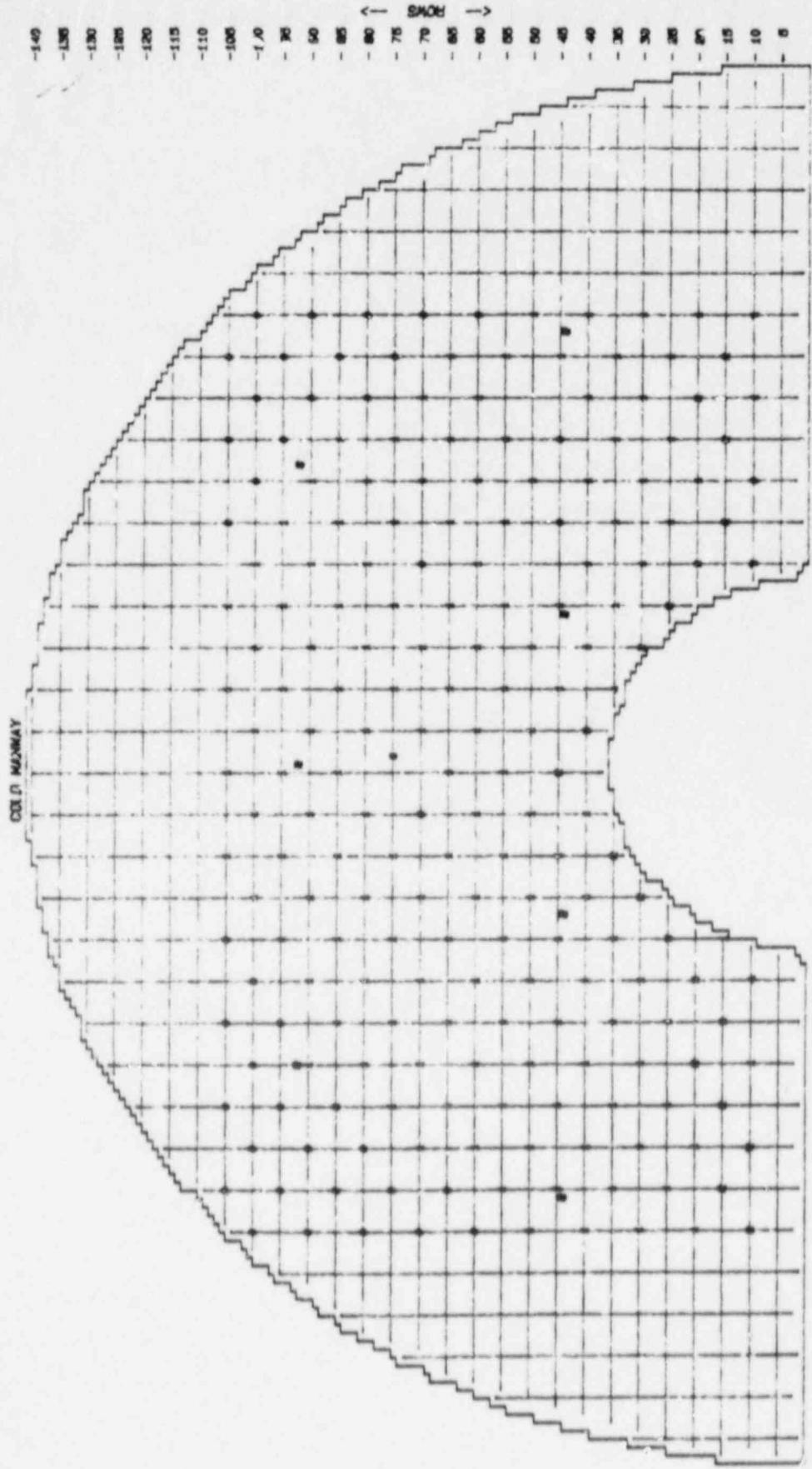
GENERATOR: 12

TOTAL TUBES: 8519
 STAYS (#): 7

0 - SLUDGE - <1 (43)
 5 - SLUDGE - 3 (6)
 * - MULTIPLE INDICATION (0)

1 - SLUDGE - 1 (1/2)
 4 - SLUDGE - 4 (2)

TOTAL TUBES ASSIGNED: 210



90 DEG COLD TEMPLATES "B"

← LINES →

270 DEG

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 12

QUERY: SLUDGE, ALL INCHES, CTS-SF (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
10 -	30	04/88	SLUDGE	
10 -	40	04/88	SLUDGE	
10 -	50	04/88	SLUDGE	
10 -	60	04/88	SLUDGE	
10 -	110	04/88	SLUDGE	
10 -	120	04/88	SLUDGE	
10 -	130	04/88	SLUDGE	
10 -	140	04/88	SLUDGE	
15 -	35	04/88	SLUDGE	
15 -	45	04/88	SLUDGE	
15 -	55	04/88	SLUDGE	
15 -	105	04/88	SLUDGE	
15 -	115	04/88	SLUDGE	
15 -	125	04/88	SLUDGE	
15 -	135	04/88	SLUDGE	
20 -	30	04/88	SLUDGE	
20 -	40	04/88	SLUDGE	
20 -	50	04/88	SLUDGE	
20 -	60	04/88	SLUDGE	
20 -	110	04/88	SLUDGE	
20 -	120	04/88	SLUDGE	
20 -	130	04/88	SLUDGE	
20 -	140	04/88	SLUDGE	
25 -	35	04/88	SLUDGE	
25 -	45	04/88	SLUDGE	
25 -	55	04/88	SLUDGE	
25 -	105	04/88	SLUDGE	
25 -	115	04/88	SLUDGE	
25 -	125	04/88	SLUDGE	
25 -	135	04/88	SLUDGE	
30 -	30	04/88	SLUDGE	
30 -	40	04/88	SLUDGE	
30 -	50	04/88	SLUDGE	
30 -	60	04/88	SLUDGE	
30 -	110	04/88	SLUDGE	
30 -	120	04/88	SLUDGE	
30 -	130	04/88	SLUDGE	
30 -	140	04/88	SLUDGE	
35 -	35	04/88	SLUDGE	
35 -	45	04/88	SLUDGE	
35 -	55	04/88	SLUDGE	
35 -	105	04/88	SLUDGE	
35 -	115	04/88	SLUDGE	
35 -	125	04/88	SLUDGE	
35 -	135	04/88	SLUDGE	
40 -	30	04/88	SLUDGE	
40 -	40	04/88	SLUDGE	
40 -	50	04/88	SLUDGE	
40 -	60	04/88	SLUDGE	
40 -	70	04/88	SLUDGE	
40 -	80	04/88	SLUDGE	
40 -	90	04/88	SLUDGE	
40 -	100	04/88	SLUDGE	
40 -	110	04/88	SLUDGE	
40 -	120	04/88	SLUDGE	
40 -	130	04/88	SLUDGE	
40 -	140	04/88	SLUDGE	
45 -	35	04/88	SLUDGE	
45 -	45	04/88	SLUDGE	
45 -	55	04/88	SLUDGE	
45 -	105	04/88	SLUDGE	
45 -	115	04/88	SLUDGE	
45 -	125	04/88	SLUDGE	
45 -	135	04/88	SLUDGE	

04/88

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 12

QUERY: SLUDGE, ALL INCHES, CTS-SF (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
45 -	55	U4/88	SS	SLUDGE
45 -	65	04/88	SS	SLUDGE
45 -	75	04/88	SS	SLUDGE
45 -	85	04/88	SS	SLUDGE
45 -	95	04/88	SS	SLUDGE
45 -	105	04/88	SS	SLUDGE
45 -	115	04/88	SS	SLUDGE
45 -	125	04/88	SS	SLUDGE
45 -	135	04/88	SS	SLUDGE
00 -	300	04/88	SS	SLUDGE
00 -	50	04/88	SS	SLUDGE
00 -	70	04/88	SS	SLUDGE
00 -	80	04/88	SS	SLUDGE
00 -	90	04/88	SS	SLUDGE
00 -	100	04/88	SS	SLUDGE
00 -	110	04/88	SS	SLUDGE
00 -	120	04/88	SS	SLUDGE
00 -	130	04/88	SS	SLUDGE
00 -	140	04/88	SS	SLUDGE
00 -	35	04/88	SS	SLUDGE
00 -	45	04/88	SS	SLUDGE
00 -	55	04/88	SS	SLUDGE
00 -	65	04/88	SS	SLUDGE
00 -	75	04/88	SS	SLUDGE
00 -	85	04/88	SS	SLUDGE
00 -	95	04/88	SS	SLUDGE
00 -	105	04/88	SS	SLUDGE
00 -	115	04/88	SS	SLUDGE
00 -	125	04/88	SS	SLUDGE
00 -	135	04/88	SS	SLUDGE
00 -	300	04/88	SS	SLUDGE
00 -	40	04/88	SS	SLUDGE
00 -	50	04/88	SS	SLUDGE
00 -	60	04/88	SS	SLUDGE
00 -	70	04/88	SS	SLUDGE
00 -	80	04/88	SS	SLUDGE
00 -	90	04/88	SS	SLUDGE
00 -	100	04/88	SS	SLUDGE
00 -	110	04/88	SS	SLUDGE
00 -	120	04/88	SS	SLUDGE
00 -	130	04/88	SS	SLUDGE
00 -	140	04/88	SS	SLUDGE
00 -	35	04/88	SS	SLUDGE
00 -	45	04/88	SS	SLUDGE
00 -	55	04/88	SS	SLUDGE
00 -	65	04/88	SS	SLUDGE
00 -	75	04/88	SS	SLUDGE
00 -	85	04/88	SS	SLUDGE
00 -	95	04/88	SS	SLUDGE
00 -	105	04/88	SS	SLUDGE
00 -	115	04/88	SS	SLUDGE
00 -	125	04/88	SS	SLUDGE
00 -	135	04/88	SS	SLUDGE
70 -	300	04/88	SS	SLUDGE
70 -	40	04/88	SS	SLUDGE
70 -	50	04/88	SS	SLUDGE
70 -	60	04/88	SS	SLUDGE
70 -	70	04/88	SS	SLUDGE
70 -	80	04/88	SS	SLUDGE
70 -	90	04/88	SS	SLUDGE
70 -	100	04/88	SS	SLUDGE
70 -	110	04/88	SS	SLUDGE
70 -	120	04/88	SS	SLUDGE
70 -	130	04/88	SS	SLUDGE
70 -	140	04/88	SS	SLUDGE

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 12

QUERY: SLUDGE, ALL INCHES, CTS-SF (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
100 - 110	04/88	CTS-SF	SLUDGE	0
100 - 120	04/88	CTS-SF	SLUDGE	0
100 - 130	04/88	CTS-SF	SLUDGE	0
100 - 140	04/88	CTS-SF	SLUDGE	0
105 - 155	04/88	CTS-SF	SLUDGE	0
105 - 45	04/88	CTS-SF	SLUDGE	0
105 - 55	04/88	CTS-SF	SLUDGE	0
105 - 65	04/88	CTS-SF	SLUDGE	1
105 - 75	04/88	CTS-SF	SLUDGE	1
105 - 85	04/88	CTS-SF	SLUDGE	1
105 - 95	04/88	CTS-SF	SLUDGE	1
105 - 105	04/88	CTS-SF	SLUDGE	1
105 - 115	04/88	CTS-SF	SLUDGE	0
105 - 125	04/88	CTS-SF	SLUDGE	0
105 - 135	04/88	CTS-SF	SLUDGE	0

TOTAL TUBES: 210

STEAM GENERATOR 12

H. List of Tubes Dented

Plant: CALVERT CLIFFS UNIT 1
Outage: 04/88

Steam Generator: 12

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
1- 41	04/88	HT 5 - SF	+ 3.10"	DENT
	04/88	HT 5 - SF	+ 17.00"	DENT
1- 113	04/88	VM		DENT
2- 134	04/88	H5	+ 27.60"	DENT
5- 145	04/88	H5	+ 35.40"	DENT
7- 119	04/88	C6	+ 4.10"	DENT
7- 129	04/88	C6	+ 5.50"	DENT
7- 143	04/88	C6	+ 5.00"	DENT
7- 145	04/88	H6	+ 4.50"	DENT
7- 147	04/88	H6	+ 5.60"	DENT
7- 149	04/88	H6	+ 5.40"	DENT
9- 51	04/88	VM		DENT
9- 55	04/88	VM		DENT
9- 111	04/88	H1	+ 17.30"	DENT
9- 151	04/88	H1	+ 17.40"	DENT
10- 22	04/88	H5	+ 11.30"	DENT
10- 14	04/88	DC		DENT
10- 15	04/88	C1	+ 28.20"	DENT
11- 33	04/88	VM		DENT
11- 1	04/88	C6	+ 23.20"	DENT
11- 2	04/88	VM		DENT
11- 15	04/88	DC		DENT
11- 107	04/88	C6	+ 7.70"	DENT
11- 109	04/88	C6	+ 7.70"	DENT
11- 133	04/88	C6	+ 7.90"	DENT
11- 135	04/88	VM		DENT
11- 137	04/88	VM		DENT
11- 139	04/88	VM		DENT
11- 141	04/88	C6	+ 8.10"	DENT
11- 143	04/88	VM		DENT
11- 145	04/88	C6	+ 8.10"	DENT
11- 147	04/88	C6	+ 8.00"	DENT
11- 149	04/88	C6	+ 7.90"	DENT
11- 151	04/88	VM		DENT
11- 153	04/88	DC		DENT
11- 155	04/88	H3	+ 5.90"	DENT
11- 157	04/88	VM		DENT
11- 161	04/88	C6	+ 8.80"	DENT
11- 163	04/88	C6	+ 8.80"	DENT
11- 165	04/88	HT 5 - SF	+ 25.90"	DENT
11- 167	04/88	VM		DENT
11- 169	04/88	VM		DENT
15- 145	04/88	H1	+ 7.50"	DENT
19- 139	04/88	H6	+ 2.50"	DENT
	04/88	H6	+ 5.20"	DENT
20- 120	04/88	DC		DENT
11- 39	04/88	VM	+ 6.80"	DENT
11- 51	04/88	VM	+ 5.80"	DENT
11- 53	04/88	VM	+ 5.80"	DENT
11- 55	04/88	VM	+ 5.60"	DENT
11- 57	04/88	VM	+ 5.00"	DENT
11- 27	04/88	C6		DENT
11- 135	04/88	H6	+ 18.70"	DENT
11- 124	04/88	VM		DENT
11- 49	04/88	VM		DENT
11- 36	04/88	H3		DENT
11- 57	04/88	VM		DENT
11- 143	04/88	CT 5 - SF	+ 30.20"	DENT
11- 136	04/88	VM		DENT
11- 156	04/88	VM	+ 0.40"	DENT
11- 158	04/88	VM		DENT

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS	
	04/88	G7	+ 14.20"	DENT	11
	04/88	G7	+ 15.60"	DENT	11
67- 41	04/88	H7	+ 23.80"	DENT	11
67- 49	04/88	H7	+ 10.60"	DENT	11
	04/88	H7	+ 11.30"	DENT	4
	04/88	H8	+ 11.30"	DENT	4
67- 81	04/88	JH	+ 13.40"	DENT	11
67- 97	04/88	H8		DENT	11
67- 115	04/88	CC7	+ 1.40"	DENT	11
	04/88	CC7	+ 8.40"	DENT	11
	04/88	CC6		DENT	11
67- 139	04/88	CC7	+ 11.00"	DENT	11
	04/88	CC7	+ 18.00"	DENT	11
	04/88	CC7	+ 20.70"	DENT	11
67- 151	04/88	CC7	+ 17.10"	DENT	11
	04/88	CC8	+ 2.60"	DENT	11
69- 21	04/88	JH	+ 18.40"	DENT	11
69- 31	04/88	H7	+ 21.00"	DENT	11
69- 49	04/88	JH	+ 14.90"	DENT	11
69- 73	04/88	CC7	+ 18.00"	DENT	11
	04/88	CC7		DENT	11
69- 83	04/88	JH	+ 11.50"	DENT	11
69- 85	04/88	CC7	+ 11.10"	DENT	11
69- 87	04/88	CC8	+ 1.00"	DENT	11
	04/88	CC8		DENT	11
69- 105	04/88	HK		DENT	11
69- 115	04/88	HJ	+ 16.70"	DENT	11
	04/88	HJ		DENT	11
69- 139	04/88	HJ	+ 11.50"	DENT	11
70- 64	04/88	HJ	+ 16.70"	DENT	11
	04/88	HJ	+ 13.30"	DENT	11
	04/88	HJ	+ 13.90"	DENT	11
	04/88	CC8		DENT	11
70- 132	04/88	HJ	+ 18.50"	DENT	11
	04/88	HJ	+ 13.10"	DENT	11
70- 136	04/88	HJ	+ 11.80"	DENT	11
	04/88	HJ	+ 4.10"	DENT	11
	04/88	H8		DENT	11
	04/88	H8	+ 13.00"	DENT	11
	04/88	JH	+ 20.50"	DENT	11
	04/88	JH	+ 4.90"	DENT	11
71- 43	04/88	V4		DENT	11
71- 105	04/88	CC7		DENT	11
74- 80	04/88	CC7	+ 13.60"	DENT	11
	04/88	CC7	+ 13.40"	DENT	11
	04/88	CC7	+ 12.80"	DENT	11
	04/88	CC7	+ 12.00"	DENT	11
	04/88	CC7	+ 11.60"	DENT	11
76- 18	04/88	CC7		DENT	11
76- 78	04/88	CC7	+ 20.80"	DENT	11
	04/88	CC7	+ 18.40"	DENT	11
	04/88	CC7	+ 17.60"	DENT	11
77- 37	04/88	CC7	+ 23.20"	DENT	11
77- 93	04/88	H5	+ 9.20"	DENT	11
	04/88	H5	+ 6.70"	DENT	11
78- 42	04/88	CC7	+ 17.20"	DENT	11
	04/88	CC7	+ 11.40"	DENT	11
	04/88	CC7	+ 22.10"	DENT	11
	04/88	CC7	+ 22.00"	DENT	11
78- 136	04/88	H5	+ 10.30"	DENT	11
79- 135	04/88	H5	+ 10.30"	DENT	11
79- 139	04/88	H5	+ 1.70"	DENT	11

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
81-	81	04/888	HTS-SF	20
		04/888		6
81-	131	04/888		5
82-	32	04/888		9
		04/888		14
		04/888		12
		04/888		6
82-	88	04/888		6
82-	114	04/888		5
85-	123	04/888		10
		04/888		10
86-	84	04/888		6
86-		04/888		6
86-	133	04/888		1
86-	133	04/888		7
86-	133	04/888		7
86-	140	04/888		1
86-	140	04/888		1
87-	125	04/888		10
87-	133	04/888		6
90-	300	04/888		1
90-	66	04/888		5
91-	111	04/888		7
91-	337	04/888		5
91-	339	04/888		0
91-	441	04/888		0
91-	443	04/888		0
		04/888		7
91-	47	04/888		4
91-	54	04/888		1
91-	54	04/888		6
91-	54	04/888		3
91-	54	04/888		6
91-	54	04/888		6
91-	54	04/888		0
91-	54	04/888		6
91-	54	04/888		4
91-	54	04/888		4
91-	69	04/888		4
91-	73	04/888		10
91-	77	04/888		6
91-	77	04/888		17
91-	85	04/888		4
91-	87	04/888		6
91-	89	04/888		2
91-	89	04/888		9
91-	93	04/888		5
91-	95	04/888		9
91-	97	04/888		3
91-	99	04/888		1
91-	99	04/888		7
91-	105	04/888		3
91-	107	04/888		6
91-	109	04/888		8
91-	111	04/888		8
91-	113	04/888		2
91-	115	04/888		2
		04/888		8
91-	117	04/888		3
91-	119	04/888		8
91-	127	04/888		4
91-	129	04/888		6
91-	129	04/888		3
91-	131	04/888		1
91-	141	04/888		9
		04/888		6

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
36	04/0000	H09	DENT	11
38	04/0000	H09	DENT	11
40	04/0000	H09	DENT	11
42	04/0000	H09	DENT	11
44	04/0000	H09	DENT	11
46	04/0000	H09	DENT	11
52	04/0000	H09	DENT	11
54	04/0000	H09	DENT	11
56	04/0000	H09	DENT	11
58	04/0000	H09	DENT	11
60	04/0000	H09	DENT	11
64	04/0000	H09	DENT	11
66	04/0000	H09	DENT	11
68	04/0000	H09	DENT	11
70	04/0000	H09	DENT	11
72	04/0000	H09	DENT	11
74	04/0000	H09	DENT	11
76	04/0000	H09	DENT	11
78	04/0000	H09	DENT	11
80	04/0000	H09	DENT	11
88	04/0000	H09	DENT	11
90	04/0000	H09	DENT	11
94	04/0000	H09	DENT	11
96	04/0000	H09	DENT	11
98	04/0000	H09	DENT	11
100	04/0000	H09	DENT	11
104	04/0000	H09	DENT	11
106	04/0000	H09	DENT	11
110	04/0000	H09	DENT	11
112	04/0000	H09	DENT	11
114	04/0000	H09	DENT	11
116	04/0000	H09	DENT	11
118	04/0000	H09	DENT	11
124	04/0000	H09	DENT	11
128	04/0000	H09	DENT	11
130	04/0000	H09	DENT	11
132	04/0000	H09	DENT	11
134	04/0000	H09	DENT	11
136	04/0000	H09	DENT	11
138	04/0000	H09	DENT	11
140	04/0000	H09	DENT	11
142	04/0000	H09	DENT	11
144	04/0000	H09	DENT	11
146	04/0000	H09	DENT	11
148	04/0000	H09	DENT	11
150	04/0000	H09	DENT	11
152	04/0000	H09	DENT	11
154	04/0000	H09	DENT	11
156	04/0000	H09	DENT	11
158	04/0000	H09	DENT	11
160	04/0000	H09	DENT	11
162	04/0000	H09	DENT	11
164	04/0000	H09	DENT	11
166	04/0000	H09	DENT	11
168	04/0000	H09	DENT	11
170	04/0000	H09	DENT	11
172	04/0000	H09	DENT	11
174	04/0000	H09	DENT	11
176	04/0000	H09	DENT	11
178	04/0000	H09	DENT	11
180	04/0000	H09	DENT	11
182	04/0000	H09	DENT	11
184	04/0000	H09	DENT	11
186	04/0000	H09	DENT	11
188	04/0000	H09	DENT	11
190	04/0000	H09	DENT	11
192	04/0000	H09	DENT	11
194	04/0000	H09	DENT	11
196	04/0000	H09	DENT	11
198	04/0000	H09	DENT	11
200	04/0000	H09	DENT	11

+ 2.00"

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-EL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
100 -	52	04 /		
100 -	54	04 /		
100 -	56	04 /		
100 -	60	04 /		
100 -	62	04 /		
100 -	66	04 /		
100 -	68	04 /		
			+ 22.10"	
10	70	04 /		
10000	72	04 /		
10000	74	04 /		
10000	76	04 /		
10000	78	04 /		
10000	80	04 /		
10000	82	04 /		
10000	84	04 /		
10000	86	04 /		
10000	88	04 /		
10000	90	04 /		
10000	92	04 /		
10000	94	04 /		
10000	96	04 /		
10000	98	04 /		
10000	100	04 /		
			+ 9.30"	
10000	44	04 /		
10000	46	04 /		
10000	48	04 /		
10000	50	04 /		
10000	52	04 /		
10000	54	04 /		
10000	56	04 /		
10000	58	04 /		
10000	60	04 /		
10000	62	04 /		
10000	64	04 /		
10000	66	04 /		
10000	68	04 /		
10000	70	04 /		
10000	72	04 /		
10000	74	04 /		
10000	76	04 /		
10000	78	04 /		
10000	80	04 /		
10000	82	04 /		
10000	84	04 /		
10000	86	04 /		
10000	88	04 /		
10000	90	04 /		
10000	92	04 /		
10000	94	04 /		
10000	96	04 /		
10000	98	04 /		
10000	100	04 /		
			+ 17.60"	
10000	44	04 /		
10000	46	04 /		
10000	48	04 /		
10000	50	04 /		
10000	52	04 /		
10000	54	04 /		
10000	56	04 /		
10000	58	04 /		
10000	60	04 /		
10000	62	04 /		
10000	64	04 /		
10000	66	04 /		
10000	68	04 /		
10000	70	04 /		
10000	72	04 /		
10000	74	04 /		
10000	76	04 /		
10000	78	04 /		
10000	80	04 /		
10000	82	04 /		
10000	84	04 /		
10000	86	04 /		
10000	88	04 /		
10000	90	04 /		
10000	92	04 /		
10000	94	04 /		
10000	96	04 /		
10000	98	04 /		
10000	100	04 /		
			+ 8.40"	

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
	04/88	H9	DENT	56
105 -	53 04/88	H9	DENT	112
105 -	55 04/88	H9	DENT	97
105 -	57 04/88	H9	DENT	36
105 -	59 04/88	H9	DENT	42
105 -	63 04/88	H9	DENT	66
105 -	67 04/88	H9	DENT	80
105 -	69 04/88	H9	DENT	80
105 -	71 04/88	H9	DENT	26
105 -	73 04/88	H9	DENT	37
105 -	75 04/88	H9	DENT	55
105 -	77 04/88	H9	DENT	30
105 -	79 04/88	H9	DENT	66
105 -	83 04/88	H9	DENT	43
105 -	85 04/88	H9	DENT	00
105 -	87 04/88	H9	DENT	56
105 -	89 04/88	H9	DENT	66
105 -	91 04/88	H9	DENT	66
105 -	93 04/88	H9	DENT	66
105 -	95 04/88	H9	DENT	66
105 -	97 04/88	H9	DENT	66
105 -	99 04/88	H9	DENT	66
105 -	101 04/88	H9	DENT	66
105 -	109 04/88	H9	DENT	66
105 -	111 04/88	H9	DENT	66
105 -	113 04/88	H9	DENT	66
105 -	115 04/88	H9	DENT	66
105 -	117 04/88	H9	DENT	66
105 -	121 04/88	H9	DENT	66
105 -	125 04/88	H9	DENT	41
106 -	42 04/88	H9	DENT	66
106 -	46 04/88	H9	DENT	66
106 -	48 04/88	H9	DENT	66
106 -	50 04/88	H9	DENT	66
106 -	52 04/88	H9	DENT	66
106 -	54 04/88	H9	DENT	44
106 -	56 04/88	H9	DENT	44
106 -	58 04/88	H9	DENT	66
106 -	60 04/88	H9	DENT	66
106 -	62 04/88	H9	DENT	66
106 -	64 04/88	H9	DENT	66
106 -	66 04/88	H9	DENT	66
106 -	68 04/88	H9	DENT	66
106 -	70 04/88	H9	DENT	66
106 -	74 04/88	H9	DENT	46
106 -	76 04/88	H9	DENT	66
106 -	80 04/88	H9	DENT	18
106 -	84 04/88	H9	DENT	11
106 -	88 04/88	H9	DENT	60
106 -	90 04/88	H9	DENT	66
106 -	94 04/88	H9	DENT	47
106 -	96 04/88	H9	DENT	67
106 -	98 04/88	H9	DENT	80
106 -	100 04/88	H9	DENT	66
106 -	102 04/88	H9	DENT	66
106 -	104 04/88	H9	DENT	66
106 -	108 04/88	H9	DENT	66
106 -	114 04/88	H9	DENT	66
106 -	116 04/88	H9	DENT	66
106 -	122 04/88	H9	DENT	66
106 -	124 04/88	H9	DENT	66
106 -	126 04/88	H9	DENT	66
107 -	43 04/88	H9	DENT	66
107 -	47 04/88	H9	DENT	66

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
107-	49	04/8888	H9	21
107-	51	04/8888	H9	50
		04/8888	H9	50
		04/8888	H9	50
		04/8888	H9	50
107-	53	04/8888	H9	30
107-	55	04/8888	H9	78
107-	57	04/8888	H9	49
107-	59	04/8888	H9	69
107-	61	04/8888	H9	46
107-	63	04/8888	H9	44
107-	67	04/8888	H9	33
107-	71	04/8888	H9	23
107-	73	04/8888	H9	66
107-	75	04/8888	H9	66
107-	77	04/8888	H9	66
107-	83	04/8888	H9	66
107-	85	04/8888	H9	66
107-	87	04/8888	H9	66
107-	89	04/8888	H9	66
107-	91	04/8888	H9	66
107-	93	04/8888	H9	66
107-	95	04/8888	H9	66
107-	97	04/8888	H9	66
107-	99	04/8888	H9	66
107-	101	04/8888	H9	66
107-	107	04/8888	H9	66
107-	109	04/8888	H9	66
107-	113	04/8888	H9	66
107-	115	04/8888	H9	66
107-	119	04/8888	H9	66
107-	121	04/8888	H9	66
107-	123	04/8888	H9	66
107-	125	04/8888	H9	66
108-	40	04/8888	H9	66
108-	44	04/8888	H9	66
108-	48	04/8888	H9	66
108-	50	04/8888	H9	66
108-	52	04/8888	H9	66
108-	54	04/8888	H9	66
108-	56	04/8888	H9	66
108-	58	04/8888	H9	66
108-	60	04/8888	H9	66
108-	62	04/8888	H9	66
108-	64	04/8888	H9	66
108-	66	04/8888	H9	66
108-	68	04/8888	H9	66
108-	70	04/8888	H9	66
108-	72	04/8888	H9	66
108-	74	04/8888	H9	66
108-	76	04/8888	H9	66
108-	80	04/8888	H9	66
108-	82	04/8888	H9	66
108-	84	04/8888	H9	66
108-	88	04/8888	X9	66
108-	90	04/8888	H9	66
108-	92	04/8888	H9	66
108-	94	04/8888	H9	66
108-	96	04/8888	H9	66
108-	98	04/8888	H9	66
108-	100	04/8888	H9	66
108-	102	04/8888	H9	66
108-	104	04/8888	H9	66
108-	106	04/8888	H9	66
108-	108	04/8888	H9	66
108-	112	04/8888	H9	66

+ 9.00"
 + 6.60"

1

Plant: CALVERT CLIFFS UNIT 1
 Outage: 04/88

Steam Generator: 12

QUERY: DENTS, ALL MILS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
122 - 100	04/88	H10	DENT	36
122 - 102	04/88	H10	DENT	7
122 - 104	04/88	H9	DENT	6
123 - 63	04/88	H10	DENT	14
123 - 121	04/88	C5 + 28.70"	DENT	11
124 - 54	04/88	H9	DENT	5
	04/88	C7 + 4.40"	DENT	8
124 - 62	04/88	H10	DENT	13
124 - 116	04/88	C9 + 3.10"	DENT	5
125 - 67	04/88	VM + 29.10"	DENT	8
125 - 83	04/88	VM	DENT	6
126 - 94	04/88	VH	DENT	18
126 - 94	04/88	VH	DENT	21
130 - 14	04/88	VH	DENT	7
130 - 96	04/88	VH	DENT	10
132 - 94	04/88	VH	DENT	7
134 - 108	04/88	VH + 24.80"	DENT	7
135 - 107	04/88	VH + 24.70"	DENT	8
138 - 92	04/88	DC	DENT	6

TOTAL TUBES: 1105

STEAM GENERATOR 12

- I. List with Plot of Tubes Plugged during
the April/June 1988 Outage

SG 12 PLOT OF TUBES PLUGGED ON HOT LEG. 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

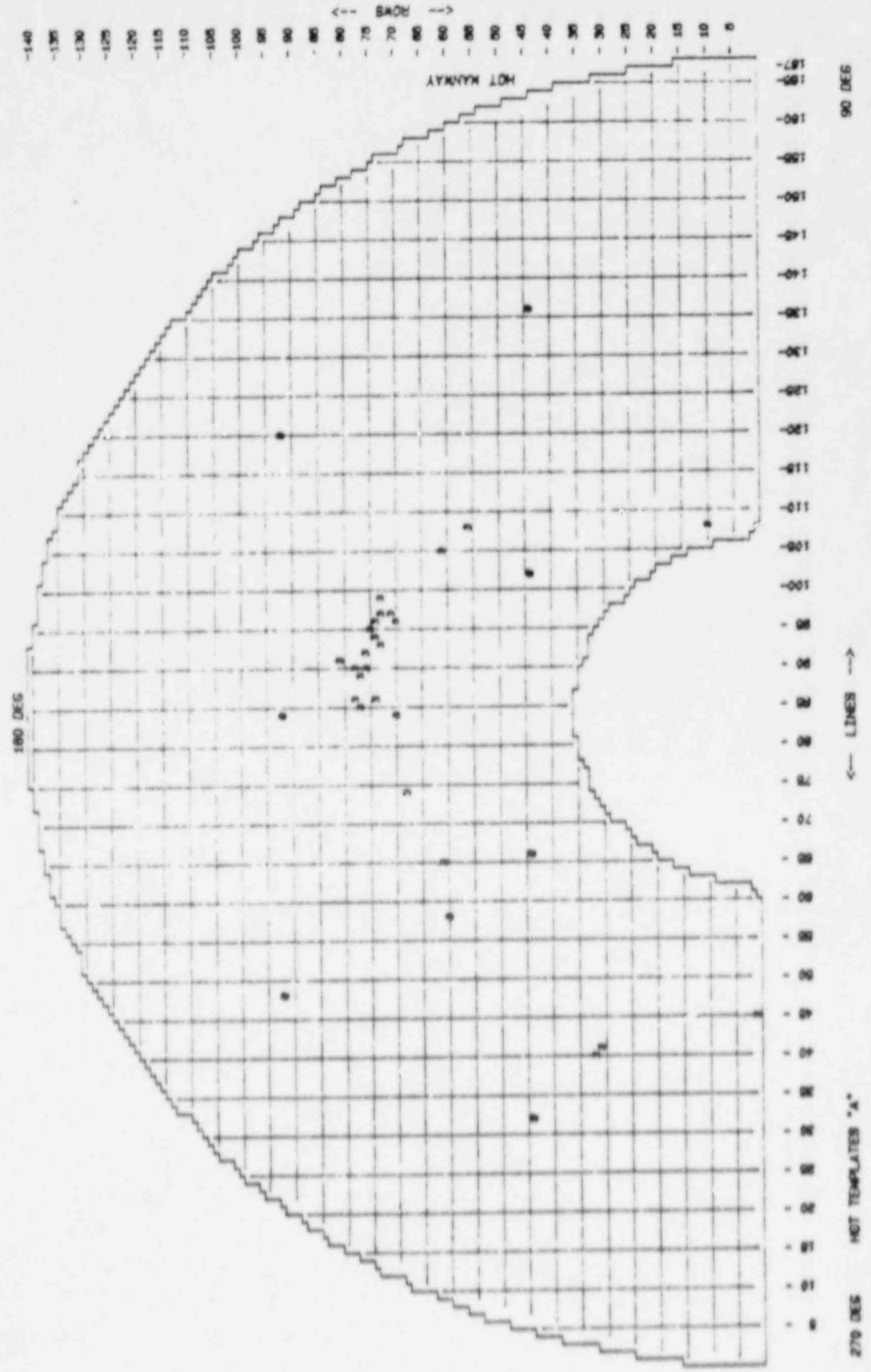
GENERATOR: 12

TOTAL TUBES: 8519
 STAYS (Ø): 7

3 - PLUGGED - MED-H (26)

- MULTIPLE INDICATION (0)

TOTAL TUBES ASSIGNED: 26



SG :2 PLOT OF TUBES PLUGGED ON COLD LEG, 4/88 OUTAGE

PLANT: CALVERT CLIFFS UNIT 1
 OUTAGE: 04/88

GENERATOR: 12

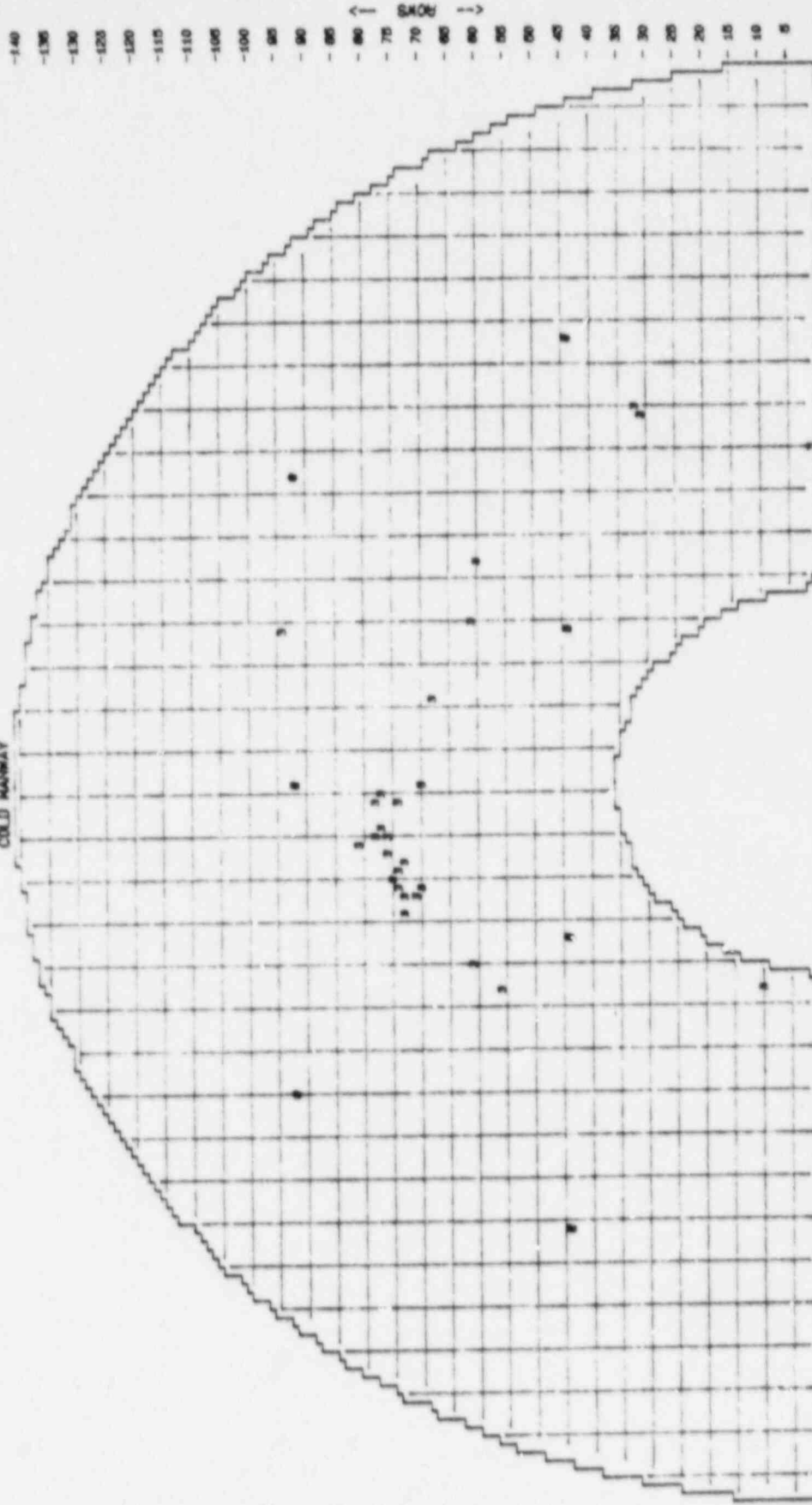
3 - PLUGGED - MED-M (27)

- MULTIPLE INDICATION (0)

TOTAL TUBES: 8519
 STAYS (S): 7

TOTAL TUBES ASSIGNED: 27

COLD MAINWAY



20 DEG 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

270 DEG

← LINES →

20 DEG COLD TEMPLATES "B"

QUERY: PLUGGED - MECH-W, MTS-PF (OUT OF SERV), ALL-PL

ROW-LINE	OUTAGE	ELEVATION	INDICATION
1 -	45	04/88	H
10 -	108	04/88	L
31 -	41	04/88	L
32 -	40	04/88	L
56 -	108	04/88	L
60 -	58	04/88	L
61 -	65	04/88	L
61 -	105	04/88	L
68 -	74	04/88	L
70 -	84	04/88	L
70 -	96	04/88	L
71 -	97	04/88	L
73 -	93	04/88	L
73 -	97	04/88	L
73 -	99	04/88	L
74 -	86	04/88	L
74 -	94	04/88	L
74 -	96	04/88	L
75 -	95	04/88	L
76 -	90	04/88	L
77 -	85	04/88	L
77 -	89	04/88	L
78 -	86	04/88	L
78 -	90	04/88	L
81 -	91	04/88	L

TOTAL TUBES: 20

QUERY: PLUGGED - MECK-W, CTS-PF (OUT OF SERV), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION
1 -	45	04/88	PLUGGED - MECK
10 -	108	04/88	PLUGGED - MECK
31 -	41	04/88	PLUGGED - MECK
32 -	40	04/88	PLUGGED - MECK
56 -	108	04/88	PLUGGED - MECK
60 -	58	04/88	PLUGGED - MECK
61 -	65	04/88	PLUGGED - MECK
61 -	105	04/88	PLUGGED - MECK
68 -	74	04/88	PLUGGED - MECK
70 -	84	04/88	PLUGGED - MECK
70 -	66	04/88	PLUGGED - MECK
71 -	97	04/88	PLUGGED - MECK
73 -	93	04/88	PLUGGED - MECK
73 -	97	04/88	PLUGGED - MECK
73 -	99	04/88	PLUGGED - MECK
74 -	86	04/88	PLUGGED - MECK
74 -	94	04/88	PLUGGED - MECK
74 -	96	04/88	PLUGGED - MECK
75 -	95	04/88	PLUGGED - MECK
76 -	90	04/88	PLUGGED - MECK
76 -	92	04/88	PLUGGED - MECK
77 -	85	04/88	PLUGGED - MECK
77 -	89	04/88	PLUGGED - MECK
78 -	86	04/88	PLUGGED - MECK
78 -	90	04/88	PLUGGED - MECK
81 -	91	04/88	PLUGGED - MECK
94 -	88	04/88	PLUGGED - MECK

TOTAL TUBES: 27

Steam Generator #12 Tubes Plugged During the April 1988
Outage:

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
1	45	Eddy Current Testing Indication of 49% wall loss originating on the outside diameter of the tube at CTS-SF+0.50 inches.
31	41	Eddy Current Testing Indication of 47% wall loss originating on the outside diameter of the tube at HTS-SF+0.70 inches.
32	40	Eddy Current Testing Indication of 42% wall loss originating on the outside diameter of the tube at HTS-SF+0.70 inches.
61	65	Eddy Current Testing Indication of 42% wall loss originating on the outside diameter of the tube at HTS-SF+0.70 inches.
61	105	Eddy Current Testing Indication of 49% wall loss originating on the outside diameter of the tube at HTS-SF+1.00 inches.
70	84	Eddy Current Testing Indication of 45% wall loss originating on the outside diameter of the tube at HTS-SF+0.70 inches.
70	96	Eddy Current Testing Indication of 64% wall loss originating on the outside diameter of the tube at HTS-SF+0.70 inches.
71	97	Eddy Current Testing Indication of 47% wall loss originating on the outside diameter of the tube at HTS-SF+0.50 inches.
73	93	Eddy Current Testing Indication of 54% wall loss originating on the outside diameter of the tube at HTS-SF+0.70 inches.
74	96	Eddy Current Testing Indication of 45% wall loss originating on the outside diameter of the tube at HTS-SF+0.60 inches.

Steam Generator #12 Tubes Plugged During the April 1988
Outage:

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
75	75	Eddy Current Testing Indication of 67% wall loss originating on the outside diameter of the tube at CTS-SF+0.70 inches.
76	92	Eddy Current Testing Indication of 53% wall loss originating on the outside diameter of the tube at HTS-SF+0.60 inches.
77	85	Eddy Current Testing Indication of 52% wall loss originating on the outside diameter of the tube at HTS-SF+2.70 inches.
77	89	Eddy Current Testing Indication of 43% wall loss originating on the outside diameter of the tube at HTS-SF+2.20 inches.
78	86	Eddy Current Testing Indication of 44% wall loss originating on the outside diameter of the tube at HTS-SF+0.60 inches.
78	90	Eddy Current Testing Indication of 47% wall loss originating on the outside diameter of the tube at HTS-SF+1.30 inches.
94	66	Cold leg side plugged. Cold leg tube plug found to have been installed into adjacent tube (R93 L67) during the 1986 Refueling Outage on Unit 1. See LER 317/88-03.
10	108	Eddy Current Testing Indication of 38% wall loss originating on the outside diameter of the tube at HTS-SF+0.80 inches.
56	108	Eddy Current Testing Indication of 31% wall loss originating on the outside diameter of the tube at HTS-SF+1.40 inches.
60	58	Eddy Current Testing Indication of 16% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+0.60 inches.

Steam Generator #12 Tubes Plugged During the April 1988
Outage:

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
68	74	Eddy Current Testing Indication of 38% wall loss originating on the outside diameter of the tube at HTS-SF+1.20 inches.
73	97	Multiple Eddy Current Testing Indications of 39%, 19% and 36% wall loss originating on the outside diameter of the tube at HTS-SF+1.70, +1.10, and +0.50 inches, respectively.
73	99	Eddy Current Testing Indication of 26% wall loss originating on the outside diameter of the tube at HTS-SF+1.10 inches.
74	86	Eddy Current Testing Indication of 38% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+1.40 inches.
74	94	Multiple Eddy Current Testing Indications of 33%, 28%, and 13% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+1.40, +1.10, and +0.50 inches, respectively.
76	90	Eddy Current Testing Indication of 28% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+1.50 inches.
81	91	Multiple Eddy Current Testing Indications of 10% and 19% wall loss with high voltage signal originating on the outside diameter of the tube at HTS-SF+1.50 and +0.50 inches, respectively.



CHARLES CENTER • P.O. BOX 1475 • BALTIMORE, MARYLAND 21203

NUCLEAR OPERATIONS DEPARTMENT
CALVERT CLIFFS NUCLEAR POWER PLANT
LUSBY, MARYLAND 20657

May 19, 1988

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

Docket No. 50-317
License No. DPR 53

Dear Sirs:

The attached LER 88-003 is being sent to you as required by 10 CFR 50.73.

Should you have any questions regarding this report, we would be pleased to discuss them with you.

Very truly yours,

J.R. Lenons
Manager - Nuclear Operations Department

JRL:PCR:plv

cc: William T. Russell
Director, Office of Management Information and Program Control
Messrs: J.A. Tiernan
W.J. Lippold

dlc: messrs: Thomas Magette
INPO Records Center
F. J. Mirno
T. Foley
P. E. Kacy
J. T. Carroll

S. E. Jones, Jr.
W. T. Lyons
R. L. Wenderlich
J. W. Raynor
L. B. Russell
E. F. Wasson
American Nuclear Insurer

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1): Calvert Cliffs, Unit-1 DOCKET NUMBER (2): 050003171 OF 02 PAGE 1

Incorrect Steam Generator Tube Plugged Due to Personnel Error

EVENT DATE (5)				LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)								
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER (3)								
1	2	0	9	8	6	8	8	0	0	3	0	0	0	0	0	0	0	0	0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11):

OPERATING MODE (9): <u>6</u>	20.402(a)	20.406(a)	20.72(a)(1)(H)	72.71(b)
POWER LEVEL (10): <u>0100</u>	20.406(a)(1)(I)	20.406(a)(1)	20.72(a)(1)(H)	72.71(c)
	20.406(a)(1)(J)	20.406(a)(2)	20.72(a)(1)(I)	OTHER (Specify in Abstract below and in Text, NRC Form 306A)
	20.406(a)(1)(K)	X 20.72(a)(2)(I)	20.72(a)(2)(H)(A)	
	20.406(a)(1)(L)	20.72(a)(2)(B)	20.72(a)(2)(H)(B)	
	20.406(a)(1)(M)	20.72(a)(2)(C)	20.72(a)(2)(H)(C)	

LICENSEE CONTACT FOR THIS LER (12):

NAME: R. C. Rudell TELEPHONE NUMBER: 3101226101-48115

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13):

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14):

YES (17) OR COMPLETE EXPECTED SUBMISSION DATE: X NO

EXPECTED SUBMISSION DATE (15):

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16):

During eddy-current testing of Calvert Cliffs Steam Generator No. 12 on April 23, 1988, a plug was found in the outlet tube sheet in a tube adjacent to the tube which should have been plugged. Combustion Engineering (CE) had installed the plug on December 9, 1986.

The cause was personnel error. Contributing factors were an inoperable tube position indicating system on the robotic arm being used and poor video monitoring clarity.

Calvert Cliffs personnel, assisted by a different contractor, are being used now and were used prior to using CE, with no incidents of this nature. Use of CE in the future will depend on their response to this event.

The outlet end of the defective tube has been plugged. The incorrectly plugged tube has been tested and evaluated as good.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Calvert Cliffs, Unit 1	0 5 0 0 0 3 1 7 8 8	—	0 0 3	—	0 0 0 2 OF 0 2

TEXT (if more than 1 reported, use additional NRC Form 256A 2-117)

On April 23, 1988, during eddy current examinations of the tubes in Calvert Cliffs Unit 1 Steam Generator No. 12 (E115 SB-SC), a plug was found in the outlet of tube R93L67 that was supposed to have been in adjacent tube R94L66.

Tube plugging operations in this steam generator had been performed on December 9, 1986. That operation was performed by remote control from outside the steam generator using a robotic arm manipulator with video monitoring. Combustion Engineering's (CE) personnel, equipment and Quality Assurance Program were utilized to perform the plugging under contract by Baltimore Gas and Electric. An audio-visual tape recording of these operations was provided by CE.

Review of the tape revealed that defective tube R94L66 had not been plugged on the outlet end, the plug intended for this tube was inserted into adjacent tube R93L67. Normally, an encoded tube position indicating system on the robotic arm is an additional indication of tube location, but that system was inoperable. Also, the video monitoring clarity was poor, making remote visual verification difficult.

The root cause of this event is personnel error. The inoperable position indicating system and the poor visual monitoring capability contributed to this personnel error.

Combustion Engineering has been given the details of this event. Future contracting of Combustion Engineering for steam generator plugging services will depend on their response and corrective actions.

Calvert Cliffs is presently using its own personnel and procedures with support from another contractor for steam generator tube plugging. These procedures require post installation visual verification that plugs are installed in identified locations. Locations marked for plugs are also verified by these procedures. This was the practice prior to the one-time contracting of Combustion Engineering steam generator tube plugging services, and no incidents of mis-plugging defective tubes have occurred previously at Calvert Cliffs. Therefore, we do not expect reoccurrence.

Defective tube R94L66 has been plugged. It contained a 44 percent through wall defect during the 1986 examination, and re-examination this spring showed 121 growth through the last cycle while only one tube end was plugged. Tube R93L67 was examined and is still not defective.

The safety consequences of this event are not significant. Had a rupture occurred in the defective tube, the plant is designed to respond and that event is analyzed in the Final Safety Analysis Report, Chapter 14, Section 15. Also, the extra tube plugged did not cause the total tubes plugged to reach the analyzed limit of no greater than 100.

No similar events have occurred.

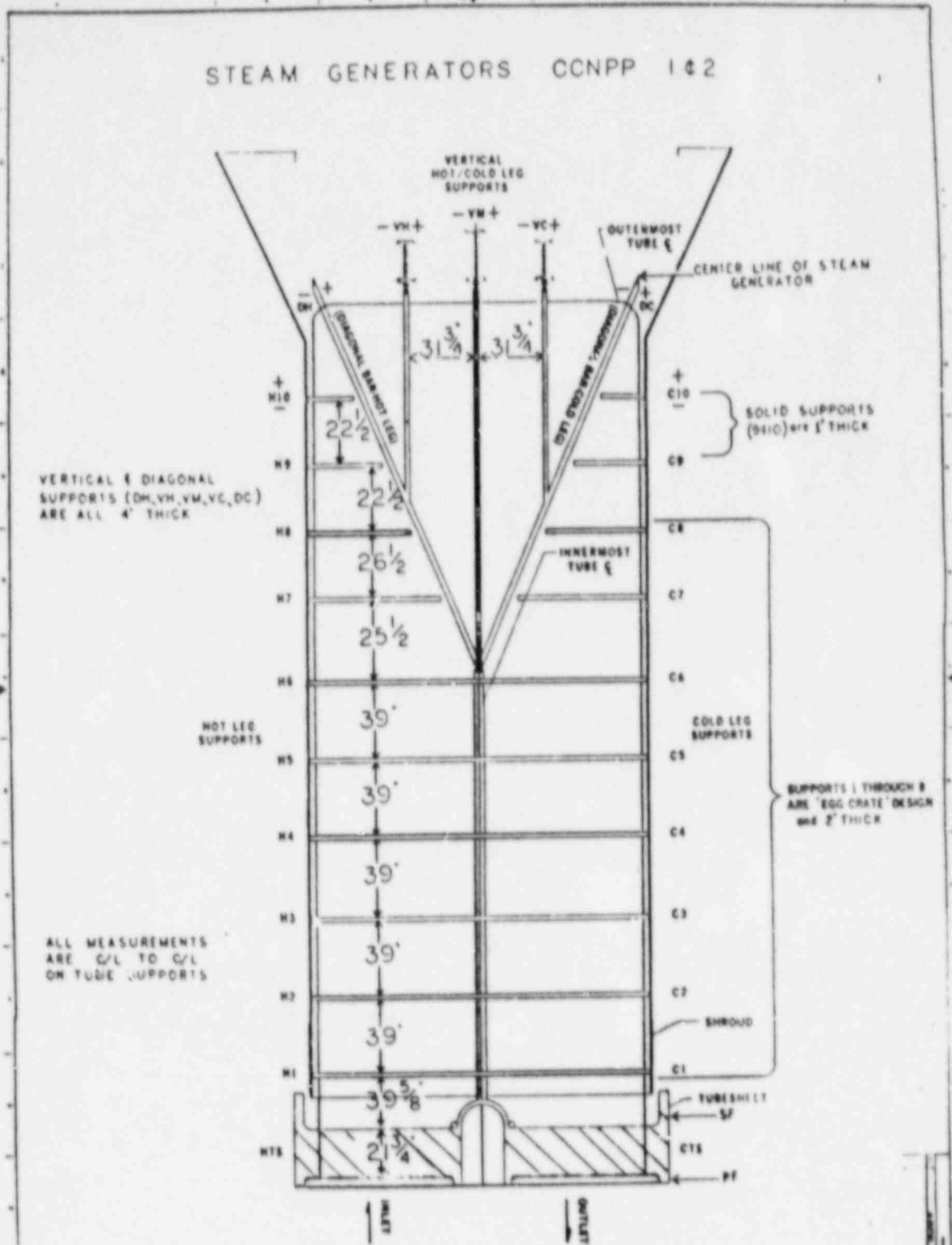
Calvert Cliffs contact for this event is Bernie Rudell, 301-260-4815.

APPENDIX III

STEAM GENERATOR INSPECTION INFORMATION

- A. Steam Generator Support Location
and Nomenclature
- B. Steam Generator Tube Sheet Pattern
and Numbering System
- C. Eddy Current Inspection Acronyms

STEAM GENERATORS CCNPP 142



VERTICAL & DIAGONAL SUPPORTS (DH, VH, VM, VC, DC) ARE ALL 4" THICK

ALL MEASUREMENTS ARE C/L TO C/L ON TUBE SUPPORTS

Rows Contacting Supports Above 6th TS

ROWS	NO. OF SUPPORTS	SUPPORT DESIGNATIONS
1-8	1	VM
10-35	3	DH, VM, DC
36-65	5	H7, DH, VM, DC, C7
66-73	7	H8, H7, DH, VM, DC, C7, C8
74-89	9	VH, H8, H7, DH, VM, DC, C7, C8, VC
90-115	11	H8, VH, H8, H7, DH, VM, DC, C7, C8, VC, C9
116-140	13	H10, H8, VH, H8, H7, DH, VM, DC, C7, C8, VC, C9, C10

SAMPLE HOT LEG TUBE SHEET MAP

PLANT: SILVERT CLIFFS

GENERATOR

8519

TOTAL TUBES:

STAYS (8): 7

- - TUBE LOCATIONS

180 DEG



HOT TEMPLATER

← LINES →

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270 DEG HOT TEMPLATER "A"

← LINES →

90 DEG

C. EDDY CURRENT INSPECTION ACRONYMS

DNT - DENT
PLG - PLUG
PV - PERMEABILITY
INC - INCOMPLETE
RT - RETEST
RES - RESTRICTED
RBD - RETEST BAD DATA
DI - DISTORTED INDICATION
UDS - UNDEFINED SIGNAL
INF - INDICATION NOT FOUND
SQR - SQUIRREL
PID - POSITIVE IDENTIFICATION
NT - NO TEST
CU - COPPER
FIX - FIXTURE
TP - TEMPLATE PLUG
BLG - BULGE
IDI - INSIDE DIAMETER INDICATION
IDV - INSIDE DIAMETER VARIATION
INR - INDICATION NOT REPORTABLE
SLG - SLUDGE
XHR - EXTRA HARD ROLL
RTI - ROLL TRANSITION INDICATION
APT - ABSOLUTE POSITIVE TRACE
NDD - NO DETECTABLE DEGRADATION
NRH - NOT ROLLED HOT
NRC - NOT ROLLED COLD