

CALVERT CLIFFS
UNIT 2
STEAM GENERATOR 21 and 22
EDDY CURRENT TESTING
FINAL REPORT
March/April 1987

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TABLE OF CONTENTS

I. INTRODUCTION

II. DISCUSSION

APPENDIX I - Eddy Current Test Results for S/G 21

- 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. List of Tubes not Rolled
- G. List of Tubes Dented
- H. List of Sludge Data
- I. List of Tubes Plugged During the 1987 Outage

APPENDIX II - Eddy Current Test Results for S/G 22

- 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. List of Tubes not Rolled
- G. List of Tubes Dented
- H. List of Sludge Data
- I. List of Tubes Plugged During the 1987 Outage

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

I. INTRODUCTION

Zetec, Inc. and NDE Technology were contracted in October 1986 to provide personnel to assist BG&E with the eddy current examination of the Calvert Cliffs Unit 2 Steam Generators in Lusby, Maryland. Zetec, Inc. provided nine people for data acquisition and five people for the primary data evaluation. NDE Technology provided four people for the secondary data evaluation.

This report summarizes the March/April 1987 eddy current (ET) inspection results of Calvert Cliffs Unit 2 Steam Generator.

II. DISCUSSION

The MIZ-18 eddy current system was used to inspect the Calvert Cliffs Unit 2 Steam Generators 21 and 22. 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 examination of Steam Generators 21 and 22 was performed using the Zetec MIZ-18 digital data acquisition system. The frequencies selected were 400, 100, 200, 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 with all distorted indications retested.

Edition 18.1 Rev.4.2 software with stripcharts was used to analyze data from the M12-18 digital data acquisition system. This system provides on-line data digitization and storage onto a magnetic data cartridge. All digital data (up to 8 channels) is sent directly to the HP-9836 computer from the cartridge recorder.

The initial eddy current(ET) testing plan for the March/April 1987 outage called for approximately 19% of the tubes in Steam Generators 21 and 22 to be inspected. From this inspection plan, 3% of the tubes in each Steam Generator(S/G) were pre-selected as the Technical Specification population to which the inspection results classification rules would be applied. Following analysis of the data from the Technical Specification sample, the results were determined to be in Category C-3 and the requirement to expand the inspection to 100% was carried out for both S/G's. All tubes were inspected through their entire length.

Indications were found in a total of 177 tubes from the 8,497 tubes examined in S/G 21 and 126 tubes from the 8,511 tubes examined in S/G 22. Forty-three tubes were found to be defective, 29 in S/G 21 and 14 in S/G 22. These tubes exceeded the plugging limit of 40% loss of nominal wall thickness. Additionally, 18 tubes which showed ET indications of less than 40% nominal wall loss were plugged for precautionary reasons. These 18 consisted of five tubes with indications at the upper supports, twelve tubes with indications within the tube sheet sludge area, and one indication at the first support.

Degradation at the upper support locations is suspected to be from wear. This is based on one tube previously removed from Unit 1. Metallurgical examination of Unit 1 tubing has shown that the degradation in the tube sheet sludge area is caused by Intergranular Attack(IGA). The one indication at the first support is also suspected to be IGA.

The following is a summary of the Unit Two 1987 inspection:

	<u>S/G #21</u>	<u>S/G #22</u>
Number of Tubes Inspected	8,497	8,511
Percent of Tubes Inspected	100%	100%
Number of Distorted Indications	22	35
Number of Tubes with Distorted Indications	19	34
Percent of Tubes with Distorted Indications	0.22%	0.39%
Number of Indications <20% (Imperfections)	92	71
Number of Tubes with <20% Indications	84	62
Percent of Tubes with <20% Indications	0.99%	0.73%
Number of Indications 20-39% (Degraded)	88	65
Number of Tubes with 20-39% Indications	78	55
Percent of Tubes with 20-39% Indications	0.92%	0.65%
Number of Indications >39% (Defective)	30	14
Number of Tubes with >39% Indications	29	14
Percent of Tubes with >39% Indications	0.34%	0.16%
Number of Tubes Plugged this Outage	41	20
Total Tubes Plugged each Steam Generator	63	28

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.

In addition to the standard eddy current testing, some tubes were inspected using 8x1 ET array contact probes. Some ET profilometry probe inspections were performed on S/G 22. The 8x1 contact probe inspection method was used to further quantify indications at the top of tube sheet sludge region. Profilometry was used to evaluate tube denting at the 9th and 10th solid support plates.

Appendix I and II contain the final ET inspection results and various plots showing S/G's 21 and 22 ET indication locations. All indications found were on the tube outside diameter with the exception of 4 inside diameter, all <20% through wall, in S/G 22. The tube ET indications can be placed into one of three major location categories:

- just above the top of the tube sheet
- at supports, or
- in free span areas between and not associated with supports (includes the inside diameter indications in S/G 22).

These inspection results are similar to that reported for Calvert Cliffs Unit 1. There are no apparent differences between Unit 1 and Unit 2 that indicate unique phenomenon occurring in any particular S/G. One would expect this to be the case since operating and chemistry conditions have remained similar between the two plants.

It is apparent that the indications found just above the top of the tube sheet, for the most part, are in regions of higher sludge levels. Most of these indications are on the inlet tube sheet side and produce relatively low magnitude signals. Tube specimens containing these type of indications were removed from Unit 1's S/G 11 and have undergone metallurgical and chemical evaluations. Results show that these indications are caused by intergranular attack (IGA).

ET indications seen at support locations appear to be caused by tube wear. Wear marks were confirmed at one tube's support contact region removed in 1983 from Unit 1's S/G 11. Note that most indications at supports occur at the vertical middle (VM), diagonal (DH & DC), and vertical (VH & VC) hot and cold leg side supports.

ET indications seen in free span areas are typically low magnitude signals. Three tube specimens containing free span indications were removed from Unit 1's S/G 11, one in November 1983 and two in November 1986. Investigations of the free span indications showed these indications are manufacturing imperfections. It was noted that there seems to be no correlation of free span indications with respect to location, elevation, inlet side or outlet side.

APPENDIX I
EDDY CURRENT TEST RESULTS
STEAM GENERATOR 21

- 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. List of Tubes not Rolled
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- H. List of Sludge Data
- I. List of Tubes Plugged During the 1987 Outage

STEAM GENERATOR 21

A. List with plot of All Indications

1987 STEAM GENERATOR #21, ALL INDICATIONS (00), ALL ELEVATIONS

PLANT: CALVERT CLIFFS UNIT 2

GENERATOR: 21

TOTAL TUBES: 8519

STAYS (S): 7

X = TUBES PLUGGED BEFORE 87 (22)
 = 00 INDICATIONS <20% (76)

Y = 00 INDICATIONS >30% (29)

Z = 00 INDICATIONS 20 - 30% (73)

TOTAL TUBES ASSIGNED: 100



Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 21

QUERY: ALL DEFECTS,ALL % TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

[illegible]

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 31

QUERY: ALL DEFECTS,ALL * TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	TW	VOLTS
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
15	15	15	15	15	15
16	16	16	16	16	16
17	17	17	17	17	17
18	18	18	18	18	18
19	19	19	19	19	19
20	20	20	20	20	20
21	21	21	21	21	21
22	22	22	22	22	22
23	23	23	23	23	23
24	24	24	24	24	24
25	25	25	25	25	25
26	26	26	26	26	26
27	27	27	27	27	27
28	28	28	28	28	28
29	29	29	29	29	29
30	30	30	30	30	30
31	31	31	31	31	31
32	32	32	32	32	32
33	33	33	33	33	33
34	34	34	34	34	34
35	35	35	35	35	35
36	36	36	36	36	36
37	37	37	37	37	37
38	38	38	38	38	38
39	39	39	39	39	39
40	40	40	40	40	40
41	41	41	41	41	41
42	42	42	42	42	42
43	43	43	43	43	43
44	44	44	44	44	44
45	45	45	45	45	45
46	46	46	46	46	46
47	47	47	47	47	47
48	48	48	48	48	48
49	49	49	49	49	49
50	50	50	50	50	50
51	51	51	51	51	51
52	52	52	52	52	52
53	53	53	53	53	53
54	54	54	54	54	54
55	55	55	55	55	55
56	56	56	56	56	56
57	57	57	57	57	57
58	58	58	58	58	58
59	59	59	59	59	59
60	60	60	60	60	60
61	61	61	61	61	61
62	62	62	62	62	62
63	63	63	63	63	63
64	64	64	64	64	64
65	65	65	65	65	65
66	66	66	66	66	66
67	67	67	67	67	67
68	68	68	68	68	68
69	69	69	69	69	69
70	70	70	70	70	70
71	71	71	71	71	71
72	72	72	72	72	72
73	73	73	73	73	73
74	74	74	74	74	74
75	75	75	75	75	75
76	76	76	76	76	76
77	77	77	77	77	77
78	78	78	78	78	78
79	79	79	79	79	79
80	80	80	80	80	80
81	81	81	81	81	81
82	82	82	82	82	82
83	83	83	83	83	83
84	84	84	84	84	84
85	85	85	85	85	85
8					

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 31

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	% TW	VOLTS
132 - 84	3/87	CCS	+ 18.30"	OD	1.05
	3/87	CCS	+ 4.60"	OD	1.05
	3/87	CCS	+ 35.80"	OD	1.05
133 - 110	3/87	CHT	+ 7.40"	OD	1.05
133 - 59	3/87	CHT	+ 6.80"	OD	1.05
133 - 109	3/87	CHT	+ 6.40"	OD	1.05
134 - 84	3/87	CHT	+ 6.40"	OD	1.05
135 - 83	3/87	CHT	+ 13.60"	OD	1.05
135 - 67	3/87	CHT	+ 17.70"	OD	1.05
	3/87	CHT	+ 18.90"	OD	1.05
	3/87	CHT	+ 18.90"	OD	1.05
135 - 81	3/87	CHT	+ 18.90"	OD	1.05
	3/87	CHT	+ 18.90"	OD	1.05
136 - 72	3/87	CHT	+ 18.90"	OD	1.05
	3/87	CHT	+ 18.90"	OD	1.05

TOTAL TUBES: 177

STEAM GENERATOR 21

B. List with plot of <20% Indications

PLOT OF <20% INDICATIONS

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

GENERATOR 21

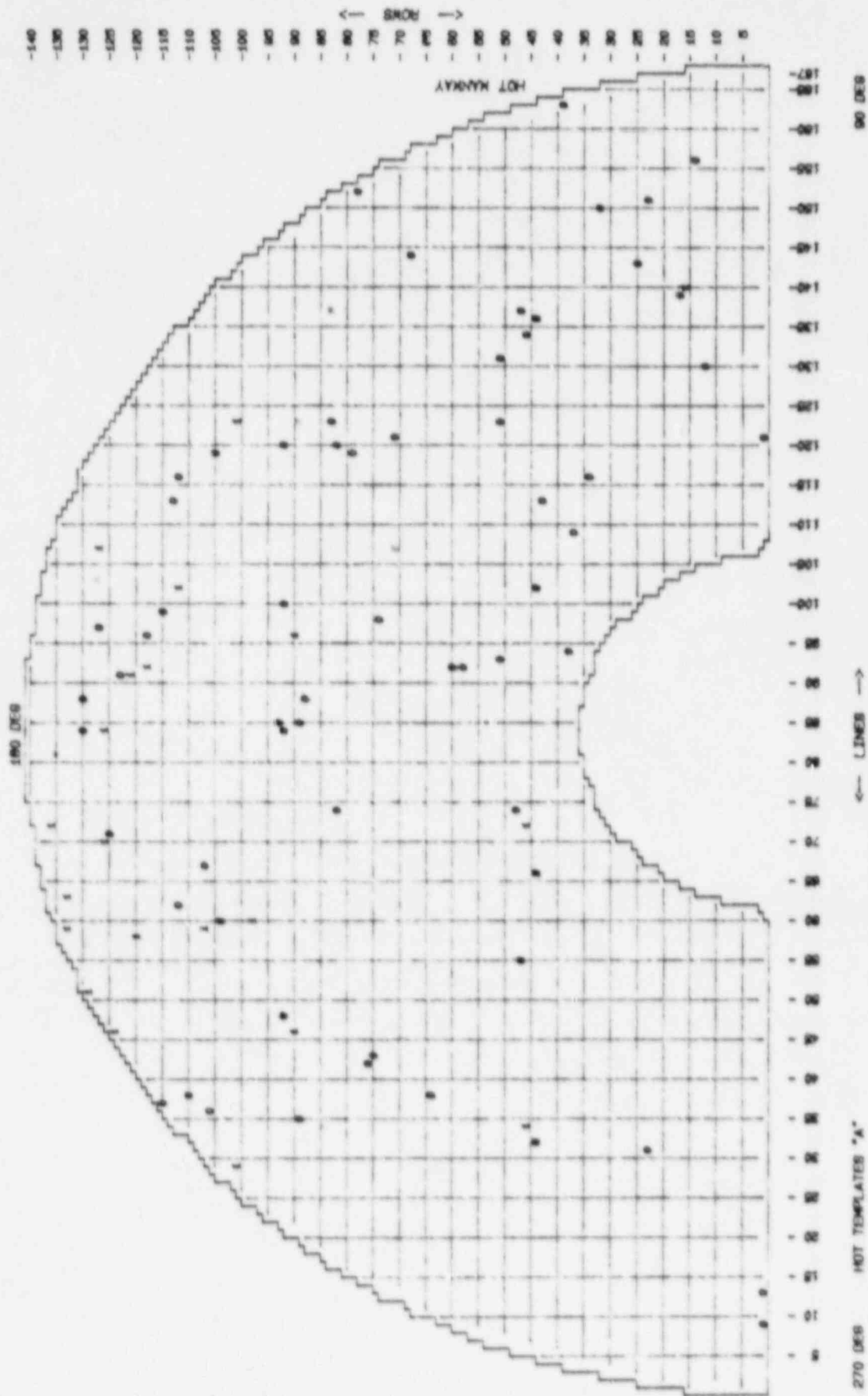
TOTAL TUBES: 8519
STAYS (#): 7

0 - 00 - <1 (96)
- MULTIPLE INDICATION (7)

1 - 00 - 1-45 (21)

6 - 00 - >45 (0)

TOTAL TUBES ASSIGNED: 84



STEAM GENERATOR 21

C. List with plot of 20%-39% Indications

PLOT OF 20-39% INDICATIONS

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

GENERATOR: 21

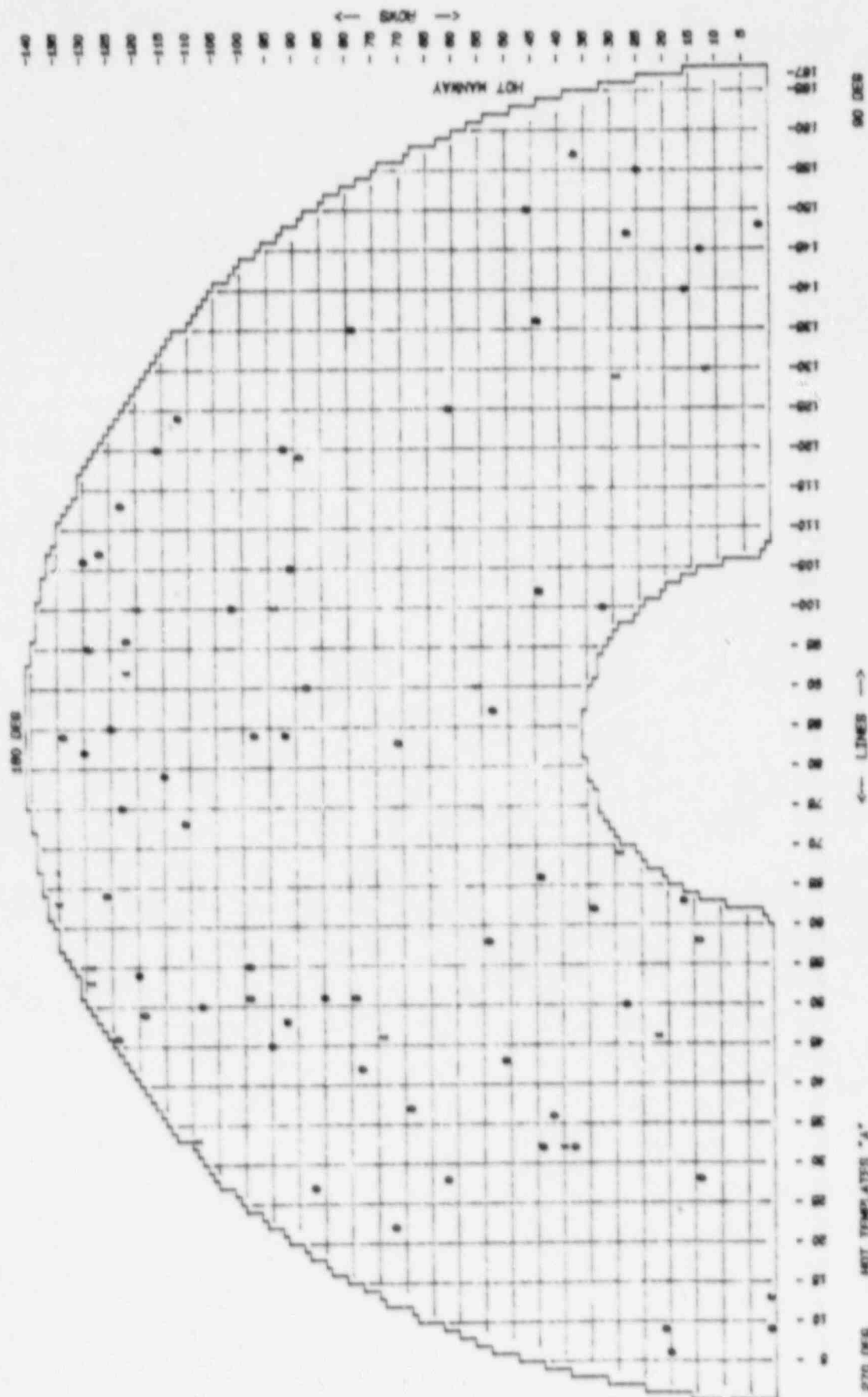
TOTAL TUBES: 8519
STAYS (S): 7

0 = 00 - <1 (RM)
- MULTIPLE INDICATION (M)

1 = 00 - 1-05 (14)

5 = 00 - 1-50

TOTAL TUBES ASSIGNED: 78



STEAM GENERATOR 21

D. List with plot of >39% Indications

STEAM GENERATOR 21

E. List with plot of Distorted Indications

STEAM GENERATOR 21

F. List of Tubes not Rolled

***** PARTIAL REPORT BASED ON THE FOLLOWING PARAMETERS *****

ROWS	ALL		
COLS	ALL	TOTAL ENTRIES =	2
VOLTS	ALL	TOTAL TUBES =	2
DEGREES	ALL		
PERCENT	ALL		
LOCATIONS	ALL		
ELEVATIONS	ALL		
PROBE SIZE	ALL		
TAPE NO.	ALL		

CODES NRH

CHANNELS ALL

COMMENTS ALL

***** PARTIAL REPORT AS A RESULT OF SORTING PARAMETERS *****
SUNDAY APRIL 19, 1987 11:37:03 AM

PLANT CALVERT CLIFFS UNIT# 2 S/G 21 PAGE 1 OF 1
ROW COL VOLTS DEG % CH# LOCATION IN INCHES EXTENT SIZE TAPE COMMENTS

64	56	NRH	1	HTS-SF-	21.70	TE-HL	560	30	FROM CL
140	76	NRH	1	HTS-SF-	21.70	TE-HL	560	54	FROM CL

***** PARTIAL REPORT BASED ON THE FOLLOWING PARAMETERS *****

ROWS ALL
COLS ALL
VOLTS ALL
DEGREES ALL
PERCENT ALL
LOCATIONS ALL
ELEVATIONS ALL
PROBE SIZE ALL
TAPE NO. ALL

TOTAL ENTRIES = 1
TOTAL TUBES = 1

CODES NRC

CHANNELS ALL

COMMENTS ALL

***** PARTIAL REPORT AS A RESULT OF SORTING PARAMETERS *****
SUNDAY APRIL 19, 1987 11:39:21 AM

PLANT CALVERT CLIFFS	UNIT# 2	S/G 21	PAGE	1 OF 1
ROW COL VOLTS DEG %	CH#	LOCATION IN INCHES	EXTENT	SIZE TAPE COMMENTS

93 145	NRC	1	CTS-SF- 21.70	TE-HL 560	5 FROM CL
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STEAM GENERATOR 21

G. List of Tubes Dented

Steam Generator: 21

1

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
1 -	151	VM	DENT	40
5 -	107	VM	DENT	10
8 -	2	04	DENT	9
9 -	57	04	DENT	17
10 -	326	04	DENT	6
10 -	36	04	DENT	6
15 -	41	06	DENT	10
15 -	167	06	DENT	10
16 -	124	06	DENT	1
16 -	102	06	DENT	1
16 -	69	06	DENT	1
16 -	11	06	DENT	1
16 -	75	06	DENT	1
16 -	68	06	DENT	1
36 -	108	06	DENT	1
40 -	86	06	DENT	1
41 -	17	06	DENT	1
41 -	73	06	DENT	1
41 -	87	06	DENT	1
41 -	101	06	DENT	1
41 -	103	06	DENT	1
41 -	119	06	DENT	1
42 -	140	06	DENT	1
44 -	67	06	DENT	1
44 -	69	06	DENT	1
44 -	71	06	DENT	1
44 -	73	06	DENT	1
44 -	75	06	DENT	1
44 -	77	06	DENT	1
44 -	79	06	DENT	1
44 -	81	06	DENT	1
44 -	83	06	DENT	1
44 -	85	06	DENT	1
44 -	87	06	DENT	1
44 -	89	06	DENT	1
44 -	91	06	DENT	1
44 -	93	06	DENT	1
44 -	95	06	DENT	1
44 -	97	06	DENT	1
44 -	99	06	DENT	1
44 -	101	06	DENT	1
44 -	103	06	DENT	1
44 -	105	06	DENT	1
44 -	107	06	DENT	1
44 -	109	06	DENT	1
44 -	111	06	DENT	1
44 -	113	06	DENT	1
44 -	115	06	DENT	1
44 -	117	06	DENT	1
44 -	119	06	DENT	1
44 -	121	06	DENT	1
44 -	123	06	DENT	1
44 -	125	06	DENT	1
44 -	127	06	DENT	1
44 -	129	06	DENT	1
44 -	131	06	DENT	1
44 -	133	06	DENT	1
44 -	135	06	DENT	1
44 -	137	06	DENT	1
44 -	139	06	DENT	1
44 -	141	06	DENT	1
44 -	143	06	DENT	1
44 -	145	06	DENT	1
44 -	147	06	DENT	1
44 -	149	06	DENT	1
44 -	151	06	DENT	1
44 -	153	06	DENT	1
44 -	155	06	DENT	1
44 -	157	06	DENT	1
44 -	159	06	DENT	1
44 -	161	06	DENT	1
44 -	163	06	DENT	1
44 -	165	06	DENT	1
44 -	167	06	DENT	1
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44 -	179	06	DENT	1
44 -	181	06	DENT	1
44 -	183	06	DENT	1
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44 -	187	06	DENT	1
44 -	189	06	DENT	1
44 -	191	06	DENT	1
44 -	193	06	DENT	1
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44 -	203	06	DENT	1
44 -	205	06	DENT	1
44 -	207	06	DENT	1
44 -	209	06	DENT	1
44 -	211	06	DENT	1
44 -	213	06	DENT	1
44 -	215	06	DENT	1
44 -	217	06	DENT	1
44 -	219	06	DENT	1
44 -	221	06	DENT	1
44 -	223	06	DENT</	

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 21

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

[illegible]

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 21

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
97-	49	111.11	DENT	111.11
97-	59	111.11	DENT	111.11
97-	99	111.11	DENT	111.11
97-	111	111.11	DENT	111.11
97-	121	111.11	DENT	111.11
97-	131	111.11	DENT	111.11
97-	141	111.11	DENT	111.11
97-	151	111.11	DENT	111.11
97-	161	111.11	DENT	111.11
97-	171	111.11	DENT	111.11
97-	181	111.11	DENT	111.11
97-	191	111.11	DENT	111.11
97-	201	111.11	DENT	111.11
97-	211	111.11	DENT	111.11
97-	221	111.11	DENT	111.11
97-	231	111.11	DENT	111.11
97-	241	111.11	DENT	111.11
97-	251	111.11	DENT	111.11
97-	261	111.11	DENT	111.11
97-	271	111.11	DENT	111.11
97-	281	111.11	DENT	111.11
97-	291	111.11	DENT	111.11
97-	301	111.11	DENT	111.11
97-	311	111.11	DENT	111.11
97-	321	111.11	DENT	111.11
97-	331	111.11	DENT	111.11
97-	341	111.11	DENT	111.11
97-	351	111.11	DENT	111.11
97-	361	111.11	DENT	111.11
97-	371	111.11	DENT	111.11
97-	381	111.11	DENT	111.11
97-	391	111.11	DENT	111.11
97-	401	111.11	DENT	111.11
97-	411	111.11	DENT	111.11
97-	421	111.11	DENT	111.11
97-	431	111.11	DENT	111.11
97-	441	111.11	DENT	111.11
97-	451	111.11	DENT	111.11
97-	461	111.11	DENT	111.11
97-	471	111.11	DENT	111.11
97-	481	111.11	DENT	111.11
97-	491	111.11	DENT	111.11
97-	501	111.11	DENT	111.11
97-	511	111.11	DENT	111.11
97-	521	111.11	DENT	111.11
97-	531	111.11	DENT	111.11
97-	541	111.11	DENT	111.11
97-	551	111.11	DENT	111.11
97-	561	111.11	DENT	111.11
97-	571	111.11	DENT	111.11
97-	581	111.11	DENT	111.11
97-	591	111.11	DENT	111.11
97-	601	111.11	DENT	111.11
97-	611	111.11	DENT	111.11
97-	621	111.11	DENT	111.11
97-	631	111.11	DENT	111.11
97-	641	111.11	DENT	111.11
97-	651	111.11	DENT	111.11
97-	661	111.11	DENT	111.11
97-	671	111.11	DENT	111.11
97-	681	111.11	DENT	111.11
97-	691	111.11	DENT	111.11
97-	701	111.11	DENT	111.11
97-	711	111.11	DENT	111.11
97-	721	111.11	DENT	111.11
97-	731	111.11	DENT	111.11
97-	741	111.11	DENT	111.11
97-	751	111.11	DENT	111.11
97-	761	111.11	DENT	111.11
97-	771	111.11	DENT	111.11
97-	781	111.11	DENT	111.11
97-	791	111.11	DENT	111.11
97-	801	111.11	DENT	111.11
97-	811	111.11	DENT	111.11
97-	821	111.11	DENT	111.11
97-	831	111.11	DENT	111.11
97-	841	111.11	DENT	111.11
97-	851	111.11	DENT	111.11
97-	861	111.11	DENT	111.11
97-	871	111.11	DENT	111.11
97-	881	111.11	DENT	111.11
97-	891	111.11	DENT	111.11
97-	901	111		

Plant: CALVERT CLIFFS UNIT 2
 Outage: 3/87

Steam Generator: 21

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS	
105-	63	3/87	H9	DENT	9
105-	71	3/87	H9	DENT	16
106-	62	3/87	H9	DENT	7
106-	118	3/87	H8	+ 13.30"	8
107-	63	3/87	H9	DENT	10
			H5	+ 3.00"	16
107-	65	3/87	H4	DENT	9
107-	69	3/87	H9	DENT	11
107-	73	3/87	H9	DENT	6
108-	64	3/87	H9	DENT	8
108-	82	3/87	H9	DENT	9
109-	65	3/87	H9	DENT	4
109-	69	3/87	H9	DENT	5
111-	69	3/87	H9	DENT	10
113-	61	3/87	H9	DENT	2
113-	71	3/87	H9	DENT	1
114-	70	3/87	H9	DENT	7
115-	69	3/87	H9	DENT	10
115-	89	3/87	C7	DENT	7
116-	106	3/87	CM	DENT	8
117-	43	3/87	H10	DENT	1
118-	110	3/87	H9	DENT	1
118-	47	3/87	H8	+ 4.80"	4
119-	101	3/87	H10	DENT	1
119-	100	3/87	H10	DENT	7
119-	114	3/87	H10	+ 37.20"	8
119-	107	3/87	H10	DENT	6
119-	58	3/87	H9	DENT	6
119-	60	3/87	H9	DENT	10
119-	63	3/87	H9	DENT	4
119-	64	3/87	H9	DENT	6
119-	65	3/87	H9	DENT	6
119-	74	3/87	H9	+ 14.80"	6
119-	74	3/87	H9	+ 14.00"	6
119-	98	3/87	H9	+ 14.20"	1
119-	97	3/87	H9	+ 4.00"	4
119-	93	3/87	H9	+ 10.00"	4
119-	66	3/87	H9	+ 10.80"	4

TOTAL TUBES: 191

STEAM GENERATOR 21

H. List with plot of Sludge Data

SLUDGE PILE PROFILE S/G 21 HOT LEG

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

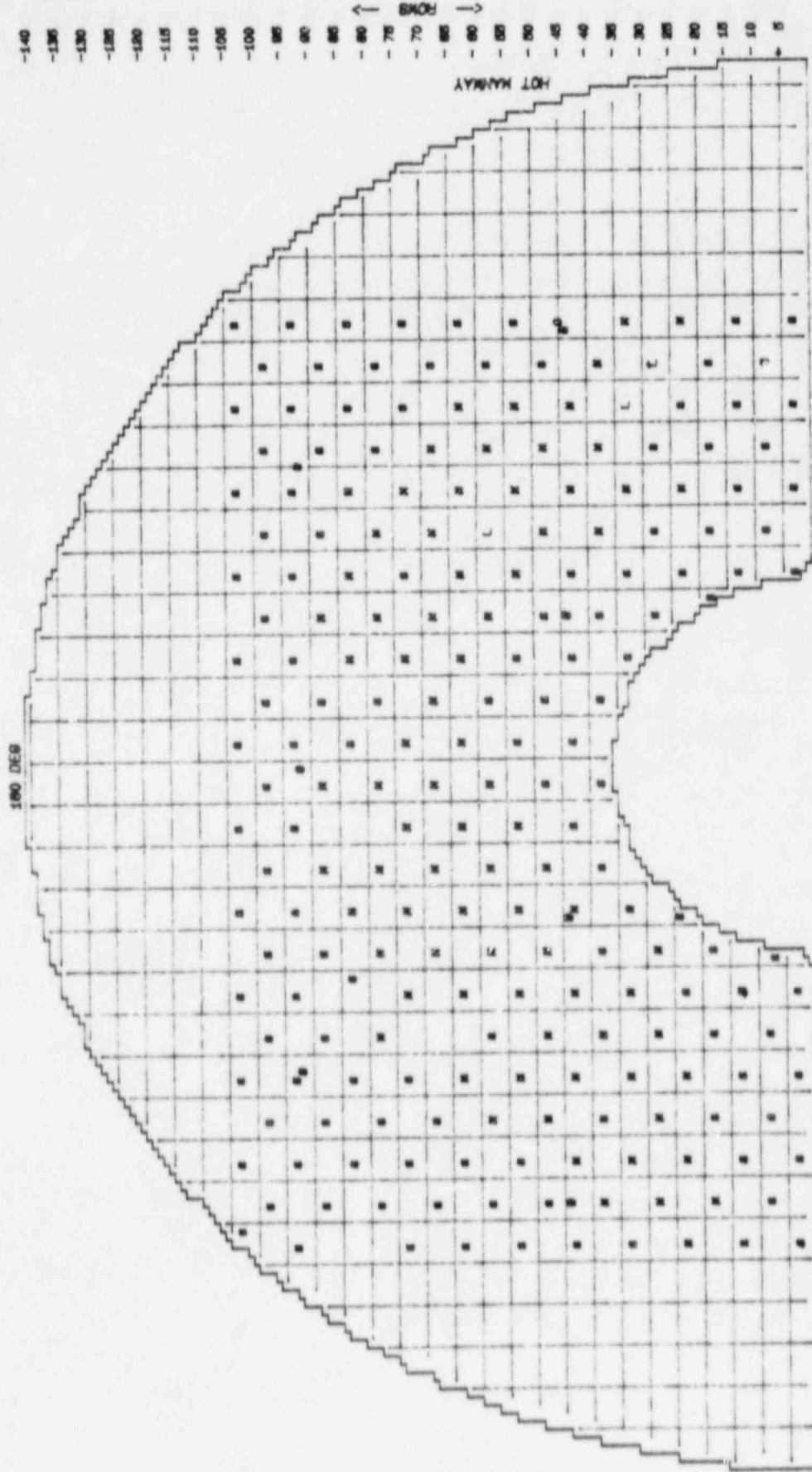
GENERATOR 21

TOTAL TUBES: 8519
STAYS (#): 7

Δ = SLUDGE - <8 (132)
- SLUDGE - 18-20 (0)

M = SLUDGE - 8-10 (81)
Y = SLUDGE - >20 (0)

TOTAL TUBES ASSIGNED: 216



270 DEG HOT TEMPLATES "A"

← LINES →

90 DEG

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 21

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

ROW	LINE	OUTAGE	ELEVATION	INDICATION	INCHES
1	0	0	0	SLUDGE	4
2	0	0	0	SLUDGE	6
3	0	0	0	SLUDGE	6
4	0	0	0	SLUDGE	6
5	0	0	0	SLUDGE	7
6	0	0	0	SLUDGE	3
7	0	0	0	SLUDGE	6
8	0	0	0	SLUDGE	6
9	0	0	0	SLUDGE	7
10	0	0	0	SLUDGE	6
11	0	0	0	SLUDGE	4
12	0	0	0	SLUDGE	4
13	0	0	0	SLUDGE	4
14	0	0	0	SLUDGE	4
15	0	0	0	SLUDGE	4
16	0	0	0	SLUDGE	4
17	0	0	0	SLUDGE	4
18	0	0	0	SLUDGE	4
19	0	0	0	SLUDGE	4
20	0	0	0	SLUDGE	4
21	0	0	0	SLUDGE	4
22	0	0	0	SLUDGE	4
23	0	0	0	SLUDGE	4
24	0	0	0	SLUDGE	4
25	0	0	0	SLUDGE	4
26	0	0	0	SLUDGE	4
27	0	0	0	SLUDGE	4
28	0	0	0	SLUDGE	4
29	0	0	0	SLUDGE	4
30	0	0	0	SLUDGE	4
31	0	0	0	SLUDGE	4
32	0	0	0	SLUDGE	4
33	0	0	0	SLUDGE	4
34	0	0	0	SLUDGE	4
35	0	0	0	SLUDGE	4
36	0	0	0	SLUDGE	4
37	0	0	0	SLUDGE	4
38	0	0	0	SLUDGE	4
39	0	0	0	SLUDGE	4
40	0	0	0	SLUDGE	4
41	0	0	0	SLUDGE	4
42	0	0	0	SLUDGE	4
43	0	0	0	SLUDGE	4
44	0	0	0	SLUDGE	4
45	0	0	0	SLUDGE	4
46	0	0	0	SLUDGE	4
47	0	0	0	SLUDGE	4
48	0	0	0	SLUDGE	4
49	0	0	0	SLUDGE	4
50	0	0	0	SLUDGE	4
51	0	0	0	SLUDGE	4
52	0	0	0	SLUDGE	4
53	0	0	0	SLUDGE	4
54	0	0	0	SLUDGE	4
55	0	0	0	SLUDGE	4
56	0	0	0	SLUDGE	4
57	0	0	0	SLUDGE	4
58	0	0	0	SLUDGE	4
59	0	0	0	SLUDGE	4
60	0	0	0	SLUDGE	4
61	0	0	0	SLUDGE	4
62	0	0	0	SLUDGE	4
63	0	0	0	SLUDGE	4
64	0	0	0	SLUDGE	4
65	0	0	0	SLUDGE	4
66	0	0	0	SLUDGE	4
67	0	0	0	SLUDGE	4
68	0	0	0	SLUDGE	4
69	0	0	0	SLUDGE	4
70	0	0	0	SLUDGE	4
71	0	0	0	SLUDGE	4
72	0	0	0	SLUDGE	4
73	0	0	0	SLUDGE	4
74	0	0	0	SLUDGE	4
75	0	0	0	SLUDGE	4
76	0	0	0	SLUDGE	4
77	0	0	0	SLUDGE	4
78	0	0	0	SLUDGE	4
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80	0	0	0	SLUDGE	4
81	0	0	0	SLUDGE	4
82	0	0	0	SLUDGE	4
83	0	0	0	SLUDGE	4
84	0	0	0	SLUDGE	4
85	0	0	0	SLUDGE	4
86	0	0	0	SLUDGE	4
87	0	0	0	SLUDGE	4
88	0	0	0	SLUDGE	4
89	0	0	0	SLUDGE	4
90	0	0	0	SLUDGE	4
91	0	0	0	SLUDGE	4
92	0	0	0	SLUDGE	4
93	0	0	0	SLUDGE	4
94	0	0	0	SLUDGE	

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 21

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

[illegible]

Plant: CALVERT CLIFFS UNIT 2

Outage: 3/87

Steam Generator: 21

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
98-	53	4/87	HTS-SF	SLUDGE
98-	62	4/87	HTS-SF	SLUDGE
98-	72	4/87	HTS-SF	SLUDGE
98-	82	4/87	HTS-SF	SLUDGE
98-	92	4/87	HTS-SF	SLUDGE
98-	102	4/87	HTS-SF	SLUDGE
98-	112	4/87	HTS-SF	SLUDGE
98-	122	4/87	HTS-SF	SLUDGE
98-	132	4/87	HTS-SF	SLUDGE
100-	4	4/87	HTS-SF	SLUDGE
100-	47	4/87	HTS-SF	SLUDGE
100-	47	4/87	HTS-SF	SLUDGE
100-	57	4/87	HTS-SF	SLUDGE
100-	67	4/87	HTS-SF	SLUDGE
100-	77	4/87	HTS-SF	SLUDGE
100-	87	4/87	HTS-SF	SLUDGE
100-	97	4/87	HTS-SF	SLUDGE
100-	107	4/87	HTS-SF	SLUDGE
100-	117	4/87	HTS-SF	SLUDGE
100-	127	4/87	HTS-SF	SLUDGE
100-	137	4/87	HTS-SF	SLUDGE

TOTAL TUBES: 216

SLUDGE PILE PROFILE S/G 21 COLD LEG

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

GENERATOR: 21

TOTAL TUBES: 8519
STAYS (#): 7

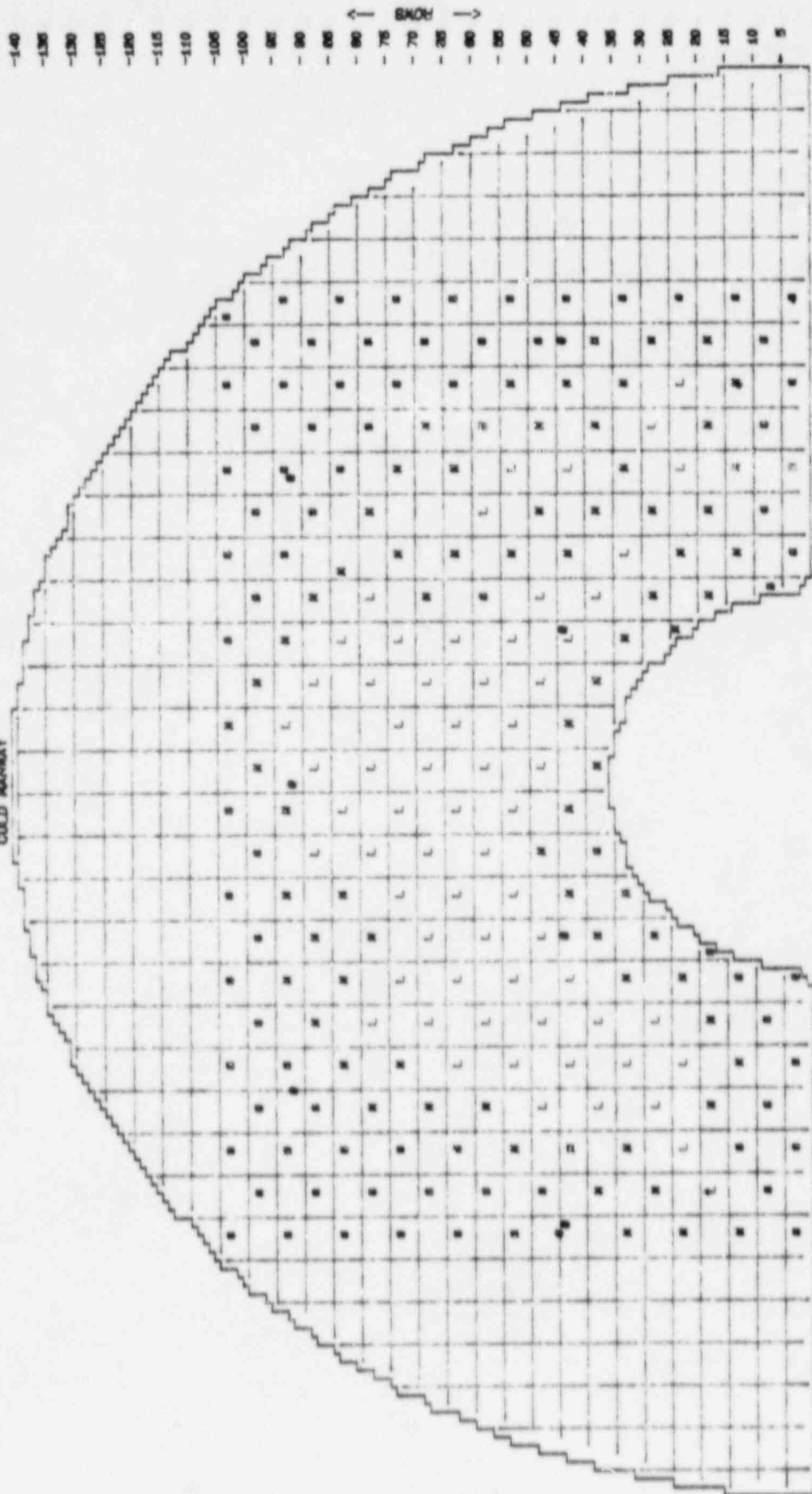
Δ = SLUDGE - <5 (822)
• = SLUDGE - 15-20 (0)

Δ = SLUDGE - 5-10 (72)
• = SLUDGE - >20 (0)

L = SLUDGE - 11-15 (83)
= MULTIPLE INDICATION (0)

TOTAL TUBES ASSIGNED: 217

COLD MANWAY



140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5

← LINES →

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 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

80 DEG COLD TEMPLATE "B"

270 DEG

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 21

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
1	107	CTSG	SLUDGE	0
2	107	CTSG	SLUDGE	0
3	107	CTSG	SLUDGE	0
4	107	CTSG	SLUDGE	0
5	107	CTSG	SLUDGE	0
6	107	CTSG	SLUDGE	0
7	107	CTSG	SLUDGE	0
8	107	CTSG	SLUDGE	0
9	107	CTSG	SLUDGE	0
10	107	CTSG	SLUDGE	0
11	107	CTSG	SLUDGE	0
12	107	CTSG	SLUDGE	0
13	107	CTSG	SLUDGE	0
14	107	CTSG	SLUDGE	0
15	107	CTSG	SLUDGE	0
16	107	CTSG	SLUDGE	0
17	107	CTSG	SLUDGE	0
18	107	CTSG	SLUDGE	0
19	107	CTSG	SLUDGE	0
20	107	CTSG	SLUDGE	0
21	107	CTSG	SLUDGE	0
22	107	CTSG	SLUDGE	0
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25	107	CTSG	SLUDGE	0
26	107	CTSG	SLUDGE	0
27	107	CTSG	SLUDGE	0
28	107	CTSG	SLUDGE	0
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30	107	CTSG	SLUDGE	0
31	107	CTSG	SLUDGE	0
32	107	CTSG	SLUDGE	0
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34	107	CTSG	SLUDGE	0
35	107	CTSG	SLUDGE	0
36	107	CTSG	SLUDGE	0
37	107	CTSG	SLUDGE	0
38	107	CTSG	SLUDGE	0
39	107	CTSG	SLUDGE	0
40	107	CTSG	SLUDGE	0
41	107	CTSG	SLUDGE	0
42	107	CTSG	SLUDGE	0
43	107	CTSG	SLUDGE	0
44	107	CTSG	SLUDGE	0
45	107	CTSG	SLUDGE	0
46	107	CTSG	SLUDGE	0
47	107	CTSG	SLUDGE	0
48	107	CTSG	SLUDGE	0
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58	107	CTSG	SLUDGE	0
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62	107	CTSG	SLUDGE	0
63	107	CTSG	SLUDGE	0
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65	107	CTSG	SLUDGE	0
66	107	CTSG	SLUDGE	0
67	107	CTSG	SLUDGE	0
68	107	CTSG	SLUDGE	0
69	107	CTSG	SLUDGE	0
70	107	CTSG	SLUDGE	0
71	107	CTSG	SLUDGE	0
72	107	CTSG	SLUDGE	0
73	107	CTSG	SLUDGE	0
74	107	CTSG	SLUDGE	0
75	107	CTSG	SLUDGE	0
76	107	CTSG	SLUDGE	0
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87	107	CTSG	SLUDGE	0
88	107	CTSG	SLUDGE	0
89	107	CTSG	SLUDGE	0
90	107	CTSG	SLUDGE	0
91	107	CTSG	SLUDGE	0
92	107	CTSG	SLUDGE	0
93	107	CTSG	SLUDGE	0
94	107	CTSG	SLUDGE	0
95	107	CTSG	SLUDGE	0
96	107	CTSG	SLUDGE	0
97	107	CTSG	SLUDGE	0
98	107	CTSG	SLUDGE	0
99	107	CTSG	SLUDGE	0
100	107	CTSG	SLUDGE	0

Steam Generator: 21

ROW	LINE	OUTAGE	ELEVATION	INDICATION	INCHES
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0
26	0	0	0	0	0
27	0	0	0	0	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0
31	0	0	0	0	0
32	0	0	0	0	0
33	0	0	0	0	0
34	0	0	0	0	0
35	0	0	0	0	0
36	0	0	0	0	0
37	0	0	0	0	0
38	0	0	0	0	0
39	0	0	0	0	0
40	0	0	0	0	0
41	0	0	0	0	0
42	0	0	0	0	0
43	0	0	0	0	0
44	0	0	0	0	0
45	0	0	0	0	0
46	0	0	0	0	0
47	0	0	0	0	0
48	0	0	0	0	0
49	0	0	0	0	0
50	0	0	0	0	0
51	0	0	0	0	0
52	0	0	0	0	0
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57	0	0	0	0	0
58	0	0	0	0	0
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66	0	0	0	0	0
67	0	0	0	0	0
68	0	0	0	0	0
69	0	0	0	0	0
70	0	0	0	0	0
71	0	0	0	0	0
72	0	0	0	0	0
73	0	0	0	0	0
74	0	0	0	0	0
75	0	0	0	0	0
76	0	0	0	0	0
77	0	0	0	0	0
78	0	0	0	0	0
79	0	0	0	0	0
80	0	0	0	0	0
81	0	0	0	0	

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/E7

Steam Generator: 21

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

[illegible]

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 21

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES	
98-	4	3/87	CTS-SF	SLUDGE	0
98-	5	3/87	CTS-SF	SLUDGE	1
98-	6	3/87	CTS-SF	SLUDGE	4
98-	7	3/87	CTS-SF	SLUDGE	7
98-	8	3/87	CTS-SF	SLUDGE	8
98-	9	3/87	CTS-SF	SLUDGE	5
98-	10	3/87	CTS-SF	SLUDGE	5
98-	11	3/87	CTS-SF	SLUDGE	4
98-	12	3/87	CTS-SF	SLUDGE	1
98-	13	3/87	CTS-SF	SLUDGE	0
100-	4	3/87	CTS-SF	SLUDGE	0
100-	5	3/87	CTS-SF	SLUDGE	0
100-	6	3/87	CTS-SF	SLUDGE	0
100-	7	3/87	CTS-SF	SLUDGE	0
100-	8	3/87	CTS-SF	SLUDGE	0
100-	9	3/87	CTS-SF	SLUDGE	0
100-	10	3/87	CTS-SF	SLUDGE	0
100-	11	3/87	CTS-SF	SLUDGE	0
100-	12	3/87	CTS-SF	SLUDGE	0
100-	13	3/87	CTS-SF	SLUDGE	0

TOTAL TUBES: 217

STEAM GENERATOR 21

I. List of Tubes Plugged During the 1987 Outage

Steam Generator #21 Tubes Plugged During the Unit 2 March 1987 Outage

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
9	33	Eddy Current Testing Indication of 96% wall loss originating on the outside diameter of the tube at VM + 0.0 inches.
14	156	Eddy Current Testing Indication of 42% wall loss originating on the outside diameter of the tube at H4 + 35.7 inches.
19	127	Eddy Current Testing Indication of 53% wall loss originating on the outside diameter of the tube at C5 + 10.2 inches.
25	157	Eddy Current Testing Indication of 46% wall loss originating on the outside diameter of the tube at H2 + 21.6 inches.
29	45	Eddy Current Testing Indication of 46% wall loss originating on the outside diameter of the tube at C1 + 14.1 inches.
29	139	Eddy Current Testing Indication of 74% wall loss originating on the outside diameter of the tube at HTS-SF + 0.6 inches.
29	143	Eddy Current Testing Indication of 48% wall loss originating on the outside diameter of the tube at HTS-SF + 0.6 inches.
46	128	Eddy Current Testing Indication of 48% wall loss originating on the outside diameter of the tube at HTS-SF + 0.6 inches.
54	136	Eddy Current Testing Indication of 69% wall loss originating on the outside diameter of the tube at HTS-SF + 0.5 inches.
68	122	Eddy Current Testing Indication of 55% wall loss originating on the outside diameter of the tube at HTS-SF + 0.4 inches.
71	115	Eddy Current Testing Indication of 47% wall loss originating on the outside diameter of the tube at HTS-SF + 0.4 inches.

Steam Generator #21 Tubes Plugged During the Unit 2 March 1987 Outage

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
74	116	Eddy Current Testing Indication of 60% wall loss originating on the outside diameter of the tube at HTS-SF + 0.7 inches.
74	120	Eddy Current Testing Indication of 54% wall loss originating on the outside diameter of the tube at HTS-SF + 0.4 inches.
76	122	Eddy Current Testing Indication of 49% wall loss originating on the outside diameter of the tube at HTS-SF + 0.5 inches.
80	114	Eddy Current Testing Indication of 49% wall loss originating on the outside diameter of the tube at HTS-SF + 0.6 inches.
81	97	Eddy Current Testing Indication of 61% wall loss originating on the outside diameter of the tube at HTS-SF + 0.8 inches.
85	51	Eddy Current Testing Indication of 40% wall loss originating on the outside diameter of the tube at C8 + 4.7 inches.
97	103	Eddy Current Testing Indication of 75% wall loss originating on the outside diameter of the tube at HTS-SF + 1.1 inches.
99	53	Eddy Current Testing Indication of 52% wall loss originating on the outside diameter of the tube at H2 + 1.5 inches.
112	102	Eddy Current Testing Indication of 43% wall loss originating on the outside diameter of the tube at C5 + 31.6 inches.
116	120	Eddy Current Testing Indication of 42% wall loss originating on the outside diameter of the tube at CTS-SF + 1.9 inches.
120	58	Eddy Current Testing Indication of 44% wall loss originating on the outside diameter of the tube at H6 + 11.9 inches.

Steam Generator #21 Tubes Plugged During the Unit 2 March 1987 Outage

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
122	64	Eddy Current Testing Indication of 49% wall loss originating on the outside diameter of the tube at CTS-SF + 3.8 inches.
122	92	Eddy Current Testing Indication of 97% wall loss originating on the outside diameter of the tube at HTS-SF + 1.8 inches.
126	108	Eddy Current Testing Indication of 87% wall loss originating on the outside diameter of the tube at H9 + 15.8 inches.
127	53	Eddy Current Testing Indication of 44% and 62% wall loss originating on the outside diameter of the tube at CTS-SF + 14.1 and CTS-SF + 14.4 inches, respectively.
129	53	Eddy Current Testing Indication of 45% wall loss originating on the outside diameter of the tube at HTS-SF + 13.8 inches.
132	110	Eddy Current Testing Indication of 44% wall loss originating on the outside diameter of the tube at HTS-SF + 7.4 inches.
133	109	Eddy Current Testing Indication of 53% wall loss originating on the outside diameter of the tube at HTS-SF + 6.7 inches.
14	28	Eddy Current Testing Indication of 27% wall loss originating on the outside diameter of the tube at HTS-SF + 2.4 inches.
37	157	Eddy Current Testing Indication of 34% wall loss originating on the outside diameter of the tube at HTS-SF + 22.4 inches.
38	32	Eddy Current Testing Indication of 39% wall loss originating on the outside diameter of the tube at HTS-SF + 1.0 inches.
40	32	Eddy Current Testing Indication of 33% wall loss originating on the outside diameter of the tube at HTS-SF + 0.9 inches.

Steam Generator #21 Tubes Plugged During the Unit 2 March 1987 Outage

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
42	36	Eddy Current Testing Indication of 32% wall loss originating on the outside diameter of the tube at HTS-SF + 0.6 inches.
74	46	Eddy Current Testing Indication of 34% wall loss originating on the outside diameter of the tube at VC + 0.0 inches.
88	90	Eddy Current Testing Indication of 36% wall loss originating on the outside diameter of the tube at HTS-SF + 1.1 inches.
89	119	Eddy Current Testing Indication of 28% wall loss originating on the outside diameter of the tube at HTS-SF + 0.4 inches.
91	105	Eddy Current Testing Indication of 28% wall loss originating on the outside diameter of the tube at HTS-SF + 1.1 inches.
113	123	Eddy Current Testing Indication of 21% and 27% wall loss originating on the outside diameter of the tube at CTS-SF + 0.9 and CTS-SF + 2.3 inches.
120	54	Eddy Current Testing Indication of 28% wall loss originating on the outside diameter of the tube at CTS-SF + 0.5 inches.
127	107	Eddy Current Testing Indication of 27% wall loss originating on the outside diameter of the tube at VH + 0.0 inches.

APPENDIX II
EDDY CURRENT TEST RESULTS
STEAM GENERATOR 22

- 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. List of Tubes not Rolled
- G. List of Tubes Dented
- H. List of Sludge Data
- I. List of Tubes Plugged During the 1987 Outage

STEAM GENERATOR 22

A. List with plot of All Indications

1987 STEAM GENERATOR #22, ALL INDICATIONS(OD & ID), ALL ELEVATIONS

PLANT: CALVERT CLIFFS UNIT 2

GENERATOR 22

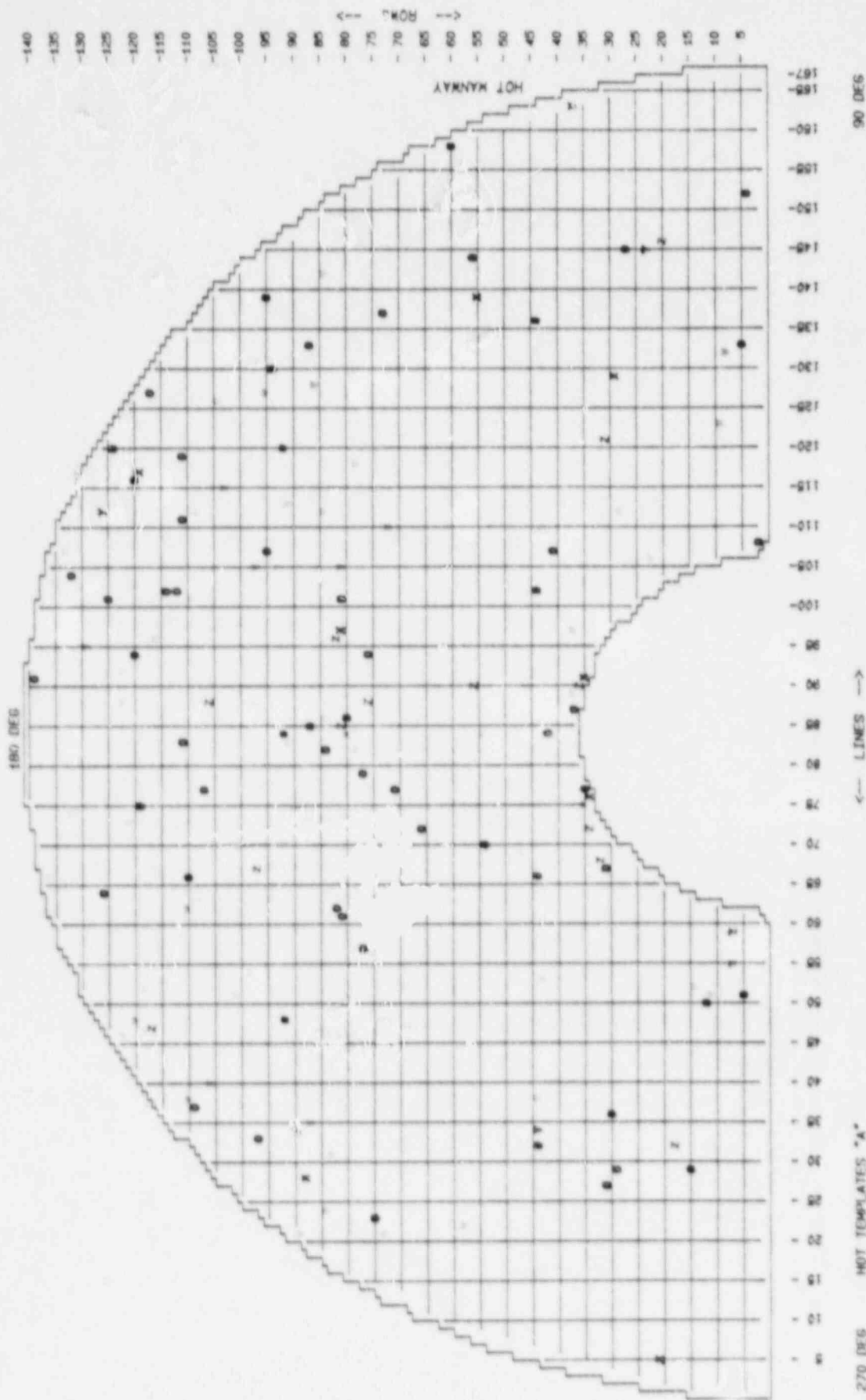
TOTAL TUBES: 8519
STAYS (Ø): 7

X = TUBES PLUGGED BEFORE Ø7 (Ø)
= OD INDICATIONS 20-30% (54)

Y = ID INDICATIONS (ALL) <20% (4)
Ø = OD INDICATIONS <20% (54)

Z = OD INDICATIONS >30% (14)

TOTAL TUBES ASSIGNED: 134



270 DEG HOT TEMPLATES "A"

← LINES →

90 DEG

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

QUERY: ALL DEFECTS,ALL W TW,ALL VOLTS,ALL ELEV (ALL TUBES),ALL-RL

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

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 32

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	& TW	VOLTS
1	94	3	00	6	0
2	11	3	00	6	0
3	7	3	00	6	0
4	3	3	00	6	0
5	0	3	00	6	0
6	0	3	00	6	0
7	0	3	00	6	0
8	0	3	00	6	0
9	0	3	00	6	0
10	0	3	00	6	0
11	0	3	00	6	0
12	0	3	00	6	0
13	0	3	00	6	0
14	0	3	00	6	0
15	0	3	00	6	0
16	0	3	00	6	0
17	0	3	00	6	0
18	0	3	00	6	0
19	0	3	00	6	0
20	0	3	00	6	0
21	0	3	00	6	0
22	0	3	00	6	0
23	0	3	00	6	0
24	0	3	00	6	0
25	0	3	00	6	0
26	0	3	00	6	0
27	0	3	00	6	0
28	0	3	00	6	0
29	0	3	00	6	0
30	0	3	00	6	0
31	0	3	00	6	0
32	0	3	00	6	0
33	0	3	00	6	0
34	0	3	00	6	0
35	0	3	00	6	0
36	0	3	00	6	0
37	0	3	00	6	0
38	0	3	00	6	0
39	0	3	00	6	0
40	0	3	00	6	0
41	0	3	00	6	0
42	0	3	00	6	0
43	0	3	00	6	0
44	0	3	00	6	0
45	0	3	00	6	0
46	0	3	00	6	0
47	0	3	00	6	0
48	0	3	00	6	0
49	0	3	00	6	0
50	0	3	00	6	0
51	0	3	00	6	0
52	0	3	00	6	0
53	0	3	00	6	0
54	0	3	00	6	0
55	0	3	00	6	0
56	0	3	00	6	0
57	0	3	00	6	0
58	0	3	00	6	0
59	0	3	00	6	0
60	0	3	00	6	0
61	0	3	00	6	0
62	0	3	00	6	0
63	0	3	00	6	0
64	0	3	00	6	0
65	0	3	00	6	0
66	0	3	00	6	0
67	0	3	00	6	0
68	0	3	00	6	0
69	0	3	00	6	0
70	0	3	00	6	0
71	0	3	00	6	0
72	0	3	00	6	0
73	0	3	00	6	0
74	0	3	00	6	0
75	0	3	00	6	0
76	0	3	00	6	0
77	0	3	00	6	0
78	0	3	00	6	0
79	0	3	00	6	0
80	0	3	00	6	0
81	0	3	00	6	0
82	0	3	00	6	0
83	0	3	00	6	0
84	0	3	00	6	0
85	0	3	00	6	0
86	0	3	00	6	0
87	0	3	00	6	0
88	0	3	00	6	0
89	0	3	00	6	0
90	0	3	00	6	0
91	0	3	00	6	0
92	0	3	00	6	0
93	0	3	00	6	0
94	0	3	00	6	0
95	0	3	00	6	0
96	0	3	00	6	0
97	0	3	00	6	0
98	0	3	00	6	0
99	0	3	00	6	0
100	0	3	00	6	0

TOTAL TUBES: 126

STEAM GENERATOR 22

B. List with plot of <20% Indications

PLOT OF <20% OD INDICATIONS

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

GENERATOR 22

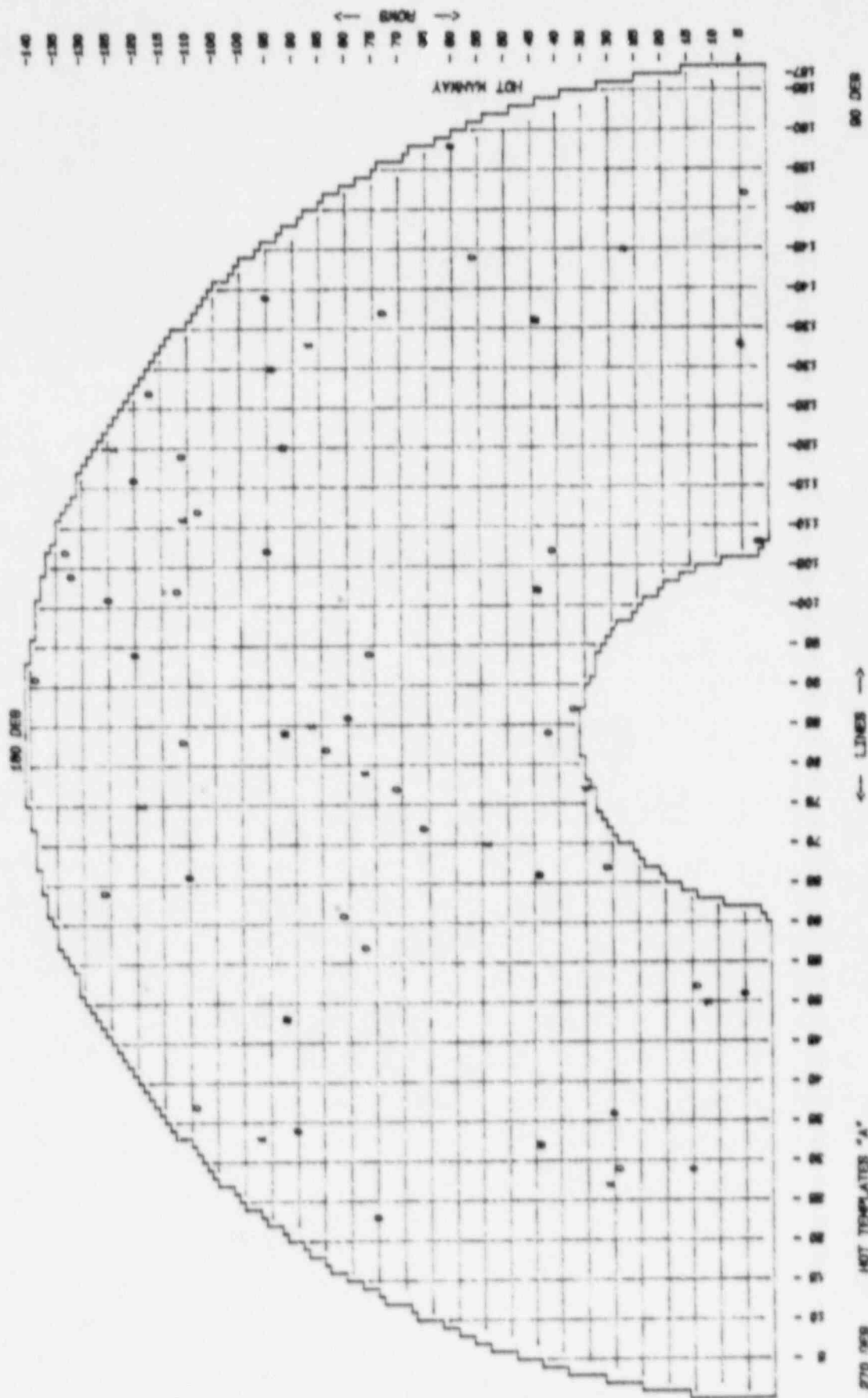
TOTAL TUBES: 8519
STAYS (S): 7

0 - 00 - <1 (41)
- MULTIPLE INDICATION (S)

0 - 00 - 1-45 (11)

0 - 00 - 1-45 (0)

TOTAL TUBES ASSIGNED: 00



PLOT OF <20% ID INDICATIONS

8519

TOTAL TUBES: 7
STAYS (#): 7

GENERATOR 22

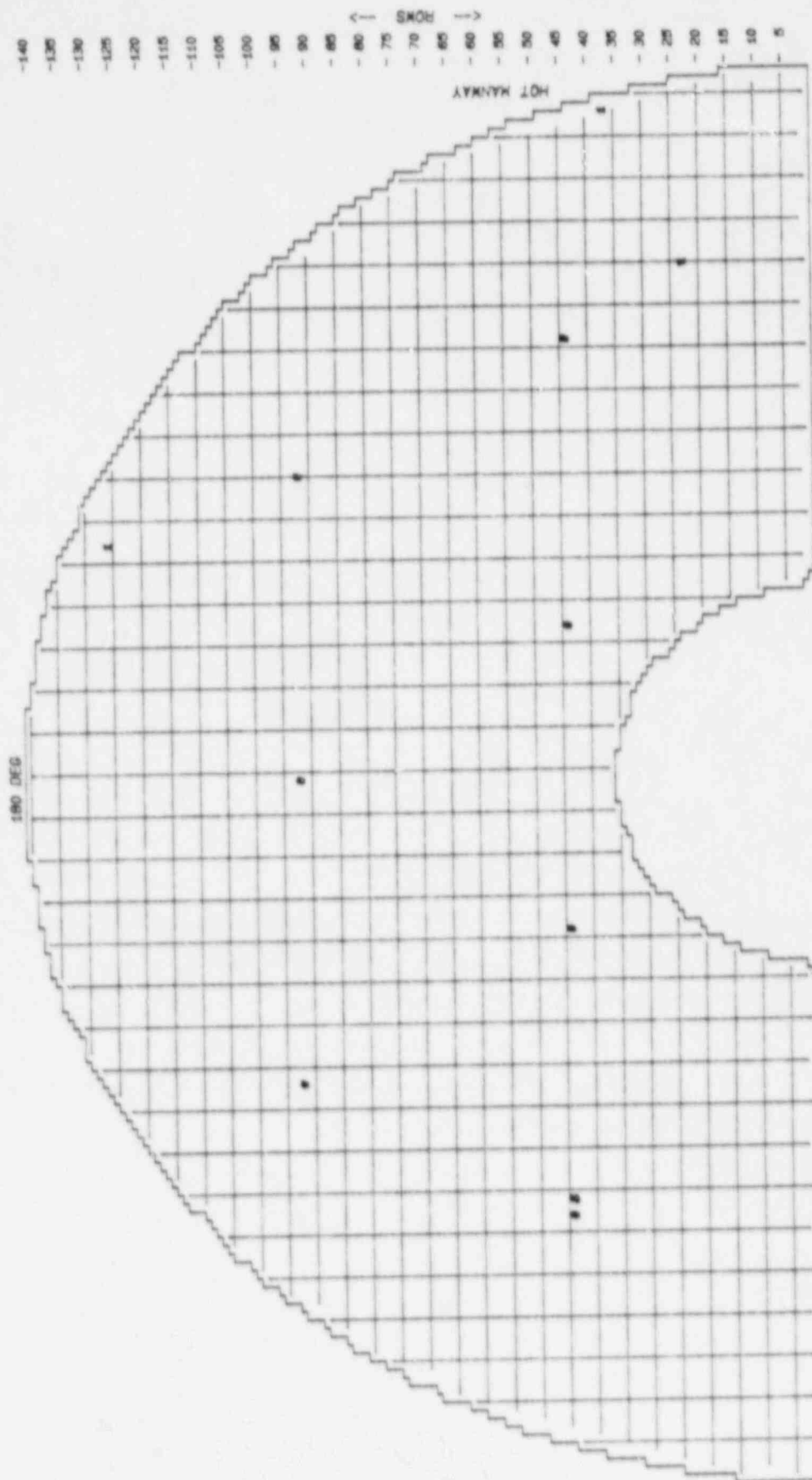
PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

● - ID - >=5 (1)

■ - ID - 1-5 (3)

○ - ID - <1 (0)
○ - MULTIPLE INDICATION (0)

TOTAL TUBES ASSIGNED: 4



90 DEG

<--- LINES --->

270 DEG NOT TEMPLATES "A"

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

QUERY: ALL DEFECTS, <20 9 TW, ALL VOLTS, ALL ELEV (ALL TUBES), ALL-NL

STEAM GENERATOR 22

C. List with plot of 20%-39% Indications

PLOT OF 20-39% INDICATIONS

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

GENERATOR: 22

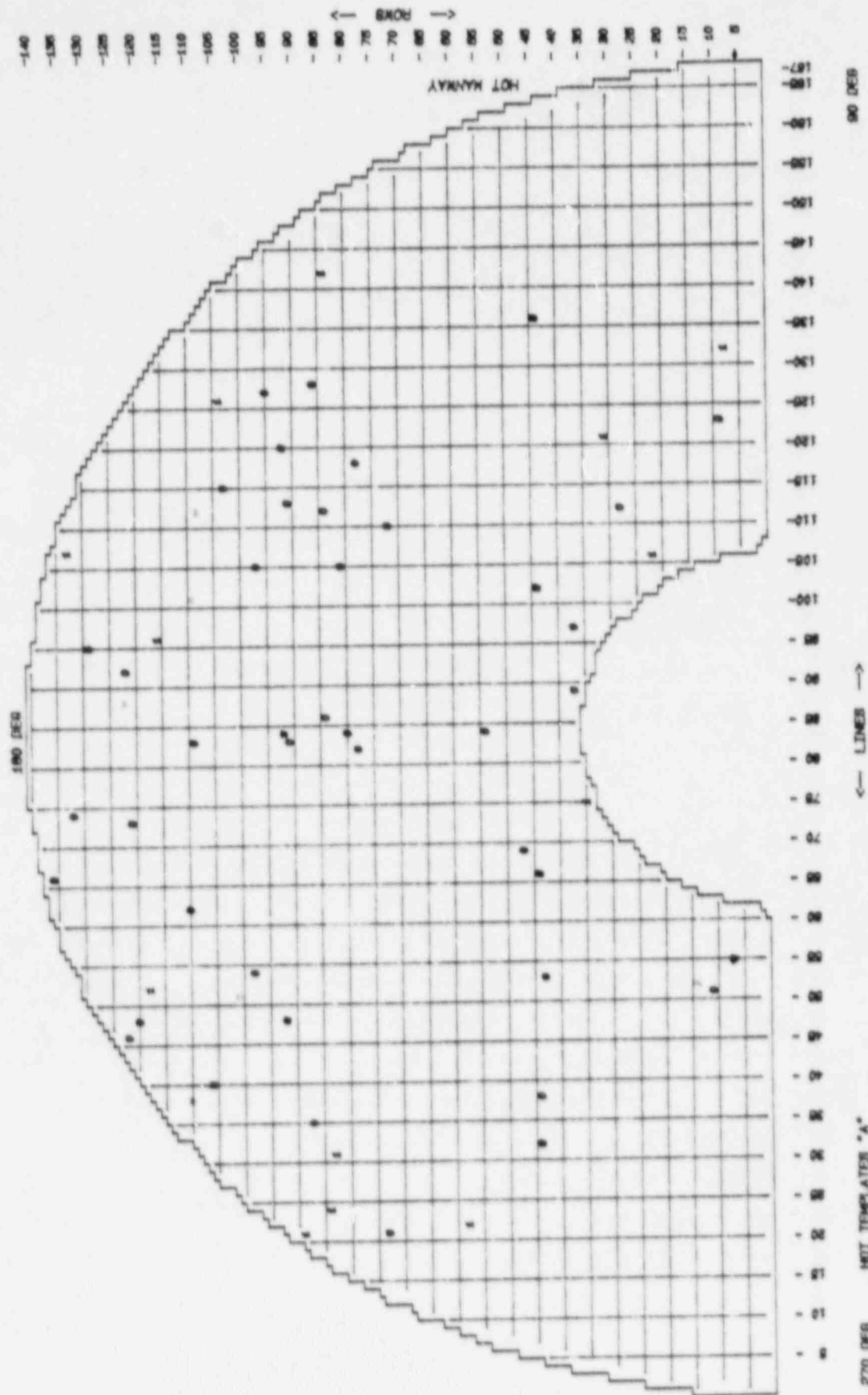
TOTAL TUBES: 8519
STAYS (S): 7

0 = 00 - <1 (395)
- = MULTIPLE INDICATION (8)

1 = 00 - 1-35 (14)

2 = 00 - >35 (0)

TOTAL TUBES ASSIGNED: 55



STEAM GENERATOR 22

D. List with plot of >39% Indications

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 00

QUERY: ALL DEFECTS, >39 % TW, ALL V TS, ALL ELEV (ALL TUBES), ALL-RL

ROW-LINE	OUTAGE	ELEVATION	INDICATION	% TW	VOLTS
7 -	59	3/87	01	51	00
18 -	30	3/87	01	71	00
20 -	146	3/87	01	50	00
31 -	121	3/87	01	40	00
32 -	68	3/87	01	30	00
34 -	72	3/87	01	30	00
36 -	90	3/87	01	40	00
56 -	90	3/87	01	40	00
76 -	88	3/87	01	40	00
81 -	85	3/87	01	40	00
82 -	96	3/87	01	40	00
97 -	67	3/87	01	40	00
106 -	88	3/87	01	40	00
117 -	47	3/87	01	40	00

TOTAL TUBES: 14

STEAM GENERATOR 22

E. List with plot of Distorted Indications

PLOT OF ALL DISTORTED INDICATIONS

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

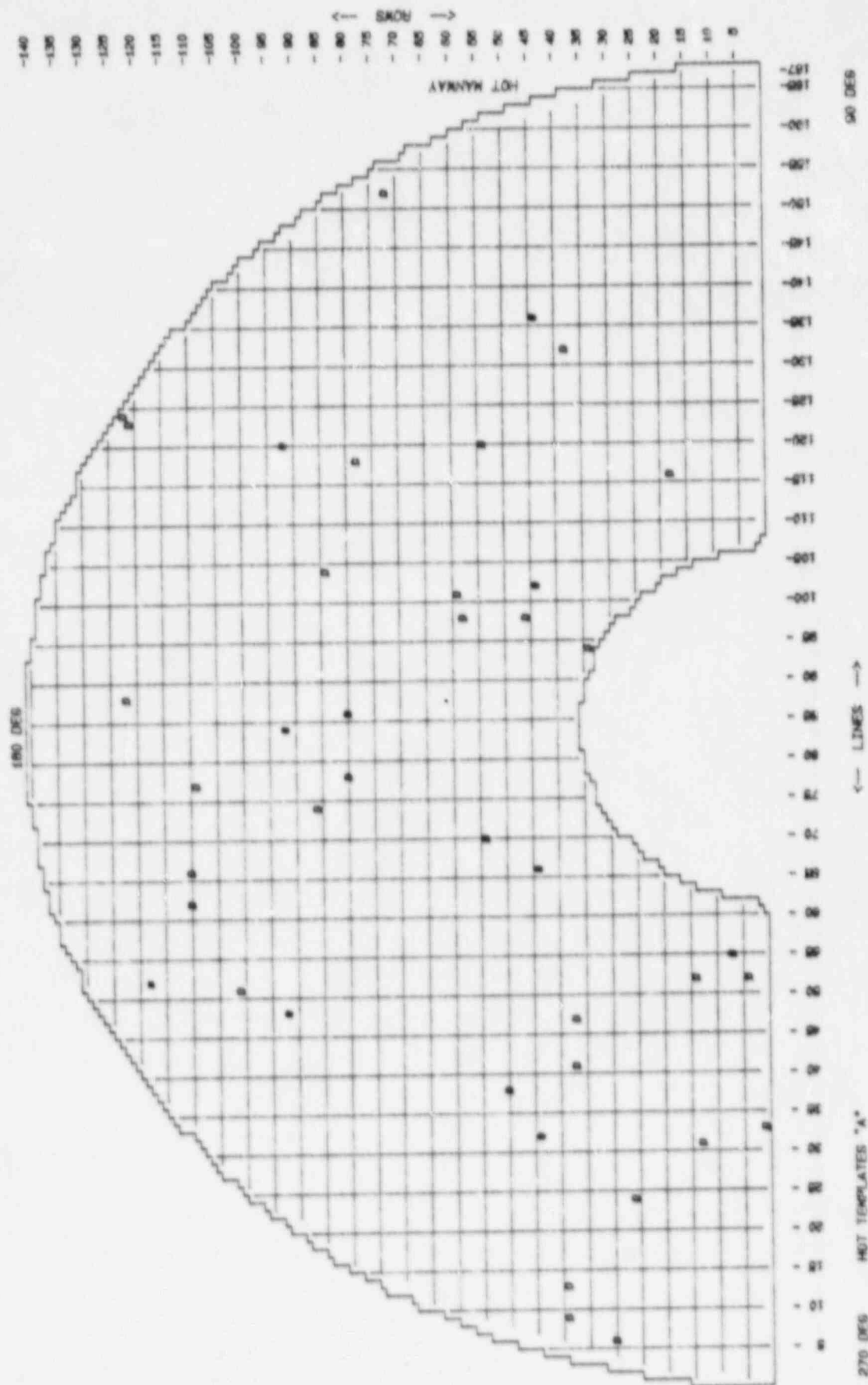
GENERATOR: 22

TOTAL TUBES: 8519
STAYS (#): 7

D - DISTORTED IND (33)

- MULTIPLE INDICATION (1)

TOTAL TUBES ASSIGNED: 34



Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION
1 1	3 / 7	HT 5 - SF	+ 34.00"
2 1	3 / 7	CO 4	+ 34.00"
3 1	3 / 7	CO 4	+ 34.00"
4 1	3 / 7	CO 4	+ 34.00"
5 1	3 / 7	CO 4	+ 34.00"
6 1	3 / 7	CO 4	+ 34.00"
7 1	3 / 7	CO 4	+ 34.00"
8 1	3 / 7	CO 4	+ 34.00"
9 1	3 / 7	CO 4	+ 34.00"
10 1	3 / 7	CO 4	+ 34.00"
11 1	3 / 7	CO 4	+ 34.00"
12 1	3 / 7	CO 4	+ 34.00"
13 1	3 / 7	CO 4	+ 34.00"
14 1	3 / 7	CO 4	+ 34.00"
15 1	3 / 7	CO 4	+ 34.00"
16 1	3 / 7	CO 4	+ 34.00"
17 1	3 / 7	CO 4	+ 34.00"
18 1	3 / 7	CO 4	+ 34.00"
19 1	3 / 7	CO 4	+ 34.00"
20 1	3 / 7	CO 4	+ 34.00"
21 1	3 / 7	CO 4	+ 34.00"
22 1	3 / 7	CO 4	+ 34.00"
23 1	3 / 7	CO 4	+ 34.00"
24 1	3 / 7	CO 4	+ 34.00"
25 1	3 / 7	CO 4	+ 34.00"
26 1	3 / 7	CO 4	+ 34.00"
27 1	3 / 7	CO 4	+ 34.00"
28 1	3 / 7	CO 4	+ 34.00"
29 1	3 / 7	CO 4	+ 34.00"
30 1	3 / 7	CO 4	+ 34.00"
31 1	3 / 7	CO 4	+ 34.00"
32 1	3 / 7	CO 4	+ 34.00"
33 1	3 / 7	CO 4	+ 34.00"
34 1	3 / 7	CO 4	+ 34.00"

TOTAL TUBES: 34

STEAM GENERATOR 22

F. List of Tubes not Rolled

***** PARTIAL REPORT BASED ON THE FOLLOWING PARAMETERS *****

ROWS ALL
COLS ALL
VOLTS ALL
DEGREES ALL
PERCENT ALL
LOCATIONS ALL
ELEVATIONS ALL
PROBE SIZE ALL
TAPE NO. ALL

TOTAL ENTRIES = 1
TOTAL TUBES = 1

CODES NRH

CHANNELS ALL

COMMENTS ALL

***** PARTIAL REPORT AS A RESULT OF SORTING PARAMETERS *****
WEDNESDAY APRIL 22, 1987 10:40:52 AM

PLANT CALVERT CLIFFS UNIT# 2 S/G 22
ROW COL VOLTS DEG % CH# LOCATION IN INCHES

PAGE 1 OF 1
EXTENT SIZE TAPE COMMENTS

32 96

NRH 1 HTS-SF- 21.70

TE-HL 560 97 FROM CL

***** PARTIAL REPORT BASED ON THE FOLLOWING PARAMETERS *****

ROWS ALL
COLS ALL
VOLTS ALL
DEGREES ALL
PERCENT ALL
LOCATIONS ALL
ELEVATIONS ALL
PROBE SIZE ALL
TAPE NO. ALL

TOTAL ENTRIES = 42
TOTAL TUBES = 42

CODES NRC

CHANNELS ALL

COMMENTS ALL

***** PARTIAL REPORT AS A RESULT OF SORTING PARAMETERS *****
WEDNESDAY APRIL 22, 1987 10:39:33 AM

PLANT CALVERT CLIFFS UNIT# 2 S/G 22
ROW COL VOLTS DEG % CH# LOCATION IN INCHES

PAGE 1 OF 1
EXTENT SIZE TAPE COMMENTS

121	43	NRC	1	CTS-SF-	21.00	TE-HL	560	8	FROM CL
121	45	NRC	1	CTS-SF-	20.70	TE-HL	560	8	FROM CL
121	47	NRC	1	CTS-SF-	21.70	TE-HL	560	10	FROM CL
121	49	NRC	1	CTS-SF-	20.30	TE-HL	560	8	FROM CL
121	51	NRC	1	CTS-SF-	20.10	TE-HL	560	8	FROM CL
121	53	NRC	1	CTS-SF-	18.10	TE-HL	560	10	FROM CL
121	55	NRC	1	CTS-SF-	21.70	TE-HL	560	10	FROM CL
121	57	NRC	1	CTS-SF-	17.60	TE-HL	560	10	FROM CL
121	59	NRC	1	CTS-SF-	21.70	TE-HL	560	10	FROM CL
121	61	NRC	1	CTS-SF-	21.70	TE-HL	560	8	FROM CL
121	63	NRC	1	CTS-SF-	21.70	TE-HL	560	8	FROM CL
121	65	NRC	1	CTS-SF-	20.50	TE-HL	560	8	FROM CL
121	67	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	69	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	71	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	73	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	75	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	77	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	79	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	81	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	83	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	85	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	87	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	89	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	91	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	93	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	95	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	97	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	99	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	101	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	103	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	105	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	107	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	109	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	111	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	113	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	115	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	117	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	119	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	121	NRC	1	CTS-SF-	21.70	TE-HL	560	61	FROM CL
121	123	NRC	1	CTS-SF-	21.70	TE-CL	560	24	FROM HL
121	125	NRC	1	CTS-SF-	21.70	TE-HL	560	5	FROM CL

STEAM GENERATOR 22

G. List of Tubes Dented

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
38-124	46	0000	DENT	10
40-74	46	0000	DENT	10
41-74	46	0000	DENT	10
42-74	46	0000	DENT	10
43-74	46	0000	DENT	10
44-74	46	0000	DENT	10
45-74	46	0000	DENT	10
46-74	46	0000	DENT	10
47-74	46	0000	DENT	10
48-74	46	0000	DENT	10
49-74	46	0000	DENT	10
50-74	46	0000	DENT	10
51-74	46	0000	DENT	10
52-74	46	0000	DENT	10
53-74	46	0000	DENT	10
54-74	46	0000	DENT	10
55-74	46	0000	DENT	10
56-74	46	0000	DENT	10
57-74	46	0000	DENT	10
58-74	46	0000	DENT	10
59-74	46	0000	DENT	10
60-74	46	0000	DENT	10
61-74	46	0000	DENT	10
62-74	46	0000	DENT	10
63-74	46	0000	DENT	10
64-74	46	0000	DENT	10
65-74	46	0000	DENT	10
66-74	46	0000	DENT	10
67-74	46	0000	DENT	10
68-74	46	0000	DENT	10
69-74	46	0000	DENT	10
70-74	46	0000	DENT	10
71-74	46	0000	DENT	10
72-74	46	0000	DENT	10
73-74	46	0000	DENT	10
74-74	46	0000	DENT	10
75-74	46	0000	DENT	10
76-74	46	0000	DENT	10
77-74	46	0000	DENT	10
78-74	46	0000	DENT	10
79-74	46	0000	DENT	10
80-74	46	0000	DENT	10
81-74	46	0000	DENT	10
82-74	46	0000	DENT	10
83-74	46	0000	DENT	10
84-74	46	0000	DENT	10
85-74	46	0000	DENT	10
86-74	46	0000	DENT	10
87-74	46	0000	DENT	10
88-74	46	0000	DENT	10
89-74	46	0000	DENT	10
90-74	46	0000	DENT	10
91-74	46	0000	DENT	10
92-74	46	0000	DENT	10
93-74	46	0000	DENT	10
94-74	46	0000	DENT	10
95-74	46	0000	DENT	10
96-74	46	0000	DENT	10
97-74	46	0000	DENT	10
98-74	46	0000	DENT	10
99-74	46	0000	DENT	10
100-74	46	0000	DENT	10

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

[illegible]

Steam Generator: 22

1

[illegible]

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
97-	55	107	DENT	19
		107	DENT	5
		107	DENT	6
		107	DENT	6
97-	57	107	DENT	64
97-	85	107	DENT	7
97-	93	107	DENT	14
		107	DENT	10
97-	97	107	DENT	20
97-	119	107	DENT	9
97-	137	107	DENT	11
97-	139	107	DENT	9
97-	141	107	DENT	2
		107	DENT	11
98-	64	107	DENT	8
98-	84	107	DENT	6
98-	86	107	DENT	6
98-	90	107	DENT	4
98-	93	107	DENT	4
98-	100	107	DENT	4
98-	103	107	DENT	4
98-	106	107	DENT	4
98-	110	107	DENT	4
98-	113	107	DENT	4
98-	116	107	DENT	4
98-	119	107	DENT	4
98-	122	107	DENT	4
98-	125	107	DENT	4
98-	128	107	DENT	4
98-	131	107	DENT	4
98-	134	107	DENT	4
98-	137	107	DENT	4
98-	140	107	DENT	4
98-	143	107	DENT	4
98-	146	107	DENT	4
98-	149	107	DENT	4
98-	152	107	DENT	4
98-	155	107	DENT	4
98-	158	107	DENT	4
98-	161	107	DENT	4
98-	164	107	DENT	4
98-	167	107	DENT	4
98-	170	107	DENT	4
98-	173	107	DENT	4
98-	176	107	DENT	4
98-	179	107	DENT	4
98-	182	107	DENT	4
98-	185	107	DENT	4
98-	188	107	DENT	4
98-	191	107	DENT	4
98-	194	107	DENT	4
98-	197	107	DENT	4
98-	200	107	DENT	4
98-	203	107	DENT	4
98-	206	107	DENT	4
98-	209	107	DENT	4
98-	212	107	DENT	4
98-	215	107	DENT	4
98-	218	107	DENT	4
98-	221	107	DENT	4
98-	224	107	DENT	4
98-	227	107	DENT	4
98-	230	107	DENT	4
98-	233	107	DENT	4
98-	236	107	DENT	4
98-	239	107	DENT	4
98-	242	107	DENT	4
98-	245	107	DENT	4
98-	248	107	DENT	4
98-	251	107	DENT	4
98-	254	107	DENT	4
98-	257	107	DENT	4
98-	260	107	DENT	4
98-	263	107	DENT	4
98-	266	107	DENT	4
98-	269	107	DENT	4
98-	272	107	DENT	4
98-	275	107	DENT	4
98-	278	107	DENT	4
98-	281	107	DENT	4
98-	284	107	DENT	4
98-	287	107	DENT	4
98-	290	107	DENT	4
98-	293	107	DENT	4
98-	296	107	DENT	4
98-	299	107	DENT	4
98-	302	107	DENT	4
98-	305	107	DENT	4
98-	308	107	DENT	4
98-	311	107	DENT	4
98-	314	107	DENT	4
98-	317	107	DENT	4
98-	320	107	DENT	4
98-	323	107	DENT	4
98-	326	107	DENT	4
98-	329	107	DENT	4
98-	332	107	DENT	4
98-	335	107	DENT	4
98-	338	107	DENT	4
98-	341	107	DENT	4
98-	344	107	DENT	4
98-	347	107	DENT	4
98-	350	107	DENT	4
98-	353	107	DENT	4
98-	356	107	DENT	4
98-	359	107	DENT	4
98-	362	107	DENT	4
98-	365	107	DENT	4
98-	368	107	DENT	4
98-	371	107	DENT	4
98-	374	107	DENT	4
98-	377	107	DENT	4
98-	380	107	DENT	4
98-	383	107	DENT	4
98-	386	107	DENT	4
98-	389	107	DENT	4
98-	392	107	DENT	4
98-	395	107	DENT	4
98-	398	107	DENT	4
98-	401	107	DENT	4
98-	404	107	DENT	4
98-	407	107	DENT	4
98-	410	107	DENT	4
98-	413	107	DENT	4
98-	416	107	DENT	4
98-	419	107	DENT	4
98-	422	107	DENT	4
98-	425	107	DENT	4
98-	428	107	DENT	4
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98-	437	107	DENT	4
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98-	443	107	DENT	4
98-	446	107	DENT	4
98-	449	107	DENT	4
98-	452	107	DENT	4
98-	455	107	DENT	4
98-	458	107	DENT	4
98-	461	107	DENT	4
98-	464	107	DENT	4
98-	467	107	DENT	4
98-	470	107	DENT	4
98-	473	107	DENT	4
98-	476	107	DENT	4
98-	479	107	DENT	4
98-	482	107	DENT	4
98-	485	107	DENT	4
98-	488	107	DENT	4
98-	491	107	DENT	4
98-	494	107	DENT	4
98-	497	107	DENT	4
98-	500	107	DENT	4
98-	503	107	DENT	4
98-	506	107	DENT	4
98-	509	107	DENT	4
98-	512	107	DENT	4
98-	515	107	DENT	4
98-	518	107	DENT	4
98-	521	107	DENT	4
98-	524	107	DENT	4
98-	527	107	DENT	4
98-	530	107	DENT	4
98-	533	107	DENT	4
98-	536	107	DENT	4
98-	539	107	DENT	4
98-	542	107	DENT	4
98-	545	107	DENT	4
98-	548	107	DENT	4
98-	551	107	DENT	4
98-	554	107	DENT	4
98-	557	107	DENT	4
98-	560	107	DENT	4
98-	563	107	DENT	4
98-	566	107	DENT	4
98-	569	107	DENT	4
98-	572	107	DENT	4
98-	575	107	DENT	4
98-	578	107	DENT	4
98-	581	107	DENT	4
98-	584	107	DENT	4
98-	587	107	DENT	4
98-	590	107	DENT	4
98-	593	107	DENT	4
98-	596	107	DENT	4
98-	599	107	DENT	4
98-	602	107	DENT	4
98-	605	107	DENT	4
98-	608	107	DENT	4
98-	611	107	DENT	4
98-	614	107	DENT	4
98-	617	107	DENT	4
98-	620	107	DENT	4
98-	623	107	DENT	4
98-	626	107	DENT	4
98-	629	107	DENT	4
98-	632	107	DENT	4
98-	635	107	DENT	4
98-	638	107	DENT	4
98-	641	107	DENT	4
98-	644	107	DENT	4
98-	647	107	DENT	4
98-	650	107	DENT	4
98-	653	107	DENT	4
98-	656	107	DENT	4
98-	659	107	DENT	4
98-	662	107	DENT	4
98-	665	107	DENT	4
98-	668	107	DENT	4
98-	671	107	DENT	4
98-	674	107	DENT	4
98-	677	107	DENT	4
98-	680	107	DENT	4
98-	683	107	DENT	4
98-	686	107	DENT	4
98-	689	107	DENT	4
98-	692	107	DENT	4
98-	695	107	DENT	4
98-	698	107	DENT	4
98-	701	107	DENT	4
98-	704	107	DENT	4
98-	707	107	DENT	4
98-	710	107	DENT	4
98-	713	107	DENT	4
98-	716	107	DENT	4
98-	719	107	DENT	4
98-	722	107	DENT	4
98-	725	107	DENT	4
98-	728	107	DENT	4
98-	731	107	DENT	4
98-	734	107	DENT	4
98-	737	107	DENT	4
98-	740	107	DENT	4
98-	743	107	DENT	4
98-	746	107	DENT	4
98-	749	107	DENT	4
98-	752	107	DENT	4
98-	755	107	DENT	4
98-	758	107	DENT	4
98-	761	107	DENT	4
98-	764	107	DENT	4
98-	767	107	DENT	4
98-	770	107	DENT	4
98-	773	107	DENT	4
98-	776	107	DENT	4
98-	779	107	DENT	4
98-	782	107	DENT	4
98-	785	107	DENT	4
98-	788	107	DENT	4
98-	791	107	DENT	4
98-	794	107	DENT	4
98-	797	107	DENT	4
98-	800	107	DENT	4
98-	803	107	DENT	4
98-	806	107	DENT	4
98-	809	107	DENT	4
98-	812	107	DENT	4
98-	815	107	DENT	4
98-	818	107	DENT	4
98-	821	107	DENT	4
98-	824	107	DENT	4
98-	827	107	DENT	4
98-	830	107	DENT	4
98-	833	107	DENT	4
98-	836	107	DENT	4
98-	839	107	DENT	4
98-	842	107	DENT	4
98-	845	107	DENT	4
98-	848	107	DENT	4
98-	851	107	DENT	4
98-	854	107	DENT	4
98-	857	107	DENT	4
98-	860	107	DENT	4
98-	863	107	DENT	4
98-	866	107	DENT	4
98-	869	107	DENT	4
98-	872	107	DENT	4
98-	875	107	DENT	4
98-	878	107	DENT	4
98-	881	107	DENT	4
98-	884	107	DENT	4
98-	887	107	DENT	4
98-	890	107	DENT	4
98-	893	107	DENT	4
98-	896	107	DENT	4
98-	899	107	DENT	4
98-	902	107	DENT	4
98-	905	107	DENT	4
98-	908	107	DENT	4
98-	911	107	DENT	4
98-	914	107	DENT	4
98-	917	107	DENT	4
98-	920	107	DENT	4
98-	923	107		

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS
100-1	70	/87	DENT	26
100-2	80	/87	DENT	46
100-3	000000	/87	DENT	46
100-4	000000	/87	DENT	46
100-5	111111	/87	DENT	46
100-6	111111	/87	DENT	46
100-7	111111	/87	DENT	46
100-8	111111	/87	DENT	46
100-9	111111	/87	DENT	46
100-10	111111	/87	DENT	46
100-11	111111	/87	DENT	46
100-12	111111	/87	DENT	46
100-13	111111	/87	DENT	46
100-14	111111	/87	DENT	46
100-15	111111	/87	DENT	46
100-16	111111	/87	DENT	46
100-17	111111	/87	DENT	46
100-18	111111	/87	DENT	46
100-19	111111	/87	DENT	46
100-20	111111	/87	DENT	46
100-21	111111	/87	DENT	46
100-22	111111	/87	DENT	46
100-23	111111	/87	DENT	46
100-24	111111	/87	DENT	46
100-25	111111	/87	DENT	46
100-26	111111	/87	DENT	46
100-27	111111	/87	DENT	46
100-28	111111	/87	DENT	46
100-29	111111	/87	DENT	46
100-30	111111	/87	DENT	46
100-31	111111	/87	DENT	46
100-32	111111	/87	DENT	46
100-33	111111	/87	DENT	46
100-34	111111	/87	DENT	46
100-35	111111	/87	DENT	46
100-36	111111	/87	DENT	46
100-37	111111	/87	DENT	46
100-38	111111	/87	DENT	46
100-39	111111	/87	DENT	46
100-40	111111	/87	DENT	46
100-41	111111	/87	DENT	46
100-42	111111	/87	DENT	46
100-43	111111	/87	DENT	46
100-44	111111	/87	DENT	46
100-45	111111	/87	DENT	46
100-46	111111	/87	DENT	46
100-47	111111	/87	DENT	46
100-48	111111	/87	DENT	46
100-49	111111	/87	DENT	46
100-50	111111	/87	DENT	46
100-51	111111	/87	DENT	46
100-52	111111	/87	DENT	46
100-53	111111	/87	DENT	46
100-54	111111	/87	DENT	46
100-55	111111	/87	DENT	46
100-56	111111	/87	DENT	46
100-57	111111	/87	DENT	46
100-58	111111	/87	DENT	46
100-59	111111	/87	DENT	46
100-60	111111	/87	DENT	46
100-61	111111	/87	DENT	46
100-62	111111	/87	DENT	46
100-63	111111	/87	DENT	46
100-64	111111	/87	DENT	46
100-65	111111	/87	DENT	46
100-66	111111	/87	DENT	46
100-67	111111	/87	DENT	46
100-68	111111	/87	DENT	46
100-69	111111	/87	DENT	46
100-70	111111	/87	DENT	46
100-71	111111	/87	DENT	46
100-72	111111	/87	DENT	46
100-73	111111	/87	DENT	46
100-74	111111	/87	DENT	46
100-75	111111	/87	DENT	46
100-76	111111	/87	DENT	46
100-77	111111	/87	DENT	46
100-78	111111	/87	DENT	46
100-79	111111	/87	DENT	46
100-80	111111	/87	DENT	46
100-81	111111	/87	DENT	46
100-82	111111	/87	DENT	46
100-83	111111	/87	DENT	46
100-84	111111	/87	DENT	46
100-85	111111	/87	DENT	46
100-86	111111	/87	DENT	46
100-87	111111	/87	DENT	46
100-88	111111	/87	DENT	46
100-89	111111	/87	DENT	46
100-90	111111	/87	DENT	46
100-91	111111	/87	DENT	46
100-92	111111	/87	DENT	46
100-93	111111	/87	DENT	46
100-94	111111	/87	DENT	46
100-95	111111	/87	DENT	46
100-96	111111	/87	DENT	46
100-97	111111	/87	DENT	46
100-98	111111	/87	DENT	46
100-99	111111	/87	DENT	46
100-100	111111	/87	DENT	46

Steam Generator: 22

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

[illegible]

Steam Generator: 22

1

[illegible]

Steam Generator: 22

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

[illegible]

Steam Generator: 22

1

[illegible]

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	VOLTS	
137-	83	3/87	H10	DENT	13
137-	87	3/87	H10	DENT	13
137-	89	3/87	H10	DENT	13
137-	91	3/87	H10	DENT	7
138-	82	3/87	H10	DENT	14
138-	84	3/87	H10	DENT	12
138-	86	3/87	H10	DENT	16
138-	88	3/87	H10	DENT	14
139-	77	3/87	H10	DENT	7
139-	85	3/87	H10	DENT	15
139-	87	3/87	H10	DENT	15
139-	89	3/87	H10	DENT	15
139-	93	3/87	H10	DENT	6
			+ 1.40"	DENT	11
			+ 6.20"	DENT	7
			+ 11.50"	DENT	7
				DENT	14
140-	76	3/87	H10	DENT	15
140-	80	3/87	H10	DENT	16
140-	84	3/87	H10	DENT	10
140-	86	3/87	H10	DENT	7
			+ 20.50"	DENT	16
140-	88	3/87	H10	DENT	16
140-	90	3/87	H10	DENT	7
140-	92	3/87	H10	DENT	7

TOTAL TUBES: 514

STEAM GENERATOR 22

M. List with plot of Sludge Data

SLUDGE PILE PROFILE S/G 22 HOT LEG

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

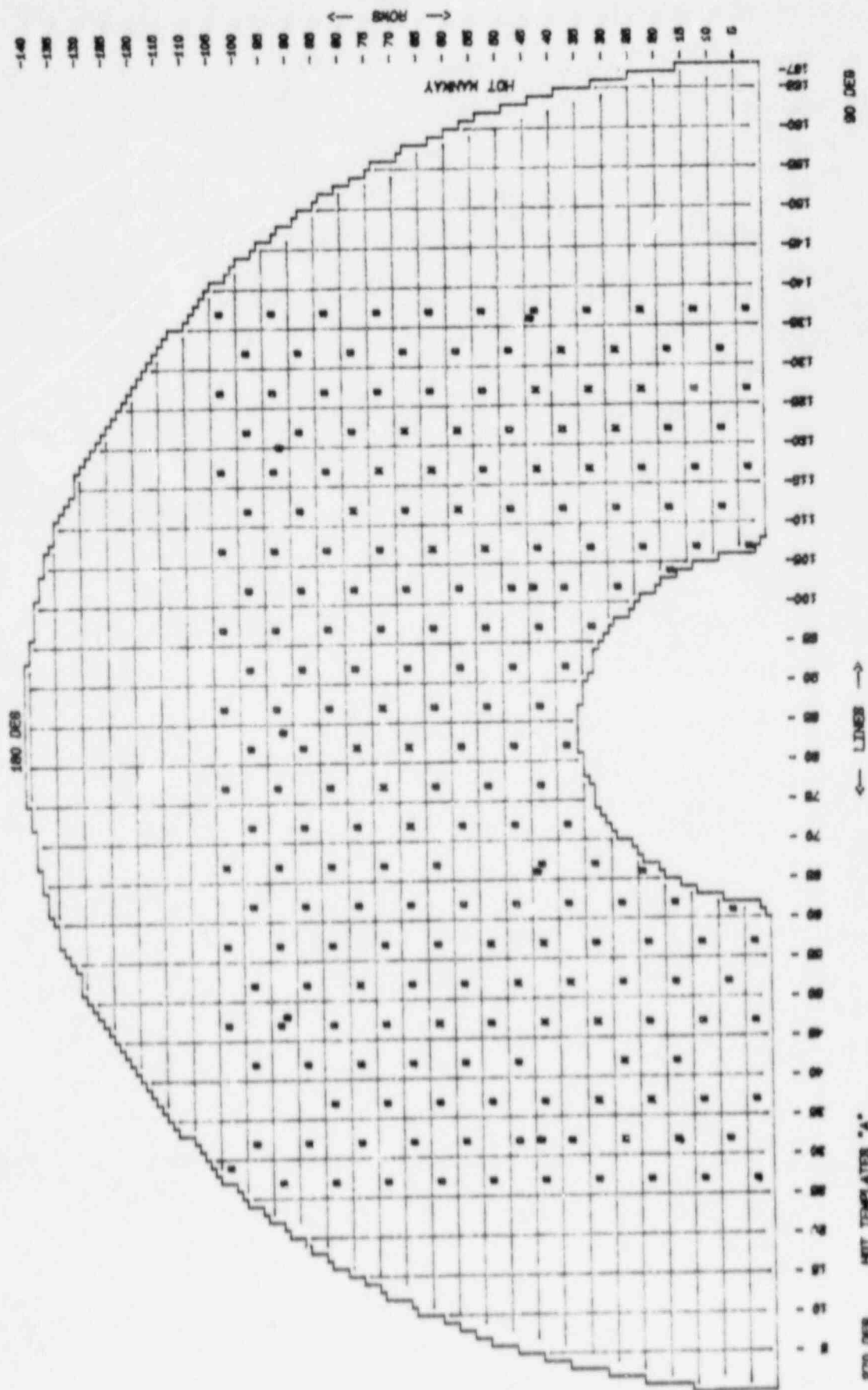
GENERATOR 22

TOTAL TUBES:	8519
STAYS (0):	7

6 - BLUDGE - - <3 (17M)
7 - BLUDGE - 10-20 (10)

N = SLUDGE - 0-10 (200)
Y = SLUDGE - >20 (0)

C - SLUDGE -- 11-15 (0)
 S - MULTIPLE INDICATION (0)
 TOTAL TUBES ASSIGNED: 214



Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

ROW	LINE	OUTAGE	ELEVATION	INDICATION	INCHES
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
15	15	15	15	15	15
16	16	16	16	16	16
17	17	17	17	17	17
18	18	18	18	18	18
19	19	19	19	19	19
20	20	20	20	20	20
21	21	21	21	21	21
22	22	22	22	22	22
23	23	23	23	23	23
24	24	24	24	24	24
25	25	25	25	25	25
26	26	26	26	26	26
27	27	27	27	27	27
28	28	28	28	28	28
29	29	29	29	29	29
30	30	30	30	30	30
31	31	31	31	31	31
32	32	32	32	32	32
33	33	33	33	33	33
34	34	34	34	34	34
35	35	35	35	35	35
36	36	36	36	36	36
37	37	37	37	37	37
38	38	38	38	38	38
39	39	39	39	39	39
40	40	40	40	40	40
41	41	41	41	41	41
42	42	42	42	42	42
43	43	43	43	43	43
44	44	44	44	44	44
45	45	45	45	45	45
46	46	46	46	46	46
47	47	47	47	47	47
48	48	48	48	48	48
49	49	49	49	49	49
50	50	50	50	50	50
51	51	51	51	51	51
52	52	52	52	52	52
53	53	53	53	53	53
54	54	54	54	54	54
55	55	55	55	55	55
56	56	56	56	56	56
57	57	57	57	57	57
58	58	58	58	58	58
59	59	59	59	59	59
60	60	60	60	60	60
61	61	61	61	61	61
62	62	62	62	62	62
63	63	63	63	63	63
64	64	64	64	64	64
65	65	65	65	65	65
66	66	66	66	66	66
67	67	67	67	67	67
68	68	68	68	68	68
69	69	69	69	69	69
70	70	70	70	70	70
71	71	71	71	71	71
72	72	72	72	72	72
73	73	73	73	73	73
74	74	74	74	74	74
75	75	75	75	75	75
76	76	76	76	76	76
77	77	77	77	77	77
78	78	78	78	78	78
79	79	79	79	79	79
80	80	80	80	80	80
81	81	81	81	81	81
82	82	82	82	82	82
83	83	83	83	83	83
84	84	84	84	84	84
85	85	85	85	85	85
86	86	86	86	86	86
87	87	87	87	87	87
88	88	88	88	88	88
89	89	89	89	89	89
90	90	90	90	90	90
91	91	91	91	91	91
92	92	92	92	92	92
93	93	93	93	93	93
94	94	94	94	94	94
95	95	95	95	95	95
96	96	96	96	96	96
97	97	97	97	97	97
98	98	98	98	98	98
99	99	99	99	99	99
100	100	100	100	100	100

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

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

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES	
98-	63	3/87	HTS-SF	SLUDGE	2
98-	72	3/87	HTS-SF	SLUDGE	4
98-	82	3/87	HTS-SF	SLUDGE	4
98-	92	3/87	HTS-SF	SLUDGE	4
98-	102	3/87	HTS-SF	SLUDGE	4
98-	112	3/87	HTS-SF	SLUDGE	1
98-	122	3/87	HTS-SF	SLUDGE	1
98-	132	3/87	HTS-SF	SLUDGE	0
103-	29	3/87	HTS-SF	SLUDGE	0
103-	47	3/87	HTS-SF	SLUDGE	0
103-	57	3/87	HTS-SF	SLUDGE	0
103-	67	3/87	HTS-SF	SLUDGE	0
103-	77	3/87	HTS-SF	SLUDGE	0
103-	87	3/87	HTS-SF	SLUDGE	0
103-	97	3/87	HTS-SF	SLUDGE	0
103-	107	3/87	HTS-SF	SLUDGE	0
103-	117	3/87	HTS-SF	SLUDGE	0
103-	127	3/87	HTS-SF	SLUDGE	0
103-	137	3/87	HTS-SF	SLUDGE	0

TOTAL TUBES: 214

SLUDGE PILE PROFILE S/G 22 COLD LEG

PLANT: CALVERT CLIFFS UNIT 2
OUTAGE: 3/87

GENERATOR: 22

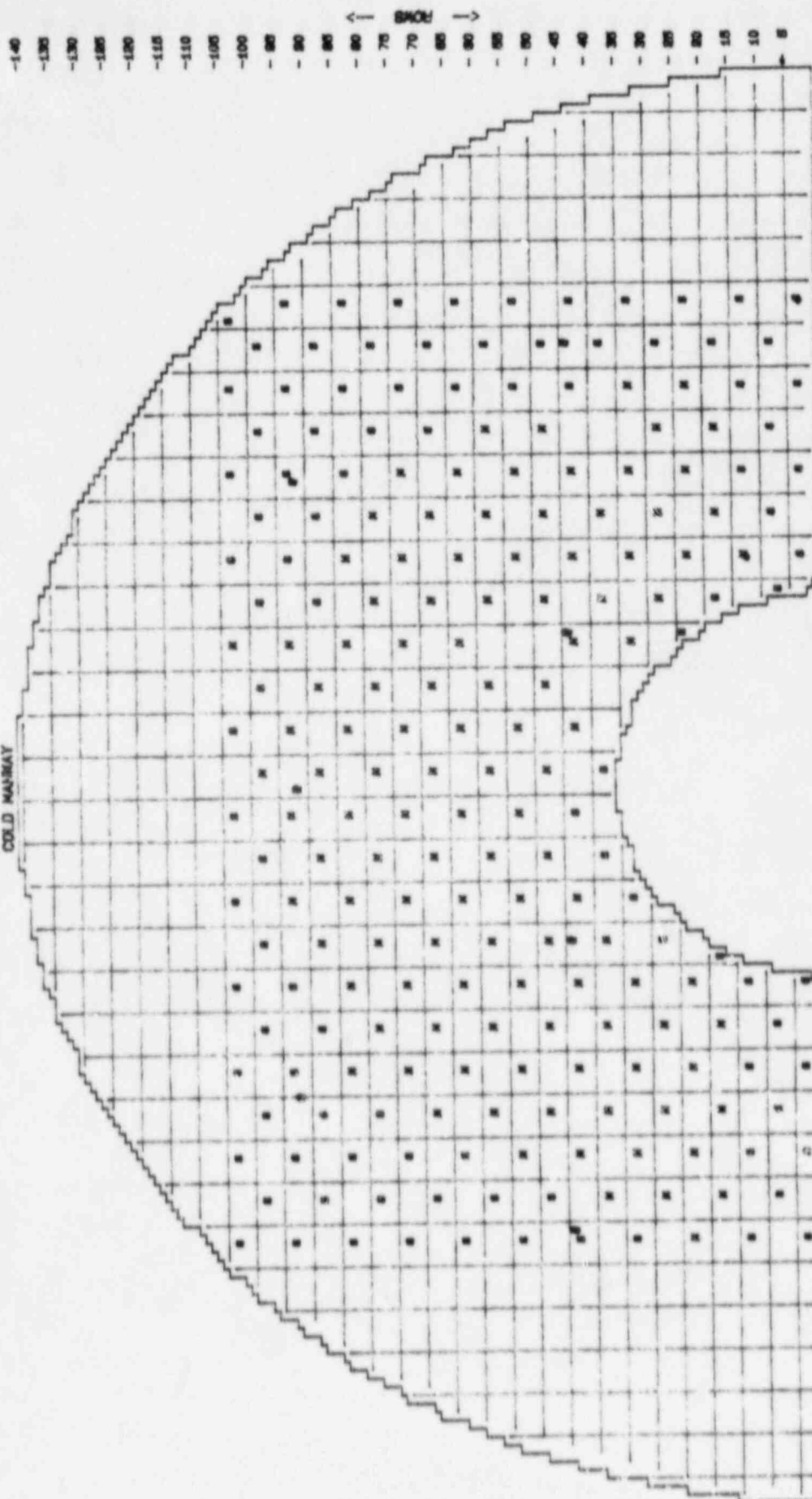
TOTAL TUBES: 8519
STAYS (#): 7

1 - SLUDGE - 11-15 (0)
- MULTIPLE INDICATION (0)
TOTAL TUBES ASSIGNED: 216

4 - SLUDGE - 5-10 (114)
- SLUDGE - >20 (0)

6 - SLUDGE - <5 (102)
- SLUDGE - 10-20 (0)

COLD MAINWAY



270 DEG

← LINES →

60 DEG COLD TEMPLATES "H"

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
1	107	CTG-SF	SLUDGE	0
2	107	CTG-SF	SLUDGE	0
3	107	CTG-SF	SLUDGE	0
4	107	CTG-SF	SLUDGE	0
5	107	CTG-SF	SLUDGE	0
6	107	CTG-SF	SLUDGE	0
7	107	CTG-SF	SLUDGE	0
8	107	CTG-SF	SLUDGE	0
9	107	CTG-SF	SLUDGE	0
10	107	CTG-SF	SLUDGE	0
11	107	CTG-SF	SLUDGE	0
12	107	CTG-SF	SLUDGE	0
13	107	CTG-SF	SLUDGE	0
14	107	CTG-SF	SLUDGE	0
15	107	CTG-SF	SLUDGE	0
16	107	CTG-SF	SLUDGE	0
17	107	CTG-SF	SLUDGE	0
18	107	CTG-SF	SLUDGE	0
19	107	CTG-SF	SLUDGE	0
20	107	CTG-SF	SLUDGE	0
21	107	CTG-SF	SLUDGE	0
22	107	CTG-SF	SLUDGE	0
23	107	CTG-SF	SLUDGE	0
24	107	CTG-SF	SLUDGE	0
25	107	CTG-SF	SLUDGE	0
26	107	CTG-SF	SLUDGE	0
27	107	CTG-SF	SLUDGE	0
28	107	CTG-SF	SLUDGE	0
29	107	CTG-SF	SLUDGE	0
30	107	CTG-SF	SLUDGE	0
31	107	CTG-SF	SLUDGE	0
32	107	CTG-SF	SLUDGE	0
33	107	CTG-SF	SLUDGE	0
34	107	CTG-SF	SLUDGE	0
35	107	CTG-SF	SLUDGE	0
36	107	CTG-SF	SLUDGE	0
37	107	CTG-SF	SLUDGE	0
38	107	CTG-SF	SLUDGE	0
39	107	CTG-SF	SLUDGE	0
40	107	CTG-SF	SLUDGE	0
41	107	CTG-SF	SLUDGE	0
42	107	CTG-SF	SLUDGE	0
43	107	CTG-SF	SLUDGE	0
44	107	CTG-SF	SLUDGE	0
45	107	CTG-SF	SLUDGE	0
46	107	CTG-SF	SLUDGE	0
47	107	CTG-SF	SLUDGE	0
48	107	CTG-SF	SLUDGE	0
49	107	CTG-SF	SLUDGE	0
50	107	CTG-SF	SLUDGE	0
51	107	CTG-SF	SLUDGE	0
52	107	CTG-SF	SLUDGE	0
53	107	CTG-SF	SLUDGE	0
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55	107	CTG-SF	SLUDGE	0
56	107	CTG-SF	SLUDGE	0
57	107	CTG-SF	SLUDGE	0
58	107	CTG-SF	SLUDGE	0
59	107	CTG-SF	SLUDGE	0
60	107	CTG-SF	SLUDGE	0
61	107	CTG-SF	SLUDGE	0
62	107	CTG-SF	SLUDGE	0
63	107	CTG-SF	SLUDGE	0
64	107	CTG-SF	SLUDGE	0
65	107	CTG-SF	SLUDGE	0
66	107	CTG-SF	SLUDGE	0
67	107	CTG-SF	SLUDGE	0
68	107	CTG-SF	SLUDGE	0
69	107	CTG-SF	SLUDGE	0
70	107	CTG-SF	SLUDGE	0
71	107	CTG-SF	SLUDGE	0
72	107	CTG-SF	SLUDGE	0
73	107	CTG-SF	SLUDGE	0
74	107	CTG-SF	SLUDGE	0
75	107	CTG-SF	SLUDGE	0
76	107	CTG-SF	SLUDGE	0
77	107	CTG-SF	SLUDGE	0
78	107	CTG-SF	SLUDGE	0
79	107	CTG-SF	SLUDGE	0
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81	107	CTG-SF	SLUDGE	0
82	107	CTG-SF	SLUDGE	0
83	107	CTG-SF	SLUDGE	0
84	107	CTG-SF	SLUDGE	0
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86	107	CTG-SF	SLUDGE	0
87	107	CTG-SF	SLUDGE	0
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91	107	CTG-SF	SLUDGE	0
92	107	CTG-SF	SLUDGE	0
93	107	CTG-SF	SLUDGE	0
94	107	CTG-SF	SLUDGE	0
95	107	CTG-SF	SLUDGE	0
96	107	CTG-SF	SLUDGE	0
97	107	CTG-SF	SLUDGE	0
98	107	CTG-SF	SLUDGE	0
99	107	CTG-SF	SLUDGE	0
100	107	CTG-SF	SLUDGE	0

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
1	117	CT	SLUDGE	8
2	117	CT	SLUDGE	6
3	117	CT	SLUDGE	1
4	117	CT	SLUDGE	6
5	117	CT	SLUDGE	1
6	117	CT	SLUDGE	7
7	117	CT	SLUDGE	7
8	117	CT	SLUDGE	7
9	117	CT	SLUDGE	7
10	117	CT	SLUDGE	7
11	117	CT	SLUDGE	7
12	117	CT	SLUDGE	7
13	117	CT	SLUDGE	7
14	117	CT	SLUDGE	7
15	117	CT	SLUDGE	7
16	117	CT	SLUDGE	7
17	117	CT	SLUDGE	7
18	117	CT	SLUDGE	7
19	117	CT	SLUDGE	7
20	117	CT	SLUDGE	7
21	117	CT	SLUDGE	7
22	117	CT	SLUDGE	7
23	117	CT	SLUDGE	7
24	117	CT	SLUDGE	7
25	117	CT	SLUDGE	7
26	117	CT	SLUDGE	7
27	117	CT	SLUDGE	7
28	117	CT	SLUDGE	7
29	117	CT	SLUDGE	7
30	117	CT	SLUDGE	7
31	117	CT	SLUDGE	7
32	117	CT	SLUDGE	7
33	117	CT	SLUDGE	7
34	117	CT	SLUDGE	7
35	117	CT	SLUDGE	7
36	117	CT	SLUDGE	7
37	117	CT	SLUDGE	7
38	117	CT	SLUDGE	7
39	117	CT	SLUDGE	7
40	117	CT	SLUDGE	7
41	117	CT	SLUDGE	7
42	117	CT	SLUDGE	7
43	117	CT	SLUDGE	7
44	117	CT	SLUDGE	7
45	117	CT	SLUDGE	7
46	117	CT	SLUDGE	7
47	117	CT	SLUDGE	7
48	117	CT	SLUDGE	7
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63	117	CT	SLUDGE	7
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65	117	CT	SLUDGE	7
66	117	CT	SLUDGE	7
67	117	CT	SLUDGE	7
68	117	CT	SLUDGE	7
69	117	CT	SLUDGE	7
70	117	CT	SLUDGE	7
71	117	CT	SLUDGE	7
72	117	CT	SLUDGE	7
73	117	CT	SLUDGE	7
74	117	CT	SLUDGE	7
75	117	CT	SLUDGE	7
76	117	CT	SLUDGE	7
77	117	CT	SLUDGE	7
78	117	CT	SLUDGE	7
79	117	CT	SLUDGE	7
80	117	CT	SLUDGE	7
81	117	CT	SLUDGE	7
82	117	CT	SLUDGE	7
83	117	CT	SLUDGE	7
84	117	CT	SLUDGE	7
85	117	CT	SLUDGE	7
86	117	CT	SLUDGE	7
87	117	CT	SLUDGE	7
88	117	CT	SLUDGE	7
89	117	CT	SLUDGE	7
90	117	CT	SLUDGE	7
91	117	CT	SLUDGE	7
92	117	CT	SLUDGE	7
93	117	CT	SLUDGE	7
94	117	CT	SLUDGE	7
95	117	CT	SLUDGE	7
96	117	CT	SLUDGE	7
97	117	CT	SLUDGE	7
98	117	CT	SLUDGE	7
99	117	CT	SLUDGE	7
100	117	CT	SLUDGE	7

Plant: CALVERT CLIFFS UNIT 2
Outage: 3/87

Steam Generator: 22

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

[illegible]

Plant: CALVERT CLIFFS UNIT 2
 Outage: 3/87

Steam Generator: 22

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

ROW-LINE	OUTAGE	ELEVATION	INDICATION	INCHES
98-	52	44/87	CTS-SF	SLUDGE
98-	62	44/87	CTS-SF	SLUDGE
98-	72	44/87	CTS-SF	SLUDGE
98-	82	44/87	CTS-SF	SLUDGE
98-	92	44/87	CTS-SF	SLUDGE
98-	102	44/87	CTS-SF	SLUDGE
98-	112	44/87	CTS-SF	SLUDGE
98-	122	44/87	CTS-SF	SLUDGE
98-	132	44/87	CTS-SF	SLUDGE
100-	47	44/87	CTS-SF	SLUDGE
100-	57	44/87	CTS-SF	SLUDGE
100-	67	44/87	CTS-SF	SLUDGE
100-	77	44/87	CTS-SF	SLUDGE
100-	87	44/87	CTS-SF	SLUDGE
100-	97	44/87	CTS-SF	SLUDGE
100-	107	44/87	CTS-SF	SLUDGE
100-	117	44/87	CTS-SF	SLUDGE
100-	127	44/87	CTS-SF	SLUDGE
100-	137	44/87	CTS-SF	SLUDGE

TOTAL TUBES: 216

STEAM GENERATOR 22

I. List of Tubes Plugged During the 1987 Outage

Steam Generator #22 Tubes Plugged During the Unit 2 March 1987 Outage

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
7	59	Eddy Current Testing Indication of 61% wall loss originating on the outside diameter of the tube at C1 + 5.0 inches.
18	32	Eddy Current Testing Indication of 71% wall loss originating on the outside diameter of the tube at HTS-SF + 0.7 inches.
20	146	Eddy Current Testing Indication of 50% wall loss originating on the outside diameter of the tube at C1 + 12.8 inches.
31	121	Eddy Current Testing Indication of 46% wall loss originating on the outside diameter of the tube at C2 + 14.1 inches.
32	68	Eddy Current Testing Indication of 57% wall loss originating on the outside diameter of the tube at CTS-SF + 25.4 inches.
34	72	Eddy Current Testing Indication of 70% wall loss originating on the outside diameter of the tube at DC + 0.0 inches.
36	90	Eddy Current Testing Indication of 59% wall loss originating on the outside diameter of the tube at DC + 0.0 inches.
56	90	Eddy Current Testing Indication of 47% wall loss originating on the outside diameter of the tube at C3 + 21.3 inches.
76	88	Eddy Current Testing Indication of 48% wall loss originating on the outside diameter of the tube at HTS-SF + 1.5 inches.
81	85	Eddy Current Testing Indication of 65% wall loss originating on the outside diameter of the tube at DH + 0.0 inches.
82	96	Eddy Current Testing Indication of 43% wall loss originating on the outside diameter of the tube at HTS-SF + 0.5 inches.

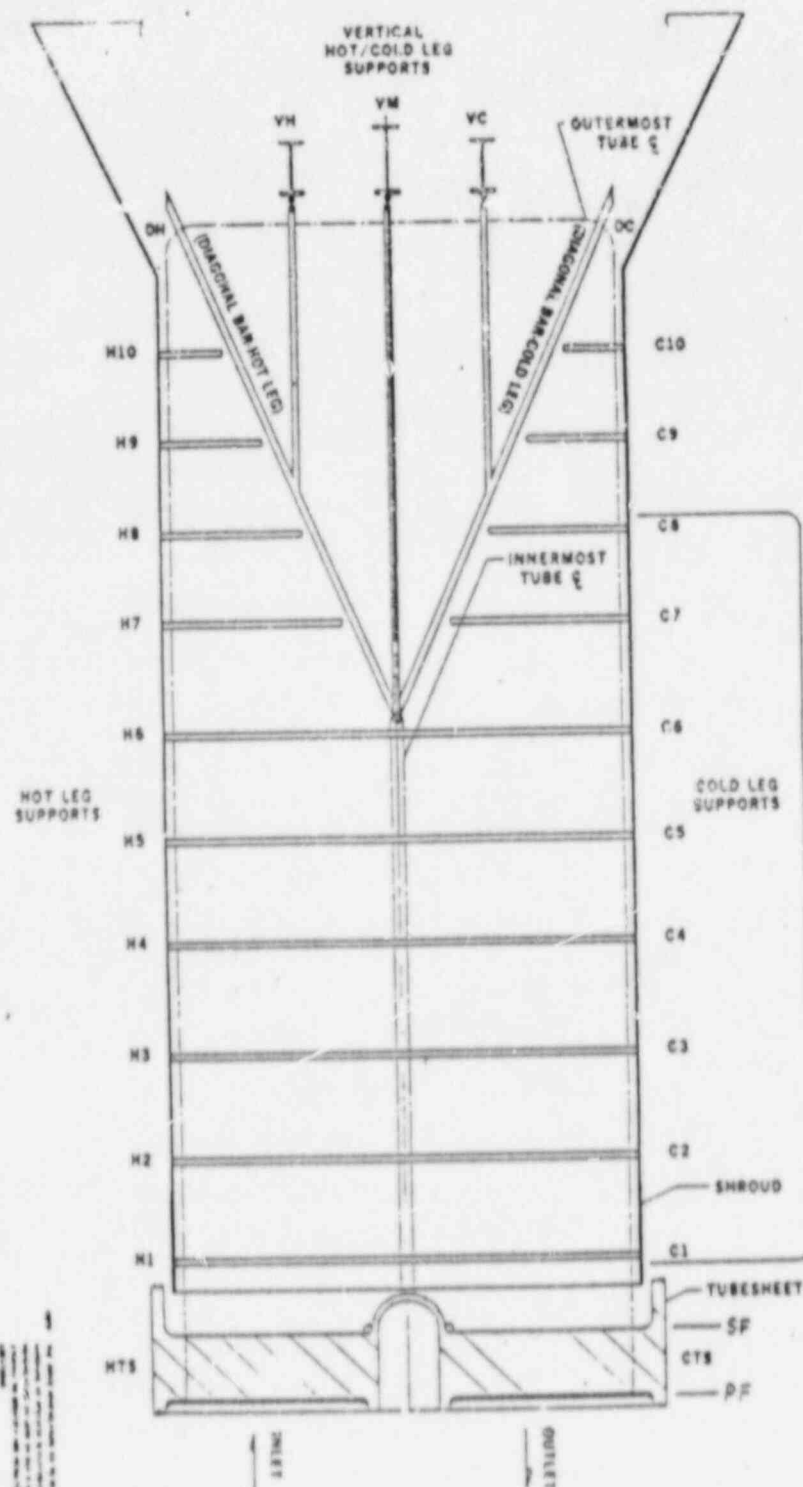
Steam Generator #22 Tubes Plugged During the Unit 2 March 1987 Outage

<u>ROW</u>	<u>LINE</u>	<u>REASON FOR PLUGGING</u>
97	67	Eddy Current Testing Indication of 42% wall loss originating on the outside diameter of the tube at C9 + 1.2 inches.
106	88	Eddy Current Testing Indication of 47% wall loss originating on the outside diameter of the tube at H7 + 22.9 inches.
117	47	Eddy Current Testing Indication of 46% wall loss originating on the outside diameter of the tube at HTS-SF + 8.7 inches.
8	132	Eddy Current Testing Indication of 37% wall loss originating on the outside diameter of the tube at VM + 0.0 inches.
9	123	Eddy Current Testing Indication of 26% wall loss originating on the outside diameter of the tube at VM + 0.0 inches.
11	51	Eddy Current Testing Indication of 38% wall loss originating on the outside diameter of the tube at HTS-SF + 12.0 inches.
37	89	Eddy Current Testing Indication of 25% wall loss originating on the outside diameter of the tube at DH + 0.0 inches.
80	84	Eddy Current Testing Indication of 29% wall loss originating on the outside diameter of the tube at HTS-SF + 0.7 inches.
136	66	Eddy Current Testing Indication of 37% wall loss originating on the outside diameter of the tube at C1 + 0.0 inches.

APPENDIX IIX

STEAM GENERATOR INSPECTION INFORMATION

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



STEAM GENERATOR SUPPORT LOCATION & NOMENCLATURE

SAMPLE HOT LEG TUBE SHEET MAP

PLANT: CALVERT CLIFFS UNIT 2

GENERATION: 21

TOTAL TUBES: 8519

STAYS (S): 7

TOTAL TUBES ASSIGNED:

← TUBE LOCATIONS

180 DEG

← ROHS →
 -140
 -135
 -130
 -125
 -120
 -115
 -110
 -105
 -100
 -95
 -90
 -85
 -80
 -75
 -70
 -65
 -60
 -55
 -50
 -45
 -40
 -35
 -30
 -25
 -20
 -15
 -10
 -5
 0

HOT MAINWAY

90 DEG

← LINES →

270 DEG HOT TEMPLATES "A"

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
ID _I	-	INSIDE DIAMETER INDICATION
ID _V	-	INSIDE DIAMETER VARIATION
SLG	-	SLUDGE
XHR	-	EXTRA HARD ROLL
RTI	-	ROLL TRANSITION INDICATION
APT	-	ABSOLUTE POSITIVE TRACE
NDD	-	NO DETECTABLE INDICATION
NRH	-	NOT ROLLED HOT
NRC	-	NOT ROLLED COLD