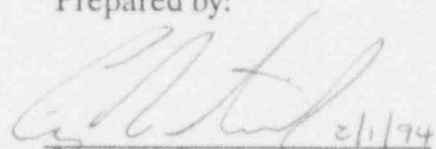


**CALVERT CLIFFS
UNIT #2**

STEAM GENERATORS #21 AND #22
EDDY CURRENT TESTING
FINAL REPORT
MARCH 1993

Prepared by:



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I. INTRODUCTION

This report summarizes the March 1993 eddy current inspection results of the Calvert Cliffs Unit #2 Steam Generators. The report contains a brief description of the inspection plan, written and tabular summaries of the inspection results, and detailed lists of all indications found.

II. DISCUSSION

The Zetec, Inc. MIZ-18A digital data acquisition system was used to examine the U-tubes of the Unit #2 Steam Generators.

The primary analysis frequency selected was 400 KHz. Frequencies of 800, 100 and 30 KHz were also selected to enhance the data analysis. All eddy current data collected received both a primary and a secondary analysis in addition to an independent third party review. Zetec, Inc. was contracted to perform the primary analysis. The secondary analysis was performed by Computer Data Screening (CDS).

Prior to conducting data analysis, all of the analysts, including the CDS system, were required to pass a site specific examination.

The scope of the inspection plan was a full length bobbin coil examination of all the in-service tubes in both steam generators. In addition to the 100% bobbin coil inspection, a motorized rotating pancake coil (MRPC) was used to perform more detailed examinations at selected locations in both steam generators. MRPC was used to examine 25% of the tubes in each steam generator at the hot leg tubesheet expansion zone. This examination was designed to look for circumferential cracking identified at plants of similar design and age. No circumferential cracking was found. MRPC examination was also performed on 100 tubes in each steam generator at dent locations adjacent to the solid tube support plates. No circumferential cracking was found at these locations. In addition, selected bobbin coil indications throughout both steam generators were further characterized by MRPC examination at the discretion of the eddy current analysts.

Table II-1 summarizes the Unit #2 March 1993 Eddy Current Examination results. Appendices I and II contain detailed lists of all eddy current indications found during this examination. All indications were on the outside surfaces of the tubes. The examination results were consistent with the known active corrosion mechanisms present in the steam generators. There were no noteworthy or unexpected results.

As a result of eddy current examination and analysis, twelve (12) tubes in the #21 Steam Generator and eight (8) tubes in the #22 Steam Generator were removed from service in the Unit #2 1993 Refueling Outage. These tubes were removed from service with mechanical tube plugs supplied and installed by Westinghouse, Inc. The plugs were manufactured of Alloy 690 material.

TABLE II - I

Unit Two Eddy Current Inspection Results

	SG #21	SG #22
Number of In-service Tubes	8444	8481
Percent of In-service Tubes Inspected	100%	100%
Number of Indications <20% (Imperfections)	103	96
Number of Tubes with <20% Indications	102	88
Percent of Tubes with <20% Indications	1.21%	1.04%
Number of Indications 20-39% (Degraded)	126	71
Number of Tubes with 20-39% Indications	120	68
Percent of Tubes with 20-39% Indications	1.42%	0.80%
Number of Indications >39% (Defective)	12	7
Number of Tubes with >39% Indications	11	7
Percent of Tubes with >39% Indications	0.13%	0.08%
Number of Tubes Plugged this Outage	12	8
Total Tubes Plugged	87	46
Percent of Tubes Plugged	1.02%	0.54%

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

APPENDIX I

Eddy Current Test Results for #21 Steam Generator

- A. Plot with List of All Indications March 1993
- B. Plot with List of <20% Indications March 1993
- C. Plot with List of 20% - 39% Indications March 1993
- D. Plot with List of >39% Indications March 1993
- E. Plot with List of Tubes Plugged March 1993
- F. Plot with List of All Tubes Plugged All Outages

STEAM GENERATOR #21

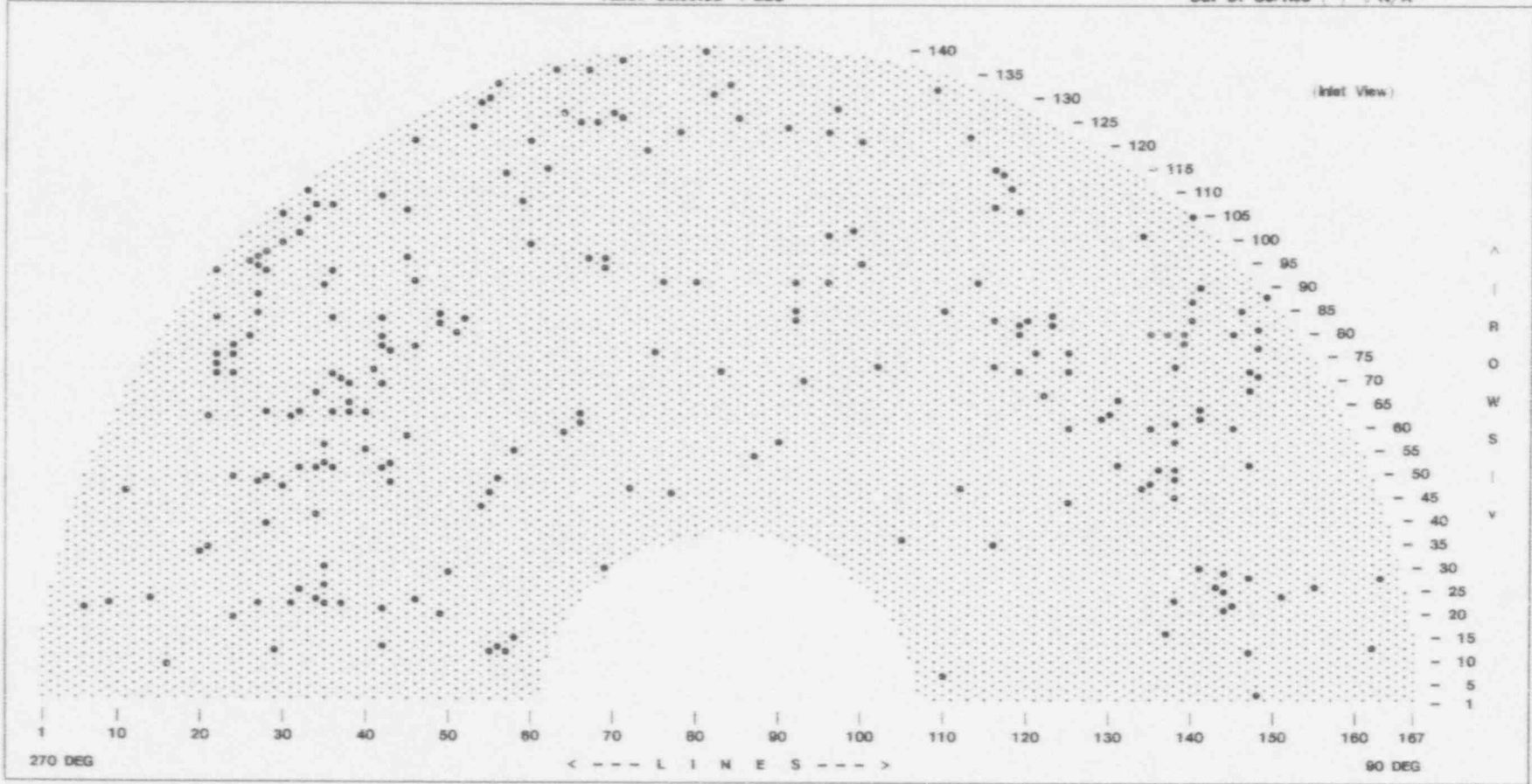
A. Plot with List of All Indications March 1993

21 STEAM GENERATOR ALL INDICATIONS

Calvert Cliffs - Unit 2
Total Tubes : 8519

Tubes Selected : 228

S/G 21
Out Of Service () : N/A



● TUB 1 TO 100 - 228

BWNS TUBAN II (Version 1.0) 01/13/1994 17:03:14
 Calvert Cliffs - Unit 2
 S/G 21
 03/93 RFO

1 - 100% INDICATIONS						
COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION
1.	2	148	ODI	31	1.07	C3 +35.75
2.	6	110	ODI	38	0.89	TSH +1.74
3.	8	16	ODI	15	1.00	C5 +25.71
4.	11	29	ODI	15	0.49	H1 +22.47
5.	11	55	ODI	13	1.75	VM +0.00
6.	11	57	ODI	31	0.77	VM +4.00
7.	11	147	ODI	15	1.53	H6 +24.14
8.	12	42	ODI	25	0.71	C6 +32.87
9.	12	56	ODI	22	1.07	VM +2.04
10.	12	162	ODI	23	0.84	TSH +13.93
11.	14	58	ODI	30	0.84	C4 +31.55
12.	15	137	ODI	60	1.49	H4 +24.34
13.	18	24	ODI	17	2.16	H4 +18.59
14.	19	49	ODI	54	0.50	C2 +18.99
15.	20	6	ODI	34	1.18	C2 +28.58
16.	20	42	ODI	23	0.82	C6 +48.62
17.	20	144	ODI	16	0.66	TSH +0.75
18.	21	9	ODI	26	1.36	C1 +27.57
19.	21	27	ODI	40	0.82	TSH +0.96
20.	21	31	ODI	16	0.56	TSH +0.95
21.	21	35	ODI	18	0.58	TSH +1.16
22.	21	37	ODI	36	0.48	TSH +1.02
23.	21	145	ODI	8	1.17	C3 +36.39
24.	22	14	ODI	29	0.80	C5 +9.98
25.	22	34	ODI	17	0.59	TSH +1.08
26.	22	46	ODI	27	1.03	TSC +8.91
27.	22	138	ODI	20	0.93	TSH +20.47
28.	23	151	ODI	22	0.96	C5 +26.77
29.	24	32	ODI	22	0.57	TSH +1.51
30.	24	144	ODI	23	0.45	TSH +0.81
31.	25	35	ODI	6	0.51	TSH +0.83
32.	25	143	ODI	14	1.09	TSH +0.69
33.	25	155	ODI	29	0.99	H3 +11.66
34.			ODI	33	1.81	H2 +33.64
35.	27	147	ODI	19	0.36	TSC +4.95
36.	27	163	ODI	9	0.76	H2 +8.56
37.	28	50	ODI	7	1.08	TSH +18.96
38.	28	144	ODI	37	0.40	TSH +0.69
39.	29	35	ODI	29	0.48	TSH +6.36
40.	29	69	ODI	22	1.95	H3 +20.10
41.	29	141	IDI	13	2.68	TSC +21.97
42.	32	20	ODI	18	0.44	TSH +2.78
43.			ODI	23	0.75	TSH +1.59
44.			ODI	25	0.42	TSH +2.17
45.			ODI	35	0.43	TSH +1.10
46.	33	21	ODI	34	0.46	TSH +1.14
47.	34	116	ODI	7	0.98	C3 +20.72
48.			ODI	15	0.98	H3 +24.92
49.	35	105	ODI	34	1.40	H3 +26.23
50.	38	28	ODI	26	0.74	TSH +1.06
51.	40	34	ODI	26	0.45	TSH +0.85
52.	42	54	ODI	12	0.58	TSH +1.40
53.	43	125	ODI	15	1.17	C1 +0.65
54.	44	138	ODI	31	0.50	TSH +0.58
55.	45	11	ODI	5	1.19	C5 +21.35
56.	45	55	ODI	22	0.50	TSH +0.89
57.	45	77	ODI	63	0.71	H7 -0.15
58.	46	30	ODI	19	0.56	TSH +1.08
59.	46	72	ODI	33	1.29	H1 +24.63
60.	46	112	ODI	23	0.51	TSH +1.09
61.	46	134	ODI	31	1.10	TSH +0.88
62.	47	27	ODI	19	0.52	TSH +1.79
63.			ODI	27	0.43	TSH +1.28
64.	47	43	ODI	33	0.59	TSC +3.67
65.	47	135	ODI	25	0.79	TSH +0.45
66.			ODI	58	0.63	TSH +1.11

1 - 100% COUNT	INDICATIONS ROW LINE IND	%TW	VOLTS	LOCATION	
67.	48 24 ODI	28	0.54	H4	+15.51
68.	48 28 ODI	39	0.44	TSH	+1.01
69.	48 56 ODI	33	0.56	TSH	+1.02
70.	48 138 ODI	37	1.25	TSH	+2.07
71.	50 32 ODI	33	0.51	TSH	+0.87
72.	50 34 ODI	37	0.58	TSH	+0.71
73.	50 36 ODI	13	0.46	TSH	+0.77
74.	50 42 ODI	39	0.45	TSH	+1.22
75.	50 136 ODI	25	0.57	TSH	+0.79
76.	50 138 ODI	28	0.95	TSH	+2.16
77.	51 35 ODI	23	0.55	TSH	+0.63
78.	51 43 ODI	50	1.52	H2	+28.98
79.	51 131 ODI	15	0.61	TSH	+0.73
80.	51 147 ODI	38	0.81	TSH	+2.02
81.	53 87 ODI	27	1.25	C3	+30.10
82.	54 40 ODI	38	0.73	TSH	+0.76
83.	54 58 ODI	14	1.38	C4	+28.39
84.	55 35 ODI	16	0.63	TSH	+0.97
85.	56 90 ODI	7	2.83	H3	+25.29
86.	56 138 ODI	22	1.46	TSH	+1.90
87.	57 45 ODI	14	1.11	H4	+35.50
88.	58 64 ODI	28	0.53	TSH	+0.76
89.	59 125 ODI	35	0.77	TSH	+0.63
90.	59 135 ODI	27	1.35	TSH	+1.90
91.	59 145 ODI	23	0.62	TSH	+2.20
92.	60 66 ODI	22	1.04	TSH	+2.66
93.	60 138 ODI	37	0.90	VM	+12.95
94.	61 21 ODI	61	1.61	TSH	+31.93
95.	61 31 ODI	19	0.40	TSH	+0.75
96.	61 129 ODI	32	0.59	TSH	+0.72
97.	61 141 ODI	16	0.53	H4	+2.62
98.	62 28 ODI	25	1.38	C5	+10.63
99.	62 32 ODI	18	0.56	TSH	+0.79
100.	62 36 ODI	28	0.47	TSH	+0.86
101.	62 38 ODI	18	0.67	TSH	+0.89
102.	62 40 ODI	29	0.69	TSH	+0.86
103.	62 66 ODI	14	0.50	TSH	+0.70
104.	62 130 ODI	16	0.65	TSH	+0.73
105.	63 141 ODI	21	1.00	C7	+12.36
106.	64 38 ODI	10	0.58	TSH	+4.23
107.	65 131 ODI	22	1.26	TSH	+0.82
108.	66 34 ODI	16	0.84	H7	+12.01
109.	66 122 ODI	18	0.72	TSH	+0.56
110.	67 147 ODI	25	0.65	H4	+34.65
111.	68 38 ODI	18	0.43	TSH	+0.84
112.	68 42 ODI	36	1.18	TSH	+0.73
113.	69 37 ODI	6	0.98	H5	+14.33
114.	69 93 ODI	19	0.54	TSH	+1.17
115.	70 22 ODI	34	0.55	TSH	+1.03
116.	70 24 ODI	14	0.28	TSH	+1.92
117.	ODI	23	0.37	TSH	+1.20
118.	ODI	36	0.55	TSH	+0.75
119.	70 36 ODI	21	0.41	TSH	+0.80
120.	70 148 ODI	14	0.58	TSH	+1.84
121.	71 41 ODI	14	0.50	H1	+23.34
122.	71 83 ODI	12	1.15	C7	+15.80
123.	71 119 ODI	16	0.63	TSH	+0.68
124.	71 125 ODI	23	0.50	TSH	+0.90
125.	71 147 ODI	17	0.63	TSC	+10.43
126.	72 22 ODI	6	1.25	VM	+21.25
127.	72 102 ODI	3	0.86	H1	+6.62
128.	72 116 ODI	30	0.68	TSH	+0.74
129.	72 138 ODI	38	0.50	TSH	+0.83
130.	74 22 ODI	16	0.70	TSH	+1.49
131.	74 24 ODI	18	0.60	TSH	+1.26
132.	ODI	25	0.61	TSH	+0.85

1 - 100% COUNT	INDICATIONS ROW LINE IND	%TW	VOLTS	LOCATION	
133.	75 43 ODI	35	0.43	TSC	+1.74
134.	75 75 ODI	19	0.55	TSH	+1.04
135.	75 121 ODI	27	0.63	TSH	+0.97
136.	75 125 ODI	21	0.51	TSH	+0.81
137.	76 24 ODI	26	0.41	TSH	+0.89
138.	76 42 ODI	10	1.06	TSH	+0.98
139.	76 46 ODI	13	0.59	TSH	+0.99
140.	76 148 ODI	12	0.87	TSC	+7.0E
141.	77 139 ODI	23	0.84	TSH	+10.24
142.	78 26 ODI	33	0.46	TSH	+0.79
143.	78 42 ODI	15	1.50	C5	+1.83
144.	79 51 ODI	24	1.10	H2	+25.52
145.	79 119 ODI	18	0.89	TSH	+0.95
146.	79 135 ODI	17	1.21	H1	+0.46
147.	79 137 ODI	3	1.19	H7	+23.09
148.	79 139 ODI	19	1.37	TSH	+1.66
149.	79 145 ODI	23	0.90	C8	-0.50
150.	80 148 ODI	12	0.65	TSH	+2.03
151.	81 49 ODI	16	0.57	TSH	+0.92
152.	81 119 ODI	19	0.83	TSH	+1.14
153.	81 123 ODI	23	1.62	H5	+25.33
154.	82 22 ODI	75	0.47	TSH	+0.91
155.	82 36 ODI	22	0.56	TSH	+1.96
156.	82 42 ODI	16	1.45	C8	+5.68
157.	82 52 ODI	28	0.89	TSH	+0.74
158.	82 92 ODI	13	0.57	TSH	+0.91
159.	82 115 ODI	33	0.84	TSH	+1.01
160.	82 120 ODI	25	1.29	TSH	+1.02
161.	82 140 ODI	24	0.72	TSH	+1.08
162.	83 27 ODI	4	0.90	TSH	+1.16
163.	83 49 ODI	19	0.77	TSH	+0.83
164.	83 123 ODI	21	0.67	TSH	+0.75
165.	84 92 ODI	33	0.69	TSH	+0.94
166.	84 110 ODI	11	0.47	TSH	+0.6
167.	84 146 ODI	12	0.43	TSC	+0.8
168.	86 140 ODI	19	0.65	TSH	+1.81
169.	87 27 ODI	20	1.02	H2	+6.69
170.	87 149 ODI	17	0.81	H6	+19.2
171.	89 35 ODI	24	0.46	TSC	+12.66
172.	89 141 ODI	8	0.83	TSC	+36.37
173.	90 46 ODI	9	1.74	H6	+3.17
174.	90 76 ODI	22	0.77	TSH	+1.12
175.	90 80 ODI	37	0.59	TSH	+0.74
176.	90 92 ODI	20	1.33	TSH	+1.07
177.	90 96 ODI	26	1.42	TSH	+1.26
178.	90 114 ODI	37	0.40	TSH	+1.10
179.	92 22 ODI	6	0.69	H3	+15.47
180.	92 28 ODI	27	0.40	TSH	+1.14
181.	ODI	61	0.37	TSH	+1.53
182.	ODI	87	0.36	TSH	+3.04
183.	92 36 ODI	20	0.67	TSH	+1.08
184.	93 27 ODI	52	0.55	TSH	+1.14
185.	93 69 ODI	21	0.61	TSH	+0.95
186.	94 26 ODI	13	1.09	TSH	+1.01
187.	94 100 ODI	24	3.15	C4	+5.91
188.	95 27 ODI	29	0.45	VH	+2.00
189.	95 45 ODI	37	1.27	H1	+2.86
190.	95 67 ODI	14	1.00	TSH	+0.61
191.	95 69 ODI	21	0.76	TSH	+0.92
192.	96 28 ODI	36	0.56	TSH	+0.75
193.	98 30 ODI	11	1.00	H4	+16.67
194.	98 60 ODI	31	0.48	DH	+1.56
195.	100 32 ODI	25	0.40	TSH	+1.12
196.	100 96 ODI	37	0.47	TSH	+1.00
197.	100 134 ODI	12	0.65	H6	+11.46
198.	101 99 ODI	26	0.53	VM	-0.78

BWNS TUBAN II (Version 1.0) 01/13/1994 17:03:14
 Calvert Cliffs - Unit 2
 S/G 21
 05/93 RFO

1 - 100% INDICATIONS						
COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION
199.	103	33	ODI	18	0.82	TSH +0.85
200.			ODI	29	0.68	TSH +1.22
201.	104	30	ODI	23	0.51	TSC +1.30
202.	104	140	ODI	16	0.48	TSH +10.31
203.	105	45	ODI	29	1.07	C9 +131.24
204.	105	119	ODI	27	0.55	TSC +2.57
205.			ODI	33	0.79	TSC +1.27
206.	106	34	ODI	35	0.54	TSC +1.90
207.	106	36	ODI	12	0.97	H4 +27.04
208.	106	116	ODI	18	0.48	TSC +11.57
209.	107	59	ODI	9	1.14	H9 +8.75
210.	108	42	ODI	21	1.16	TSC +0.87
211.	109	33	ODI	34	1.09	C7 +24.37
212.	110	118	ODI	8	1.28	VH +18.45
213.	113	57	ODI	31	0.50	TSH +8.92
214.	113	117	ODI	1	0.95	H4 +12.76
215.	114	62	ODI	11	0.78	TSH +0.62
216.	114	116	ODI	31	0.47	TSH +6.38
217.	118	74	ODI	17	0.92	H2 +27.94
218.	120	46	ODI	10	0.83	TSC +1.33
219.	120	60	ODI	35	0.80	TSC +1.50
220.	120	100	ODI	8	2.12	VH +14.08
221.	121	113	ODI	35	0.48	TSC +2.41
222.	122	78	ODI	12	1.26	H10 +0.06
223.	122	96	ODI	22	1.18	H3 +28.20
224.			ODI	20	0.75	TSH +23.10
225.	123	53	ODI	18	1.12	TSC +1.14
226.	123	91	ODI	19	0.77	TSC +1.23
227.	124	66	ODI	14	0.91	H10 +0.00
228.	124	68	ODI	26	0.54	TSC +1.27
229.	125	71	ODI	16	0.91	TSH +9.46
230.	125	85	ODI	19	0.97	C1 +35.60
231.	126	64	ODI	6	1.19	H9 +13.43
232.	126	70	ODI	14	0.97	TSH +4.85
233.	127	97	ODI	20	0.78	TSH +11.16
234.	128	54	ODI	51	0.82	TSH +11.74
235.	129	55	ODI	15	1.90	C6 +8.79
236.	130	82	ODI	11	1.58	C2 +33.11
237.	131	109	ODI	34	1.07	TSH +7.03
238.	132	56	ODI	5	0.85	H3 +7.12
239.	132	84	ODI	30	2.03	C1 +37.02
240.	135	63	ODI	22	1.29	TSC +17.88
241.	135	67	ODI	2	1.33	H5 +1.69
242.	137	71	ODI	19	0.91	TSH +8.96
243.	139	81	ODI	11	1.15	DH +2.00

Total Indications Found = 243
 Total Tubes Found = 228

STEAM GENERATOR #21

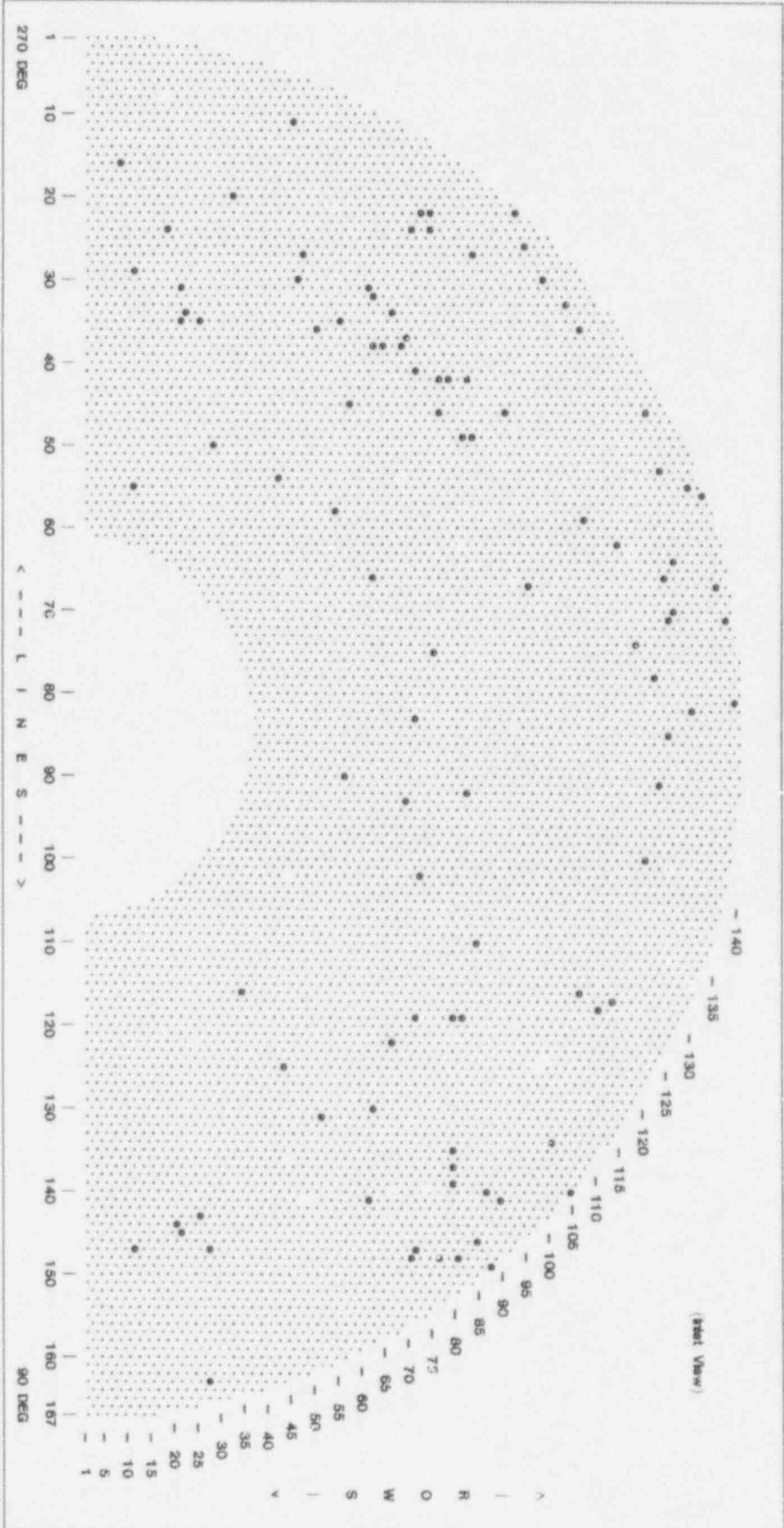
B. Plot with List of <20% Indications March 1993

Calvert Cliffs - Unit 2
Total Tubes : 8519

Tubes Selected : 102

S/G 21
Out Of Service () : N/A

21 STEAM GENERATOR < 20% INDICATIONS



BWNS TUBAN II (Version 1.0) 12/16/1993 08:11:35
 Calvert Cliffs - Unit 2
 S/G 21
 03/93 RFO

0 - 19% INDICATIONS
 INDICATIONS 0-19%

COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION	
1.	8	16	ODI	15	1.00	C5	+25.71
2.	11	29	ODI	15	0.49	H1	+22.47
3.	11	55	ODI	13	1.75	VM	+0.00
4.	11	147	ODI	15	1.53	H6	+24.14
5.	18	24	ODI	17	2.16	H4	+18.59
6.	20	144	ODI	16	0.66	TSH	+0.75
7.	21	31	ODI	16	0.56	TSH	+0.95
8.	21	35	ODI	18	0.58	TSH	+1.16
9.	21	145	ODI	8	1.17	C3	+36.39
10.	22	34	ODI	17	0.59	TSH	+1.08
11.	25	35	ODI	16	0.51	TSH	+0.83
12.	25	143	ODI	14	1.09	TSH	+0.69
13.	27	147	ODI	19	0.36	TSC	+4.95
14.	27	163	ODI	9	0.76	H2	+8.56
15.	28	50	ODI	7	1.08	TSH	+18.96
16.	32	20	ODI	18	0.44	TSH	+2.78
17.	34	116	ODI	7	0.98	C3	+20.72
18.			ODI	15	0.98	H3	+24.92
19.	42	54	ODI	12	0.58	TSH	+1.40
20.	43	125	ODI	15	1.17	C1	+0.65
21.	45	11	ODI	5	1.19	C5	+21.35
22.	46	30	ODI	19	0.56	TSH	+1.08
23.	47	27	ODI	19	0.52	TSH	+1.79
24.	50	36	ODI	13	0.46	TSH	+0.77
25.	51	131	ODI	15	0.61	TSH	+0.73
26.	54	58	ODI	14	1.38	C4	+28.39
27.	55	35	ODI	16	0.63	TSH	+0.97
28.	56	90	ODI	7	2.83	H3	+25.29
29.	57	45	ODI	14	1.11	H4	+35.50
30.	61	31	ODI	19	0.40	TSH	+0.75
31.	61	141	ODI	16	0.53	H4	+2.62
32.	62	32	ODI	18	0.56	TSH	+0.79
33.	62	38	ODI	18	0.67	TSH	+0.89
34.	62	66	ODI	14	0.50	TSH	+0.70
35.	62	130	ODI	16	0.65	TSH	+0.73
36.	64	38	ODI	10	0.58	TSH	+4.23
37.	66	34	ODI	16	0.84	H7	+12.01
38.	66	122	ODI	18	0.72	TSH	+0.56
39.	68	38	ODI	18	0.43	TSH	+0.84
40.	69	37	ODI	6	0.98	H5	+14.33
41.	69	93	ODI	19	0.54	TSH	+1.17
42.	70	24	ODI	14	0.28	TSH	+1.92
43.	70	148	ODI	14	0.58	TSH	+1.84
44.	71	41	ODI	14	0.50	H1	+23.34
45.	71	83	ODI	12	1.15	C7	+15.80
46.	71	119	ODI	16	0.63	TSH	+0.68
47.	71	147	ODI	17	0.63	TSC	+10.43
48.	72	22	ODI	6	1.25	VM	+21.25
49.	72	102	ODI	3	0.86	H1	+6.62
50.	74	22	ODI	16	0.70	TSH	+1.49
51.	74	24	ODI	18	0.60	TSH	+1.26
52.	75	75	ODI	19	0.55	TSH	+1.04
53.	76	42	ODI	10	1.06	TSH	+0.98
54.	76	46	ODI	13	0.59	TSH	+0.99
55.	76	148	ODI	12	0.87	TSC	+7.08
56.	78	42	ODI	15	1.50	C5	+1.83
57.	79	119	ODI	18	0.89	TSH	+0.95
58.	79	135	ODI	17	1.21	H1	+0.46
59.	79	137	ODI	3	1.19	H7	+23.09
60.	79	139	ODI	19	1.37	TSH	+1.66
61.	80	148	ODI	12	0.65	TSH	+2.03
62.	81	49	ODI	16	0.57	TSH	+0.92
63.	81	119	ODI	19	0.83	TSH	+1.14
64.	82	42	ODI	16	1.45	C8	+5.68
65.	82	92	ODI	13	0.57	TSH	+0.91

0 - 19% INDICATIONS

INDICATIONS 0-19%

COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION	
66.	83	27	ODI	4	0.90	TSH	+1.16
67.	83	49	ODI	19	0.77	TSH	+0.83
68.	84	110	ODI	11	0.47	TSH	+0.68
69.	84	146	ODI	13	0.43	TSC	+0.84
70.	86	140	ODI	19	0.65	TSH	+1.85
71.	87	149	ODI	17	0.81	H6	+19.28
72.	89	141	ODI	8	0.83	TSC	+36.37
73.	90	46	ODI	9	1.74	H6	+3.17
74.	92	22	ODI	6	0.69	H3	+15.47
75.	94	26	ODI	13	1.09	TSH	+1.01
76.	95	67	ODI	14	1.00	TSH	+0.61
77.	98	30	ODI	11	1.00	H4	+16.67
78.	100	134	ODI	12	0.65	H6	+11.46
79.	103	33	ODI	18	0.82	TSH	+0.85
80.	104	140	ODI	16	0.48	TSH	+10.31
81.	106	36	ODI	12	0.97	H4	+27.04
82.	106	116	ODI	18	0.48	TSC	+11.57
83.	107	59	ODI	9	1.14	H9	+8.75
84.	110	118	ODI	8	1.28	VH	+18.45
85.	113	117	ODI	1	0.95	H4	+12.76
86.	114	62	ODI	11	0.78	TSH	+0.62
87.	118	74	ODI	17	0.92	H2	+27.94
88.	120	46	ODI	10	0.83	TSC	+1.33
89.	120	100	ODI	8	2.12	VH	+14.08
90.	122	78	ODI	12	1.26	H10	+0.06
91.	123	53	ODI	18	1.12	TSC	+1.14
92.	123	91	ODI	19	0.77	TSC	+1.23
93.	124	66	ODI	14	0.91	H10	+0.00
94.	125	71	ODI	16	0.91	TSH	+9.46
95.	125	85	ODI	19	0.97	C1	+35.60
96.	126	64	ODI	6	1.19	H9	+13.43
97.	126	70	ODI	14	0.97	TSH	+4.85
98.	129	55	ODI	15	1.90	C6	+8.79
99.	130	82	ODI	11	1.58	C2	+33.11
100.	132	56	ODI	5	0.85	H3	+7.12
101.	135	67	ODI	2	1.33	H5	+1.69
102.	137	71	ODI	19	0.91	TSH	+8.96
103.	139	81	ODI	11	1.15	DH	+2.00

Total Indications Found = 103
 Total Tubes Found = 102

STEAM GENERATOR #21

C. Plot with List of 20% - 39% Indications March 1993

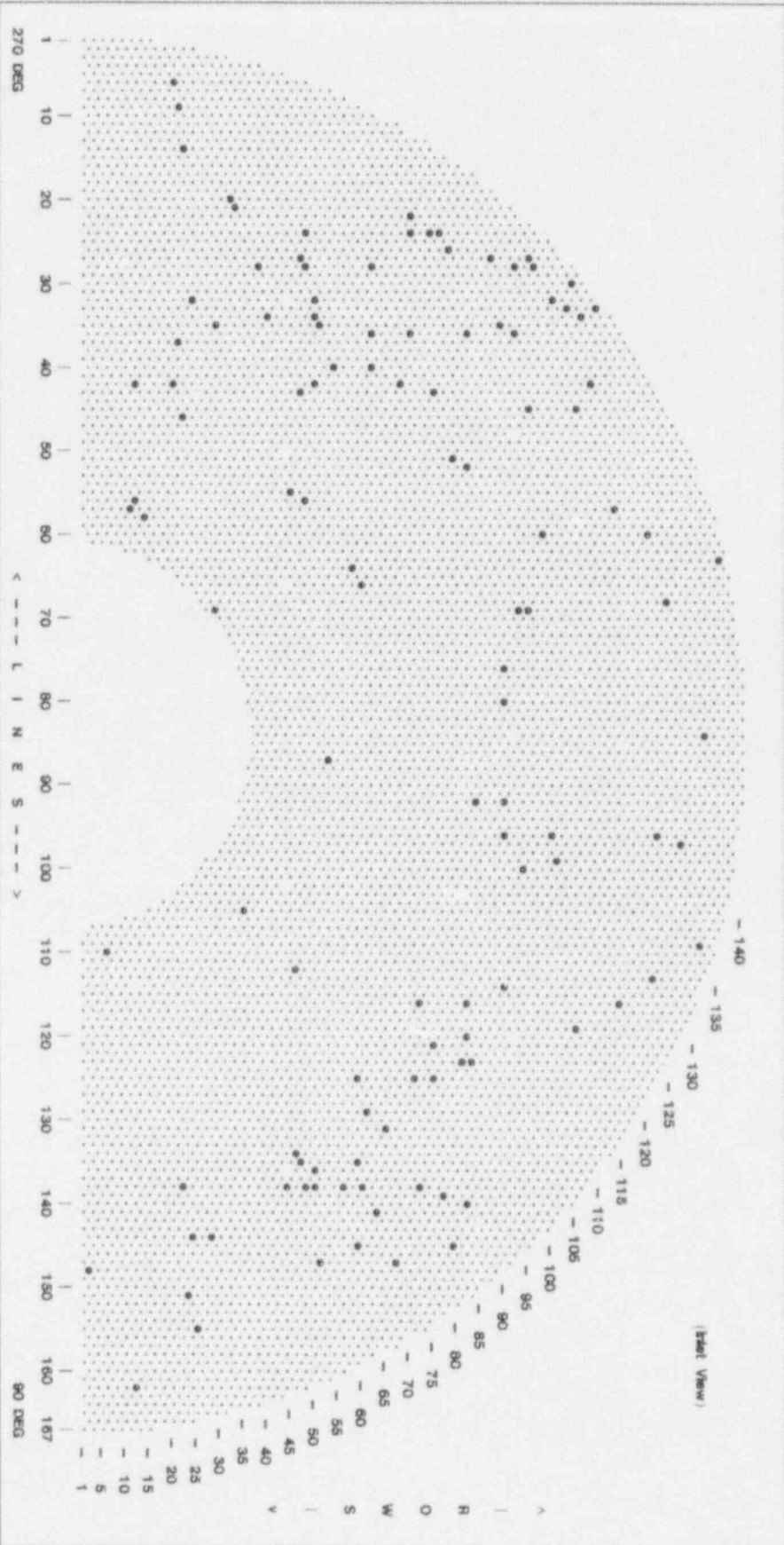
21 STEAM GENERATOR

20% -39% INDICATIONS

Calvert Circa -- Unit 2
 Total Tubes : 8519

Tubes Selected : 120

S/G 21
 Out Of Service () : N/A



INDICATIONS, 20-39%

COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION	
1.	2	148	ODI	31	1.07	C3	+35.75
2.	6	110	ODI	38	0.89	TSH	+1.74
3.	11	57	ODI	31	0.77	VM	+4.00
4.	12	42	ODI	25	0.71	C6	+32.87
5.	12	56	ODI	22	1.07	VM	+2.04
6.	12	162	ODI	23	0.84	TSH	+13.93
7.	14	58	ODI	30	0.84	C4	+31.55
8.	20	6	ODI	34	1.18	C2	+28.58
9.	20	42	ODI	23	0.82	C6	+48.62
10.	21	9	ODI	26	1.36	C1	+27.57
11.	21	37	ODI	36	0.48	TSH	+1.02
12.	22	14	ODI	29	0.80	C5	+9.98
13.	22	46	ODI	27	1.03	TSC	+8.91
14.	22	138	ODI	20	0.93	TSH	+20.47
15.	23	151	ODI	22	0.96	C5	+36.77
16.	24	32	ODI	22	0.57	TSH	+1.51
17.	24	144	ODI	23	0.45	TSH	+0.81
18.	25	155	ODI	29	0.99	H3	+11.66
19.			ODI	33	1.81	H2	+33.64
20.	28	144	ODI	37	0.40	TSH	+0.69
21.	29	35	ODI	29	0.48	TSH	+6.36
22.	29	69	ODI	22	1.95	H3	+20.10
23.	32	20	ODI	23	0.75	TSH	+1.59
24.			ODI	25	0.42	TSH	+2.17
25.			ODI	35	0.43	TSH	+1.10
26.	33	21	ODI	34	0.46	TSH	+1.14
27.	35	105	ODI	34	1.40	H3	+26.23
28.	38	28	ODI	26	0.74	TSH	+1.06
29.	40	34	ODI	26	0.45	TSH	+0.85
30.	44	138	ODI	31	0.50	TSH	+0.58
31.	45	55	ODI	22	0.50	TSH	+0.89
32.	46	112	ODI	23	0.51	TSH	+1.09
33.	46	134	ODI	31	1.10	TSH	+0.88
34.	47	27	ODI	27	0.43	TSH	+1.28
35.	47	43	ODI	33	0.59	TSC	+3.67
36.	47	135	ODI	25	0.79	TSH	+0.45
37.	48	24	ODI	28	0.54	H4	+15.51
38.	48	28	ODI	39	0.44	TSH	+1.01
39.	48	56	ODI	33	0.56	TSH	+1.02
40.	48	138	ODI	37	1.25	TSH	+2.07
41.	50	32	ODI	33	0.51	TSH	+0.87
42.	50	34	ODI	37	0.58	TSH	+0.71
43.	50	42	ODI	39	0.45	TSH	+1.22
44.	50	136	ODI	25	0.57	TSH	+0.79
45.	50	138	ODI	28	0.95	TSH	+2.16
46.	51	35	ODI	23	0.55	TSH	+0.63
47.	51	147	ODI	38	0.81	TSH	+2.02
48.	53	87	ODI	27	1.25	C3	+30.10
49.	54	40	ODI	38	0.73	TSH	+0.76
50.	56	138	ODI	22	1.46	TSH	+1.90
51.	58	64	ODI	28	0.53	TSH	+0.76
52.	59	125	ODI	35	0.77	TSH	+0.63
53.	59	135	ODI	27	1.35	TSH	+1.90
54.	59	145	ODI	23	0.62	TSH	+2.20
55.	60	66	ODI	22	1.04	TSH	+2.66
56.	60	138	ODI	37	0.90	VM	+12.95
57.	61	129	ODI	32	0.59	TSH	+0.72
58.	62	28	ODI	25	1.38	C5	+10.63
59.	62	36	ODI	28	0.47	TSH	+0.86
60.	62	40	ODI	29	0.69	TSH	+0.86
61.	63	141	ODI	21	1.00	C7	+12.36
62.	65	131	ODI	22	1.26	TSH	+0.82
63.	67	147	ODI	25	0.65	H4	+34.65
64.	68	42	ODI	36	1.18	TSH	+0.73
65.	70	22	ODI	34	0.55	TSH	+1.03
66.	70	24	ODI	23	0.37	TSH	+1.20

INDICATIONS, 20-39%						
COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION
67.			ODI	36	0.55	TSH +0.75
68.	70	36	ODI	21	0.41	TSH +0.80
69.	71	125	ODI	23	0.50	TSH +0.90
70.	72	116	ODI	30	0.68	TSH +0.74
71.	72	138	ODI	38	0.50	TSH +0.83
72.	74	24	ODI	25	0.61	TSH +0.85
73.	75	43	ODI	35	0.43	TSC +1.74
74.	75	121	ODI	27	0.63	TSH +0.97
75.	75	125	ODI	21	0.51	TSH +0.81
76.	76	24	ODI	26	0.41	TSH +0.89
77.	77	139	ODI	23	0.84	TSH +10.24
78.	78	26	ODI	33	0.46	TSH +0.79
79.	79	51	ODI	24	1.10	H2 +25.52
80.	79	145	ODI	23	0.90	C8 -0.50
81.	81	123	ODI	23	1.62	H5 +25.33
82.	82	36	ODI	22	0.56	TSH +1.96
83.	82	52	ODI	28	0.89	TSH +0.74
84.	82	116	ODI	33	0.84	TSH +1.01
85.	82	120	ODI	25	1.29	TSH +1.02
86.	82	140	ODI	24	0.72	TSH +1.08
87.	83	123	ODI	21	0.67	TSH +0.75
88.	84	92	ODI	33	0.69	TSH +0.94
89.	87	27	ODI	20	1.02	H2 +6.69
90.	89	35	ODI	24	0.46	TSC +12.66
91.	90	76	ODI	22	0.77	TSH +1.12
92.	90	80	ODI	37	0.59	TSH +0.74
93.	90	92	ODI	20	1.33	TSH +1.07
94.	90	96	ODI	26	1.42	TSH +1.26
95.	90	114	ODI	37	0.40	TSH +1.10
96.	92	28	ODI	27	0.40	TSH +1.14
97.	92	36	ODI	20	0.67	TSH +1.08
98.	93	69	ODI	21	0.61	TSH +0.95
99.	94	100	ODI	24	3.15	C4 +5.91
100.	95	27	ODI	29	0.45	VH +2.00
101.	95	45	ODI	37	1.27	H1 +26.86
102.	95	69	ODI	21	0.76	TSH +0.92
103.	96	28	ODI	36	0.56	TSH +0.75
104.	98	60	ODI	31	0.48	DH +1.56
105.	100	32	ODI	25	0.40	TSH +1.12
106.	100	96	ODI	37	0.47	TSH +1.00
107.	101	99	ODI	26	0.53	VM -0.78
108.	103	33	ODI	29	0.68	TSH +1.22
109.	104	30	ODI	23	0.51	TSC +1.30
110.	105	45	ODI	29	1.07	C9 +131.24
111.	105	119	ODI	27	0.55	TSC +2.57
112.			ODI	33	0.79	TSC +1.27
113.	106	34	ODI	35	0.54	TSC +1.90
114.	108	42	ODI	21	1.16	TSC +0.87
115.	109	33	ODI	34	1.09	C7 +24.37
116.	113	57	ODI	31	0.50	TSH +8.92
117.	114	116	ODI	31	0.47	TSH +6.38
118.	120	60	ODI	35	0.80	TSC +1.50
119.	121	113	ODI	35	0.48	TSC +2.41
120.	122	96	ODI	22	1.18	H3 +28.20
121.			ODI	20	0.75	TSH +23.10
122.	124	68	ODI	26	0.54	TSC +1.27
123.	127	97	ODI	20	0.78	TSH +11.16
124.	131	109	ODI	34	1.07	TSH +7.03
125.	132	84	ODI	30	2.03	C1 +37.02
126.	135	63	ODI	22	1.29	TSC +17.88

Total Indications Found = 126
 Total Tubes Found = 120

STEAM GENERATOR #21

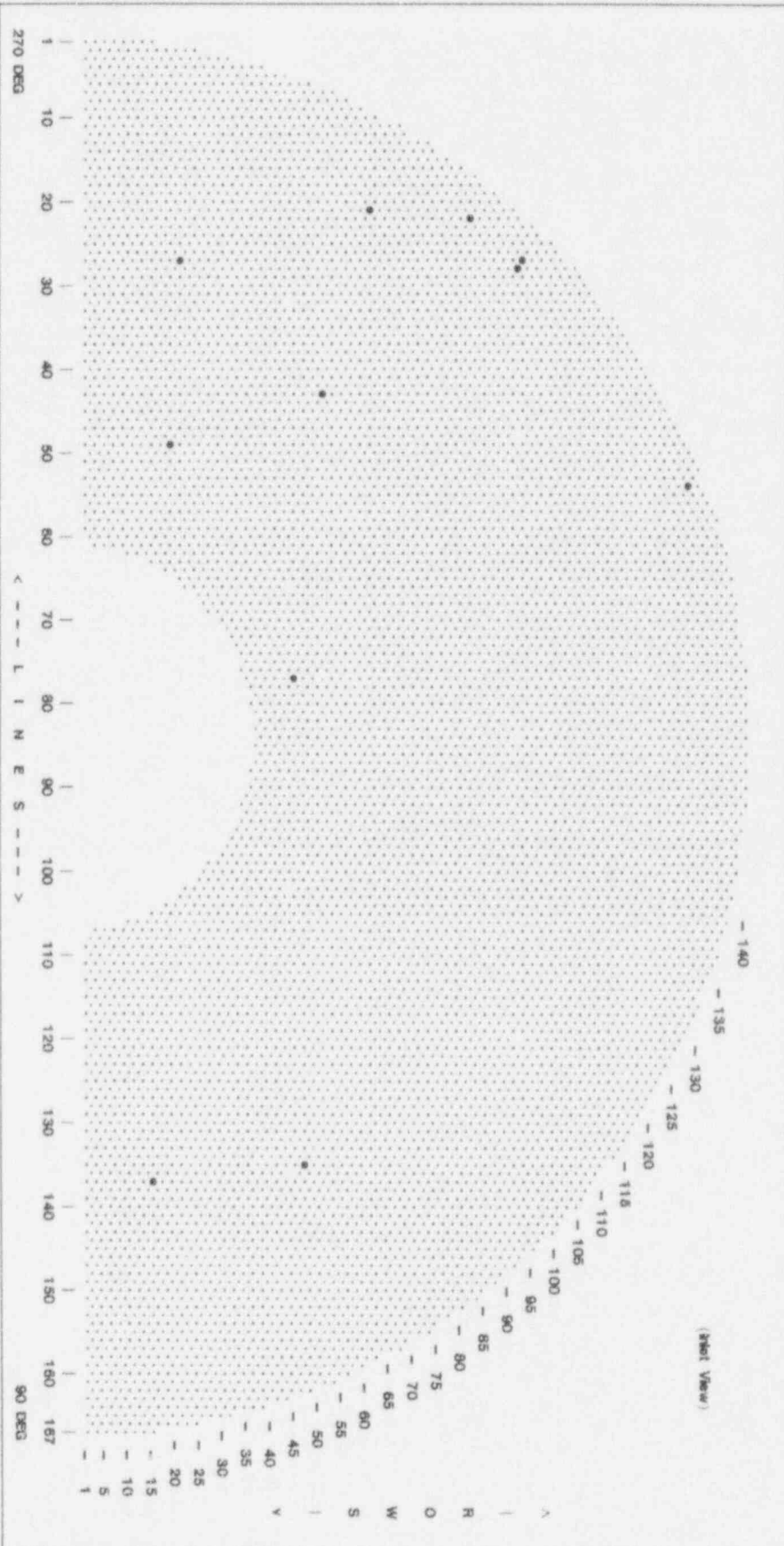
D. Plot with List of >39% Indications March 1993

21 STEAM GENERATOR > 39% INDICATIONS

Calvert Cliffs -- Unit 2
Total Tubes : 8519

Tubes Selected : 11

S/G 21
Out Of Service () : N/A



● 270 DEG TO 180 - 11

BWNS TUBAN II (Version 1.0) 12/20/1993 10:11:54
Calvert Cliffs - Unit 2
S/G 21
03/93 RFO

40 -100% COUNT	INDICATIONS ROW LINE IND	%TW	VOLTS	LOCATION	
1.	15 137 ODI	60	1.49	H4	+24.34
2.	19 49 ODI	54	0.50	C2	+18.99
3.	21 27 ODI	40	0.82	TSH	+0.96
4.	45 77 ODI	63	0.71	H7	-0.15
5.	47 135 ODI	58	0.63	TSH	+1.11
6.	51 43 ODI	50	1.52	H2	+28.98
7.	61 21 ODI	61	1.61	TSH	+31.93
8.	82 22 ODI	75	0.47	TSH	+0.91
9.	92 28 ODI	61	0.37	TSH	+1.53
10.	ODI	87	0.36	TSH	+3.04
11.	93 27 ODI	52	0.55	TSH	+1.14
12.	128 54 ODI	51	0.82	TSH	+11.74

Total Indications Found = 12
Total Tubes Found = 11

STEAM GENERATOR #21

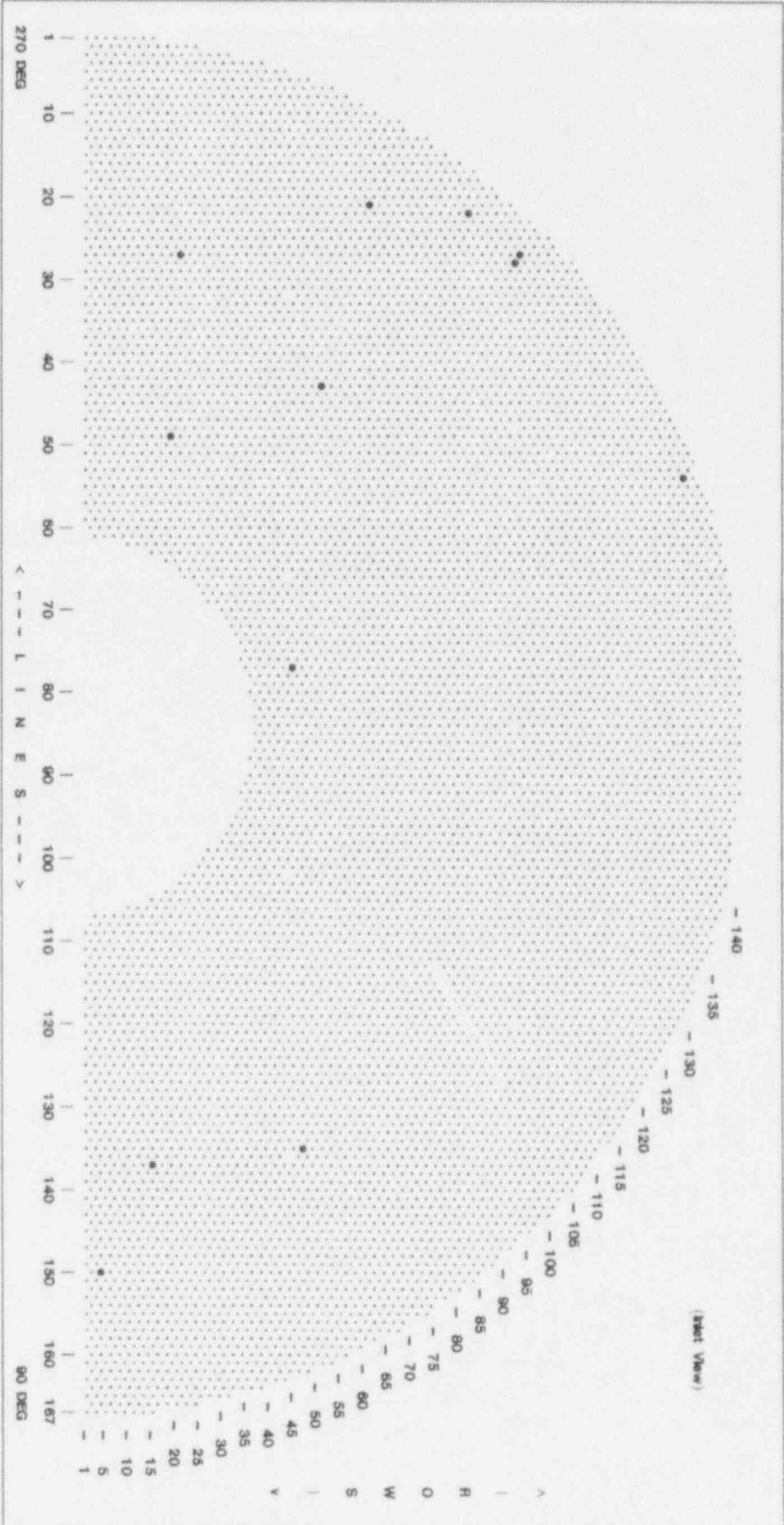
E. Plot with List of Tubes Plugged March 1993

Calvert Cliffs - Unit 2
Total Tubes : 8518

Tubes Selected : 12

S/G 21
Out Of Service () : N/A

21 STEAM GENERATOR TUBES PLUGGED IN 93 OUTAGE



COLD LEG

COUNT	ROW	LINE	TYPE
1.	4	150	MECH-W
2.	15	137	MECH-W
3.	19	49	MECH-W
4.	21	27	MECH-W
5.	45	77	MECH-W
6.	47	135	MECH-W
7.	51	43	MECH-W
8.	61	21	MECH-W
9.	82	22	MECH-W
10.	92	28	MECH-W
11.	93	27	MECH-W
12.	128	54	MECH-W

Total Indications Found = 12
Total Tubes Found = 12

STEAM GENERATOR #21

F. Plot with List of All Tubes Plugged All Outages

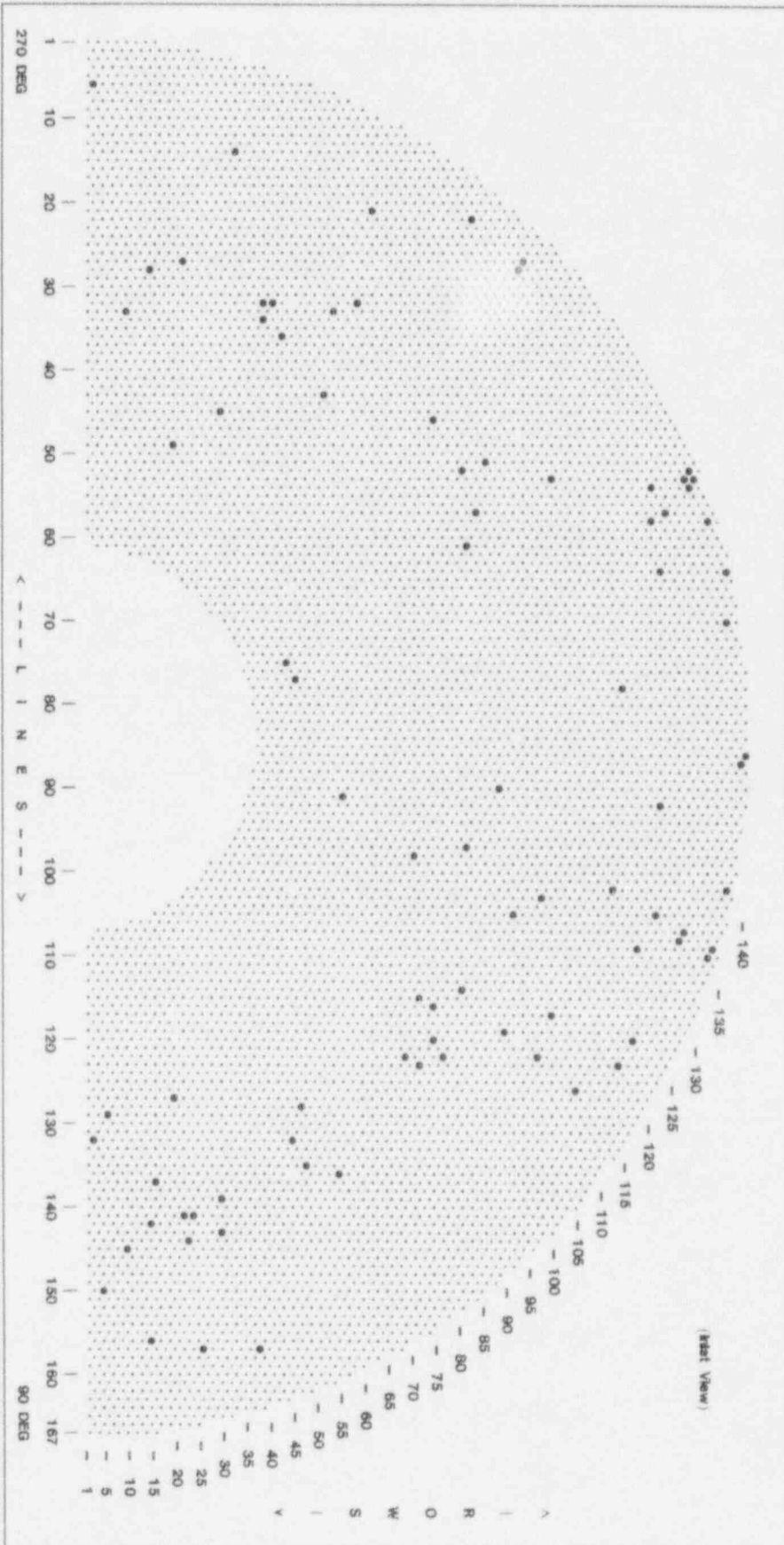
21 STEAM GENERATOR

ALL TUBES PLUGGED TO THIS DATE

Calvert Cliffs - Unit 2
 Total Tubes : 8519

Tubes Selected : 87

S/G 21
 Out Of Service () : N/A



● PLUG - 87

BWNS TUBAN II (Version 1.0) 12/16/1993 12:43:52
Calvert Cliffs - Unit 2
S/G 21
03/93 RFO,10/90,07/90,04/89,03/87,10/85,05/84,11/82,11/79

COLD LEG

COUNT	ROW	LINE	TYPE
1.	2	6	CONST
2.	2	132	MECH-W
3.	4	150	MECH-W
4.	5	129	MECH-W
5.	9	33	MECH-W
6.	9	145	MECH-W
7.	14	28	MECH-W
8.	14	142	MECH-W
9.	14	156	MECH-W
10.	15	137	MECH-W
11.	19	49	MECH-W
12.	19	127	MECH-W
13.	21	27	MECH-W
14.	21	141	MECH-W
15.	22	144	MECH-W
16.	23	141	MECH-W
17.	25	157	MECH-W
18.	29	45	MECH-W
19.	29	139	MECH-W
20.	29	143	MECH-W
21.	32	14	CONST
22.	37	157	MECH-W
23.	38	32	MECH-W
24.	38	34	MECH-W
25.	40	32	MECH-W
26.	42	36	MECH-W
27.	43	75	MECH-W
28.	44	132	MECH-W
29.	45	77	MECH-W
30.	46	128	MECH-W
31.	47	135	MECH-W
32.	51	43	MECH-W
33.	53	33	MECH-W
34.	54	136	MECH-W
35.	55	91	CONST
36.	58	32	MECH-W
37.	61	21	MECH-W
38.	68	122	MECH-W
39.	70	98	CONST
40.	71	115	MECH-W
41.	71	123	MECH-W
42.	74	46	MECH-W
43.	74	116	MECH-W
44.	74	120	MECH-W
45.	76	122	MECH-W
46.	80	52	MECH-W

BWNS TUBAN II (Version 1.0) 12/16/1993 12:43:52
Calvert Cliffs - Unit 2
S/G 21
03/93 RFO,10/90,07/90,04/89,03/87,10/85,05/84,11/82,11/79

COLD LEG

COUNT	ROW	LINE	TYPE
47.	80	114	MECH-W
48.	81	61	CONST
49.	81	97	MECH-W
50.	82	22	MECH-W
51.	83	57	CONST
52.	85	51	MECH-W
53.	88	90	MECH-W
54.	89	119	MECH-W
55.	91	105	MECH-W
56.	92	28	MECH-W
57.	93	27	MECH-W
58.	96	122	MECH-W
59.	97	103	MECH-W
60.	99	53	MECH-W
61.	99	117	CONST
62.	104	126	MECH-W
63.	112	102	MECH-W
64.	113	123	MECH-W
65.	114	78	CONST
66.	116	120	MECH-W
67.	117	109	MECH-W
68.	120	54	MECH-W
69.	120	58	MECH-W
70.	121	105	MECH-W
71.	122	64	MECH-W
72.	122	92	MECH-W
73.	123	57	MECH-W
74.	126	108	MECH-W
75.	127	53	MECH-W
76.	127	107	MECH-W
77.	128	52	MECH-W
78.	128	54	MECH-W
79.	129	53	MECH-W
80.	132	58	MECH-W
81.	132	110	MECH-W
82.	133	109	MECH-W
83.	136	64	MECH-W
84.	136	70	MECH-W
85.	136	102	MECH-W
86.	139	87	MECH-W
87.	140	86	MECH-W

Total Indications Found = 87
Total Tubes Found = 87

APPENDIX II

Eddy Current Test Results for #22 Steam Generator

- A. Plot with List of All Indications March 1993
- B. Plot with List of <20% Indications March 1993
- C. Plot with List of 20% - 39% Indications March 1993
- D. Plot with List of >39% Indications March 1993
- E. Plot with List of Tubes Plugged March 1993
- F. Plot with List of All Tubes Plugged All Outages

STEAM GENERATOR #22

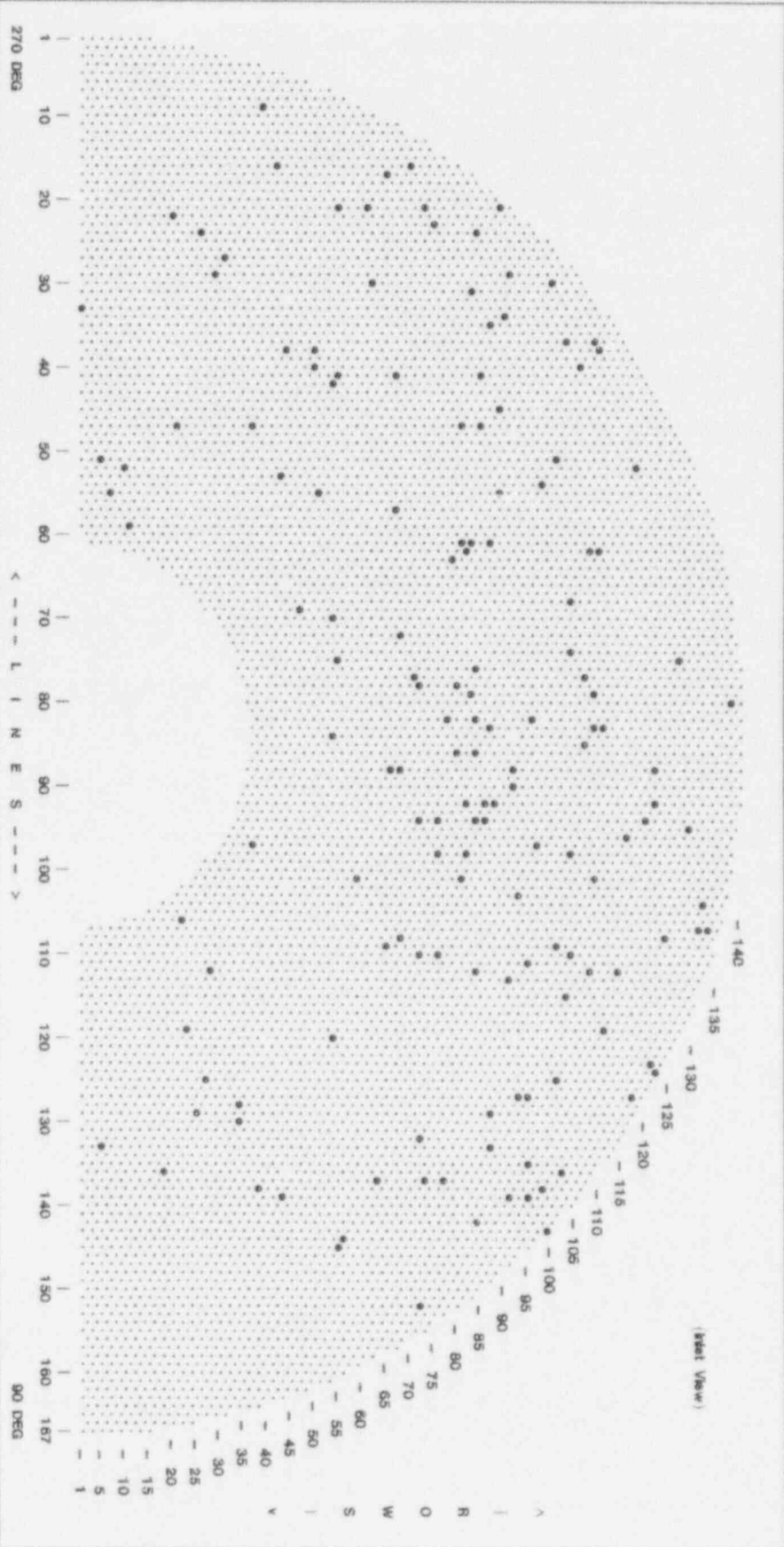
A. Plot with List of All Indications March 1993

22 STEAM GENERATOR ALL INDICATIONS

Calvert Cliffs -- Unit 2
Total Tubes : 8519

Tubes Selected : 156

S/G 22
Out Of Service () : N/A



BWNS TUBAN II (Version 1.0) 01/13/1994 17:22:28
 Calvert Cliffs - Unit 2
 S/G 22
 03/93 RFO

1 - 100% INDICATIONS						
COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION
1.	1	33	ODI	29	0.84	TSH +34.49
2.	5	51	ODI	22	1.31	H4 +0.00
3.	5	133	ODI	20	0.90	TSC +6.03
4.	7	55	ODI	1	3.76	H1 +20.14
5.	10	52	ODI	20	0.67	C6 +20.28
6.	11	59	ODI	27	0.52	C3 +8.65
7.	18	136	ODI	48	0.89	TSH +0.78
8.	20	22	ODI	22	0.41	C2 +5.91
9.	21	47	ODI	19	0.86	H1 +18.67
10.	22	106	ODI	60	0.74	C4 +0.92
11.	23	119	ODI	33	0.54	TSC +0.71
12.			ODI	36	0.86	TSC +7.07
13.	25	129	ODI	18	1.25	TSH +0.75
14.	26	24	ODI	10	2.08	VM +3.00
15.	27	125	ODI	26	0.75	C6 -0.44
16.	28	112	ODI	10	0.63	H1 +16.83
17.			ODI	16	1.81	H3 +6.59
18.	29	29	ODI	18	0.66	TSH +1.18
19.	31	27	ODI	5	2.37	C4 +19.20
20.	34	128	ODI	2	0.44	TSH +18.06
21.	34	130	ODI	29	0.72	TSC +1.18
22.	37	47	ODI	16	1.13	C1 +18.06
23.	37	97	ODI	26	0.96	H1 +13.99
24.			ODI	26	1.72	H1 +11.13
25.	38	138	ODI	31	0.43	TSH +1.79
26.	39	9	ODI	6	0.85	C5 +37.39
27.			ODI	22	0.39	C5 +38.33
28.	42	16	ODI	30	0.86	C6 +11.34
29.	43	53	ODI	28	1.20	C3 +11.18
30.	43	139	ODI	8	1.00	C1 +11.79
31.	44	38	ODI	26	0.89	TSH +0.65
32.	47	69	ODI	1	1.65	C5 +2.35
33.	50	38	ODI	32	1.45	VM +4.92
34.	50	40	ODI	16	0.48	TSH +1.11
35.	51	55	ODI	32	0.50	TSH +6.46
36.	54	42	ODI	21	0.42	TSC +3.77
37.	54	70	ODI	29	1.24	H2 +23.22
38.	54	84	ODI	4	1.34	C3 +23.26
39.	54	120	ODI	12	1.92	TSH +28.39
40.	55	21	ODI	8	1.04	H3 +8.32
41.	55	41	ODI	21	0.82	TSH +0.70
42.	55	75	ODI	13	0.52	H1 +11.71
43.	55	145	ODI	10	0.50	TSC +1.65
44.	56	144	ODI	29	0.72	H4 +12.95
45.	59	101	ODI	36	0.67	C1 +27.08
46.	61	21	ODI	14	0.72	VM -0.34
47.	62	30	ODI	10	0.68	TSH +33.17
48.			ODI	20	0.56	TSH +33.69
49.	63	137	ODI	21	0.46	H1 +19.57
50.	65	17	ODI	10	0.86	C7 +37.42
51.			ODI	20	0.77	VM +25.00
52.	65	109	ODI	21	0.99	H6 +13.51
53.	66	88	ODI	23	1.43	TSH +1.25
54.	67	41	ODI	39	0.69	VM +0.00
55.	67	57	ODI	23	1.09	H1 +23.91
56.	68	72	ODI	15	0.57	TSH +0.69
57.	68	88	ODI	27	0.69	H7 +7.40
58.	68	108	ODI	21	0.45	TSH +0.74
59.	70	16	ODI	18	0.93	C3 +31.69
60.	71	77	ODI	25	0.63	TSH +0.90
61.	72	78	ODI	10	0.77	TSH +0.95
62.	72	94	ODI	14	0.54	TSC +5.66
63.	72	110	ODI	7	1.23	TSC +26.76
64.	72	132	ODI	11	0.84	C3 +11.16 to +*
65.	72	152	ODI	35	1.35	TSH +17.86
66.	73	21	ODI	36	0.87	VM +0.00

1 - 100% COUNT	INDICATIONS ROW LINE IND	%TW	VOLTS	LOCATION	
67.	73 137 ODI	4	0.66	C2	+29.33
68.	75 23 ODI	18	1.36	DC	-1.94
69.	76 94 ODI	29	0.62	TSH	+1.01
70.	76 98 ODI	10	0.96	TSH	+1.03
71.	76 110 ODI	7	0.59	C4	+34.02
72.	77 137 ODI	15	0.58	TSH	+4.10
73.	78 82 ODI	12	1.72	C5	+29.89
74.	79 63 ODI	13	0.77	C5	+1.80
75.	80 78 ODI	24	1.08	H3	+14.41
76.	80 86 ODI	15	0.96	TSH	+0.99
77.	81 47 ODI	22	0.40	TSC	+0.76
78.	81 61 ODI	5	0.88	C6	+14.49
79.	ODI	16	0.45	C6	+6.76
80.	81 101 ODI	7	1.04	H6	+15.32
81.	82 62 ODI	14	1.74	H4	+7.16
82.	82 92 ODI	33	0.61	TSH	+1.22
83.	82 98 ODI	13	0.79	TSH	+0.75
84.	83 31 ODI	30	2.47	H1	+19.21
85.	83 61 ODI	13	0.75	TSH	+7.30
86.	83 79 ODI	10	0.40	TSH	+1.23
87.	ODI	16	0.43	TSH	+0.69
88.	84 24 ODI	2	3.00	VH	+21.62
89.	84 76 ODI	30	0.47	TSH	+0.63
90.	84 82 ODI	1	0.92	C7	+6.13
91.	84 86 ODI	36	0.93	TSH	+5.75
92.	84 94 ODI	23	0.94	TSH	+0.73
93.	84 112 ODI	32	0.65	TSH	+4.85
94.	84 142 ODI	7	2.11	C4	+2.51
95.	85 41 ODI	11	0.65	H4	+10.79
96.	85 47 ODI	10	1.01	C2	+30.51
97.	86 92 ODI	26	1.41	TSH	+0.75
98.	86 94 ODI	59	0.80	TSH	+0.65
99.	87 35 ODI	21	1.19	H7	+6.33
100.	87 61 ODI	11	1.04	H3	+22.08
101.	ODI	14	1.15	C2	+24.35
102.	87 83 ODI	34	1.59	VM	+5.10
103.	87 129 ODI	11	0.49	TSH	+9.14
104.	87 133 ODI	3	1.66	DC	+18.00
105.	88 92 ODI	38	0.60	TSH	+0.68
106.	89 21 ODI	21	1.85	C8	+22.57
107.	89 45 ODI	37	0.41	VH	+2.00
108.	89 55 ODI	1	1.22	C5	+11.14
109.	90 34 ODI	33	0.73	H5	+34.95
110.	91 29 ODI	37	0.49	VH	-0.74
111.	91 113 ODI	15	1.09	H2	+7.84
112.	91 139 ODI	18	0.79	H5	+3.81
113.	92 88 ODI	5	1.56	TSH	+33.22
114.	92 90 ODI	12	0.74	H2	+12.69
115.	93 103 ODI	19	0.74	VH	+16.74
116.	93 127 ODI	29	0.72	TSH	+14.98
117.	ODI	35	0.52	TSH	+14.92
118.	95 111 ODI	9	0.71	TSH	+14.57
119.	95 127 ODI	12	1.21	H1	+18.40
120.	95 135 ODI	45	0.77	VH	+2.09
121.	95 139 ODI	13	0.71	TSH	+35.55
122.	96 82 ODI	29	0.53	TSC	+21.06
123.	97 97 ODI	9	1.10	H3	+9.73
124.	98 54 ODI	29	1.80	C2	+20.76
125.	98 138 ODI	15	0.96	TSC	+0.73
126.	99 143 ODI	66	0.81	VC	+1.90
127.	100 30 ODI	12	0.41	H5	-1.00
128.	101 51 ODI	8	1.53	C3	+32.55
129.	ODI	28	1.10	C3	+27.50
130.	101 109 ODI	1	1.15	VM	+10.97
131.	101 125 ODI	26	0.62	C2	+21.80
132.	102 136 ODI	3	0.56	H8	+13.52

BWNS TUBAN II (Version 1.0) 01/13/1994 17:22:28
 Calvert Cliffs - Unit 2
 S/G 22
 03/93 RFO

1 - 100% COUNT	INDICATIONS ROW LINE IND		%TW	VOLTS	LOCATION	
133.	103	37 ODI	15	1.16	C9	-0.14
134.	103	115 ODI	8	1.32	H5	+32.38
135.	104	68 ODI	15	0.72	C9	-0.06
136.	104	74 ODI	21	0.56	H1	+31.30
137.	104	98 ODI	20	1.12	H7	+7.20
138.	104	110 ODI	13	0.90	C3	+25.47
139.	106	40 ODI	15	1.18	H5	+28.50
140.	107	77 ODI	12	1.03	H4	+2.78
141.	107	85 ODI	19	0.70	C4	+25.42
142.	108	62 ODI	10	0.63	H7	+16.92
143.	108	112 ODI	25	1.38	H4	+19.23
144.	109	37 ODI	6	1.04	TSH	+32.96
145.	109	79 ODI	24	0.97	H8	+11.41
146.	109	83 ODI	17	1.59	H4	+7.07
147.	109	101 ODI	11	1.48	H4	+32.07
148.		ODI	19	1.48	H4	+36.56
149.	110	38 ODI	3	1.56	C3	+19.88
150.		ODI	8	2.84	C3	+37.50
151.	110	62 ODI	23	0.99	H4	+20.56
152.	111	83 ODI	3	1.23	H3	+25.63
153.	111	119 ODI	5	1.34	H4	+6.10
154.	114	112 ODI	7	0.50	H2	+7.74
155.	116	96 ODI	15	2.22	C8	+14.24
156.		ODI	14	0.53	TSH	+2.30
157.	117	127 ODI	13	0.97	C4	+33.67
158.	118	52 ODI	15	2.41	H8	+2.48
159.		ODI	19	1.37	H9	+12.95
160.		ODI	67	0.78	H9	+2.00
161.		ODI	26	1.76	H10	+32.78
162.	120	94 ODI	23	0.82	C5	+29.47
163.	121	123 ODI	35	0.42	TSH	+0.97
164.	122	88 ODI	3	0.82	C2	+36.73
165.		ODI	30	1.08	C7	+17.17
166.	122	92 ODI	25	1.46	H4	+14.61
167.	122	124 ODI	18	1.26	C9	+9.40
168.	124	108 ODI	8	1.60	VH	+5.41
169.	127	75 ODI	17	0.85	H10	-0.98
170.	129	95 ODI	25	1.31	H6	+20.06
171.	131	107 ODI	68	0.70	VH	+25.44
172.	132	104 ODI	21	1.33	TSH	+9.31
173.	133	107 ODI	11	2.96	H3	+3.51
174.	138	80 ODI	3	1.19	C2	+36.14

Total Indications Found = 174
 Total Tubes Found = 156

STEAM GENERATOR #22

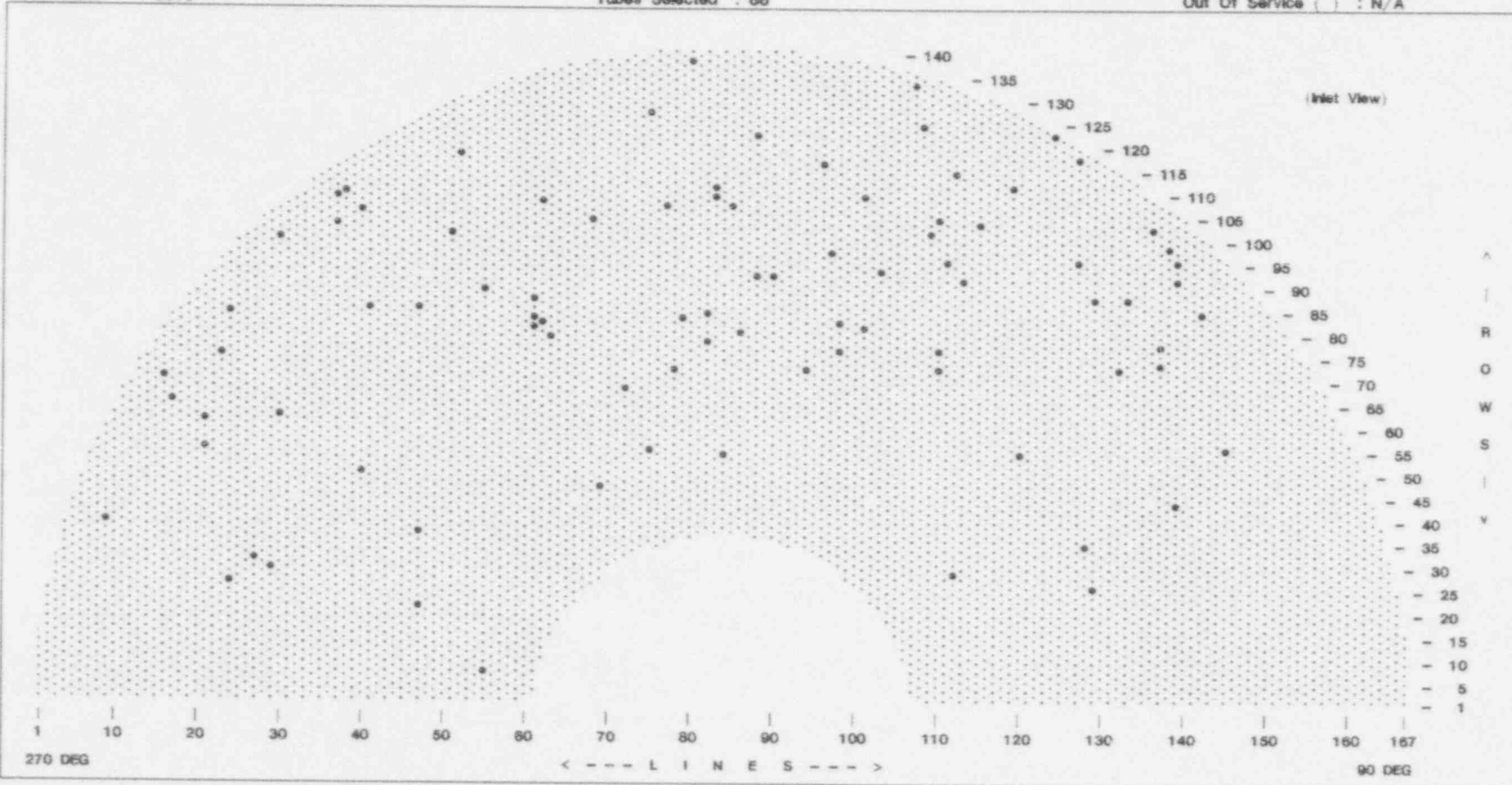
B. Plot with List of <20% Indications March 1993

22 STEAM GENERATOR < 20% INDICATIONS

Calvert Cliffs - Unit 2
Total Tubes : 8519

Tubes Selected : 88

S/G 22
Out Of Service () : N/A



● ZTW 1 TO 18 - 88

0 - 19% INDICATIONS
 INDICATIONS 0-19%

COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION	
1.	7	55	ODI	1	3.76	H1	+20.14
2.	21	47	ODI	19	0.86	H1	+18.67
3.	25	129	ODI	18	1.25	TSH	+0.75
4.	26	24	ODI	10	2.08	VM	+3.00
5.	28	112	ODI	10	0.63	H1	+16.83
6.			ODI	16	1.81	H3	+6.59
7.	29	29	ODI	18	0.66	TSH	+1.18
8.	31	27	ODI	5	2.37	C4	+19.20
9.	34	128	ODI	2	0.44	TSH	+18.06
10.	37	47	ODI	16	1.13	C1	+18.06
11.	39	9	ODI	6	0.85	C5	+37.39
12.	43	139	ODI	8	1.00	C1	+11.79
13.	47	69	ODI	1	1.65	C5	+2.35
14.	50	40	ODI	16	0.48	TSH	+1.11
15.	54	84	ODI	4	1.34	C3	+23.26
16.	54	120	ODI	12	1.92	TSH	+28.39
17.	55	21	ODI	8	1.04	H3	+8.32
18.	55	75	ODI	13	0.52	H1	+11.71
19.	55	145	ODI	10	0.50	TSC	+1.65
20.	61	21	ODI	14	0.72	VM	-0.34
21.	62	30	ODI	10	0.68	TSH	+33.17
22.	65	17	ODI	10	0.86	C7	+37.42
23.	68	72	ODI	15	0.57	TSH	+0.69
24.	70	16	ODI	18	0.93	C3	+31.69
25.	72	78	ODI	10	0.77	TSH	+0.95
26.	72	94	ODI	14	0.54	TSC	+5.66
27.	72	110	ODI	7	1.23	TSC	+26.76
28.	72	132	ODI	11	0.84	C3	+11.16 to +*
29.	73	137	ODI	4	0.66	C2	+29.33
30.	75	23	ODI	18	1.36	DC	-1.94
31.	76	98	ODI	10	0.96	TSH	+1.03
32.	76	110	ODI	7	0.59	C4	+34.02
33.	77	137	ODI	15	0.58	TSH	+4.10
34.	78	82	ODI	12	1.72	C5	+29.89
35.	79	63	ODI	13	0.77	C5	+1.80
36.	80	86	ODI	15	0.96	TSH	+0.99
37.	81	61	ODI	5	0.88	C6	+14.49
38.			ODI	16	0.45	C6	+6.76
39.	81	101	ODI	7	1.04	H6	+15.32
40.	82	62	ODI	14	1.74	H4	+7.16
41.	82	98	ODI	13	0.79	TSH	+0.75
42.	83	61	ODI	13	0.75	TSH	+7.30
43.	83	79	ODI	10	0.40	TSH	+1.23
44.			ODI	16	0.43	TSH	+0.69
45.	84	24	ODI	2	3.00	VH	+21.62
46.	84	82	ODI	1	0.92	C7	+6.13
47.	84	142	ODI	7	2.11	C4	+2.51
48.	85	41	ODI	11	0.65	H4	+10.79
49.	85	47	ODI	10	1.01	C2	+30.51
50.	87	61	ODI	11	1.04	H3	+22.08
51.			ODI	14	1.15	C2	+24.35
52.	87	129	ODI	11	0.49	TSH	+9.14
53.	87	133	ODI	3	1.66	DC	+18.00
54.	89	55	ODI	1	1.22	C5	+11.14
55.	91	113	ODI	15	1.09	H2	+7.84
56.	91	139	ODI	18	0.79	H5	+3.81
57.	92	88	ODI	5	1.56	TSH	+33.22
58.	92	90	ODI	12	0.74	H2	+12.69
59.	93	103	ODI	19	0.74	VH	+16.74
60.	95	111	ODI	9	0.71	TSH	+14.57
61.	95	127	ODI	12	1.21	H1	+18.40
62.	95	139	ODI	13	0.71	TSH	+35.55
63.	97	97	ODI	9	1.10	H3	+9.73
64.	98	138	ODI	15	0.96	TSC	+0.73
65.	100	30	ODI	12	0.41	H5	-1.00

BWNS TUBAN II (Version 1.0) 12/16/1993 08:16:32
 Calvert Cliffs - Unit 2
 S/G 22
 03/93 RFO

0 - 19% INDICATIONS
 INDICATIONS 0-19%

COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION	
66.	101	51	ODI	8	1.53	C3	+32.35
67.	101	109	ODI	1	1.15	VM	+10.97
68.	102	136	ODI	3	0.56	H8	+13.52
69.	103	37	ODI	15	1.16	C9	-0.14
70.	103	115	ODI	8	1.32	H5	+32.38
71.	104	68	ODI	15	0.72	C9	-0.06
72.	104	110	ODI	13	0.90	C3	+25.47
73.	106	40	ODI	15	1.18	H5	+28.50
74.	107	77	ODI	12	1.03	H4	+2.78
75.	107	85	ODI	19	0.70	C4	+25.42
76.	108	62	ODI	10	0.63	H7	+16.92
77.	109	37	OLI	6	1.04	TSH	+32.96
78.	109	83	ODI	17	1.59	H4	+7.07
79.	109	101	ODI	11	1.48	H4	+32.07
80.			ODI	19	1.48	H4	+36.56
81.	110	38	ODI	3	1.56	C3	+19.88
82.			ODI	8	2.84	C3	+37.50
83.	111	83	ODI	3	1.23	H3	+25.63
84.	111	119	ODI	5	1.34	H4	+6.10
85.	114	112	ODI	7	0.50	H2	+7.74
86.	116	96	ODI	15	2.22	C8	+14.24
87.			ODI	14	0.53	TSH	+2.30
88.	117	127	ODI	13	0.97	C4	+33.67
89.	118	52	ODI	15	2.41	H8	+2.48
90.			ODI	19	1.37	H9	+12.95
91.	122	88	ODI	3	0.82	C2	+36.73
92.	122	124	ODI	18	1.26	C9	+9.40
93.	124	108	ODI	8	1.60	VH	+5.41
94.	127	75	ODI	17	0.85	H10	-0.98
95.	133	107	ODI	11	2.96	H3	+3.51
96.	138	80	ODI	3	1.19	C2	+36.14

Total Indications Found = 96
 Total Tubes Found = 88

STEAM GENERATOR #22

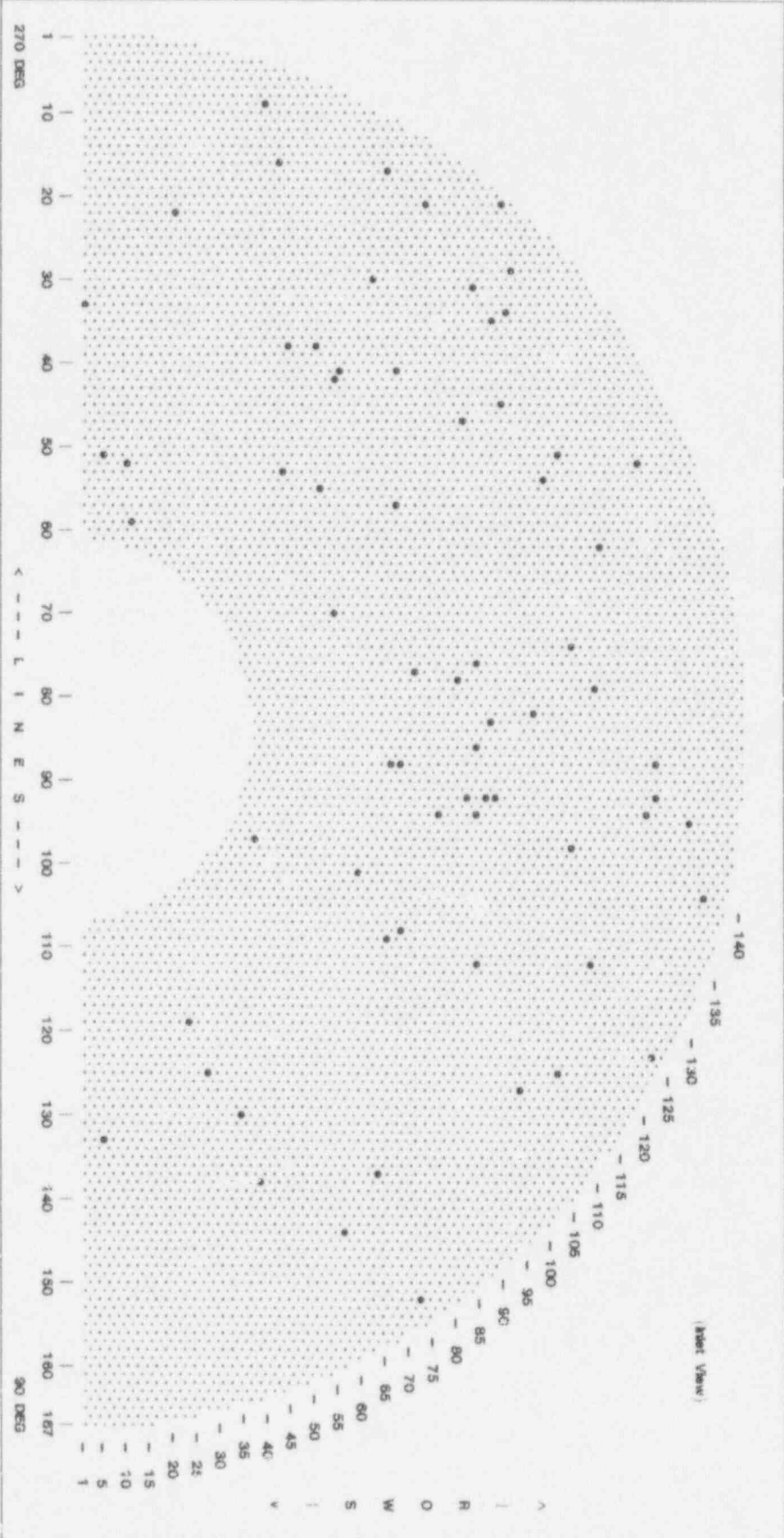
C. Plot with List of 20% - 39% Indications March 1993

Calvert Cliffs -- Unit 2
Total Tubes : 8519

Tubes Selected : 68

S/G 22
Out Of Service () : N/A

22 STEAM GENERATOR 20% -- 39% INDICATIONS



BWNS TUBAN II (Version 1.0) 12/16/1993 08:33:48
 Calvert Cliffs - Unit 2
 S/G 22
 03/93 RFO

INDICATIONS, 20-39%	COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION	
1.	1	33	ODI	29	0.84	TSH	+34.49	
2.	5	51	ODI	22	1.31	H4	+0.00	
3.	5	133	ODI	20	0.90	TSC	+6.03	
4.	10	52	ODI	20	0.67	C6	+20.28	
5.	11	59	ODI	27	0.52	C3	+8.65	
6.	20	22	ODI	22	0.41	C2	+5.91	
7.	23	119	ODI	33	0.54	TSC	+0.71	
8.			ODI	36	0.86	TSC	+7.07	
9.	27	125	ODI	26	0.75	C6	-0.44	
10.	34	130	ODI	29	0.72	TSC	+1.18	
11.	37	97	ODI	26	0.96	H1	+13.99	
12.			ODI	26	1.72	H1	+11.13	
13.	38	138	ODI	31	0.43	TSH	+1.79	
14.	39	9	ODI	22	0.39	C5	+38.33	
15.	42	16	ODI	30	0.86	C6	+11.34	
16.	43	53	ODI	28	1.20	C3	+11.18	
17.	44	38	ODI	26	0.89	TSH	+0.65	
18.	50	38	ODI	32	1.45	VM	+4.92	
19.	51	55	ODI	32	0.50	TSH	+6.46	
20.	54	42	ODI	21	0.42	TSC	+3.77	
21.	54	70	ODI	29	1.24	H2	+23.22	
22.	55	41	ODI	21	0.82	TSH	+0.70	
23.	56	144	ODI	29	0.72	H4	+12.95	
24.	59	101	ODI	36	0.67	C1	+27.08	
25.	62	30	ODI	20	0.56	TSH	+33.69	
26.	63	137	ODI	21	0.46	H1	+19.57	
27.	65	17	ODI	20	0.77	VM	+25.00	
28.	65	109	ODI	21	0.99	H6	+13.51	
29.	66	88	ODI	23	1.43	TSH	+1.25	
30.	67	41	ODI	39	0.69	VM	+0.00	
31.	67	57	ODI	23	1.09	H1	+23.91	
32.	68	88	ODI	27	0.69	H7	+7.40	
33.	68	108	ODI	21	0.45	TSH	+0.74	
34.	71	77	ODI	25	0.63	TSH	+0.90	
35.	72	152	ODI	35	1.35	TSH	+17.86	
36.	73	21	ODI	36	0.87	VM	+0.00	
37.	76	94	ODI	29	0.62	TSH	+1.01	
38.	80	78	ODI	24	1.08	H3	+14.41	
39.	81	47	ODI	22	0.40	TSC	+0.76	
40.	82	92	ODI	33	0.61	TSH	+1.22	
41.	83	31	ODI	30	2.47	H1	+19.21	
42.	84	76	ODI	30	0.47	TSH	+0.63	
43.	84	86	ODI	36	0.93	TSH	+5.75	
44.	84	94	ODI	23	0.94	TSH	+0.73	
45.	84	112	ODI	32	0.65	TSH	+4.85	
46.	86	92	ODI	26	1.41	TSH	+0.75	
47.	87	35	ODI	21	1.19	H7	+6.33	
48.	87	83	ODI	34	1.59	VM	+5.10	
49.	88	92	ODI	38	0.60	TSH	+0.68	
50.	89	21	ODI	21	1.85	C8	+22.57	
51.	89	45	ODI	37	0.41	VH	+2.00	
52.	90	34	ODI	33	0.73	H5	+34.95	
53.	91	29	ODI	37	0.49	VH	-0.74	
54.	93	127	ODI	29	0.72	TSH	+14.98	
55.			ODI	35	0.52	TSH	+14.92	
56.	96	82	ODI	29	0.53	TSC	+21.06	
57.	98	54	ODI	29	1.80	C2	+20.76	
58.	101	51	ODI	28	1.10	C3	+27.50	
59.	101	125	ODI	26	0.62	C2	+21.80	
60.	104	74	ODI	21	0.56	H1	+31.30	
61.	104	98	ODI	20	1.12	H7	+7.20	
62.	108	112	ODI	25	1.38	H4	+19.23	
63.	109	79	ODI	24	0.97	H8	+11.41	
64.	110	62	ODI	23	0.99	H4	+20.56	
65.	118	52	ODI	26	1.76	H10	+32.78	
66.	120	94	ODI	23	0.82	C5	+29.47	

BWNS TUBAN II (Version 1.0) 12/16/1993 08:33:48
Calvert Cliffs - Unit 2
S/G 22
03/93 RFO

INDICATIONS, 20-39%							
COUNT	ROW	LINE	IND	%TW	VOLTS	LOCATION	
67.	121	123	ODI	35	0.42	TSH	+0.97
68.	122	88	ODI	30	1.08	C7	+17.17
69.	122	92	ODI	25	1.46	H4	+14.61
70.	129	95	ODI	25	1.31	H6	+20.06
71.	132	104	ODI	21	1.33	TSH	+9.31

Total Indications Found = 71
Total Tubes Found = 68

STEAM GENERATOR #22

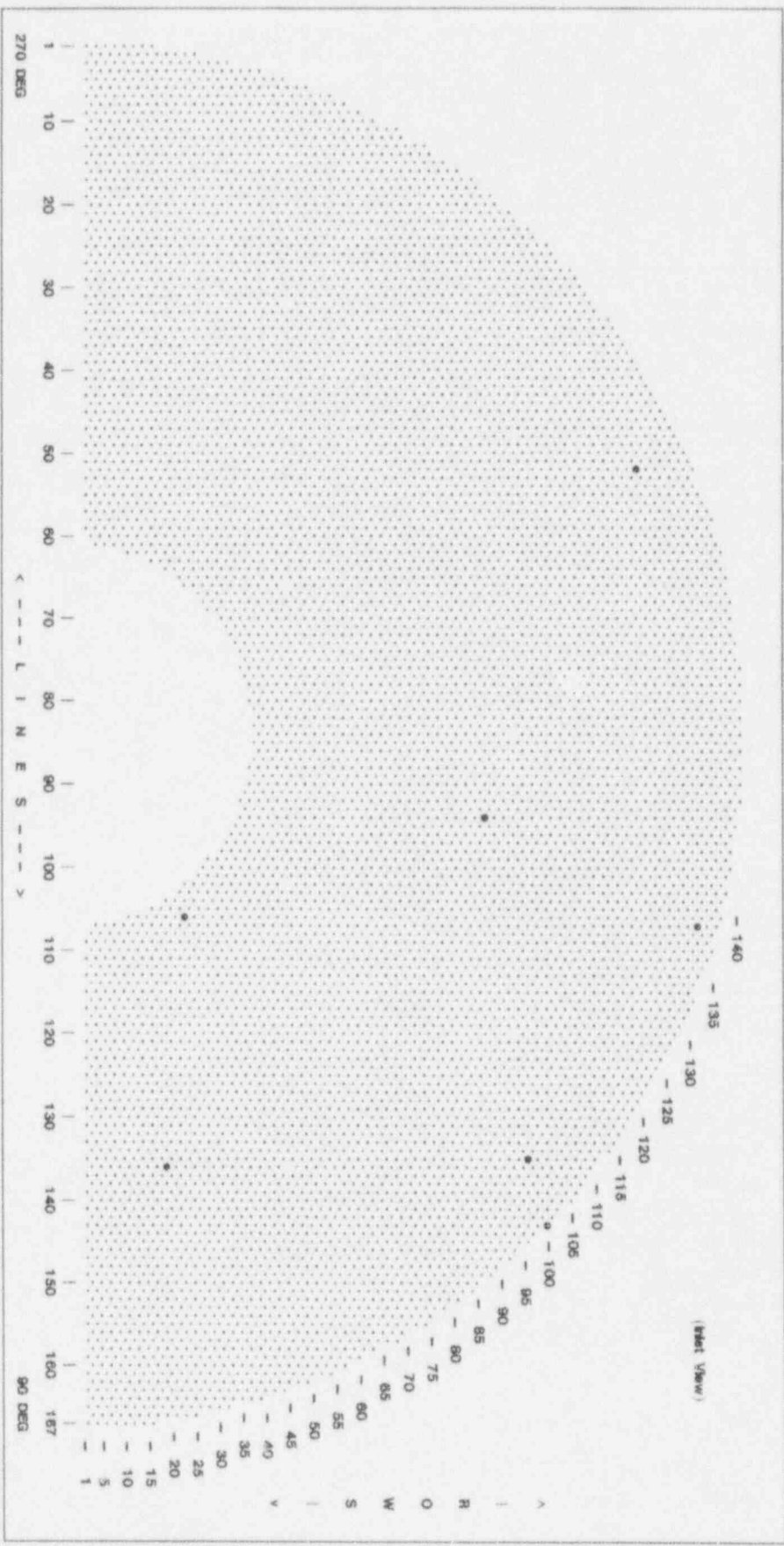
D. Plot with List of >39% Indications March 1993

22 STEAM GENERATOR > 39% INDICATIONS

Calvert Cliffs - Unit 2
Total Tubes : 8519

Tubes Selected : 7

S/G 22
Out Of Service () : N/A



● 270 40 TO 100 - 7

BWNS TUBAN II (Version 1.0) 12/20/1993 10:18:12
Calvert Cliffs - Unit 2
S/G 22
03/93 RFO

40 -100% COUNT	INDICATIONS ROW LINE IND	%TW	VOLTS	LOCATION	
1.	18 136 ODI	48	0.89	TSH	+0.78
2.	22 106 ODI	60	0.74	C4	+0.92
3.	86 94 ODI	59	0.80	TSH	+0.65
4.	95 135 ODI	45	0.77	VH	+2.09
5.	99 143 ODI	66	0.81	VC	+1.90
6.	118 52 ODI	67	0.78	H9	+2.00
7.	131 107 ODI	68	0.70	VH	+25.44

Total Indications Found = 7
Total Tubes Found = 7

STEAM GENERATOR #22

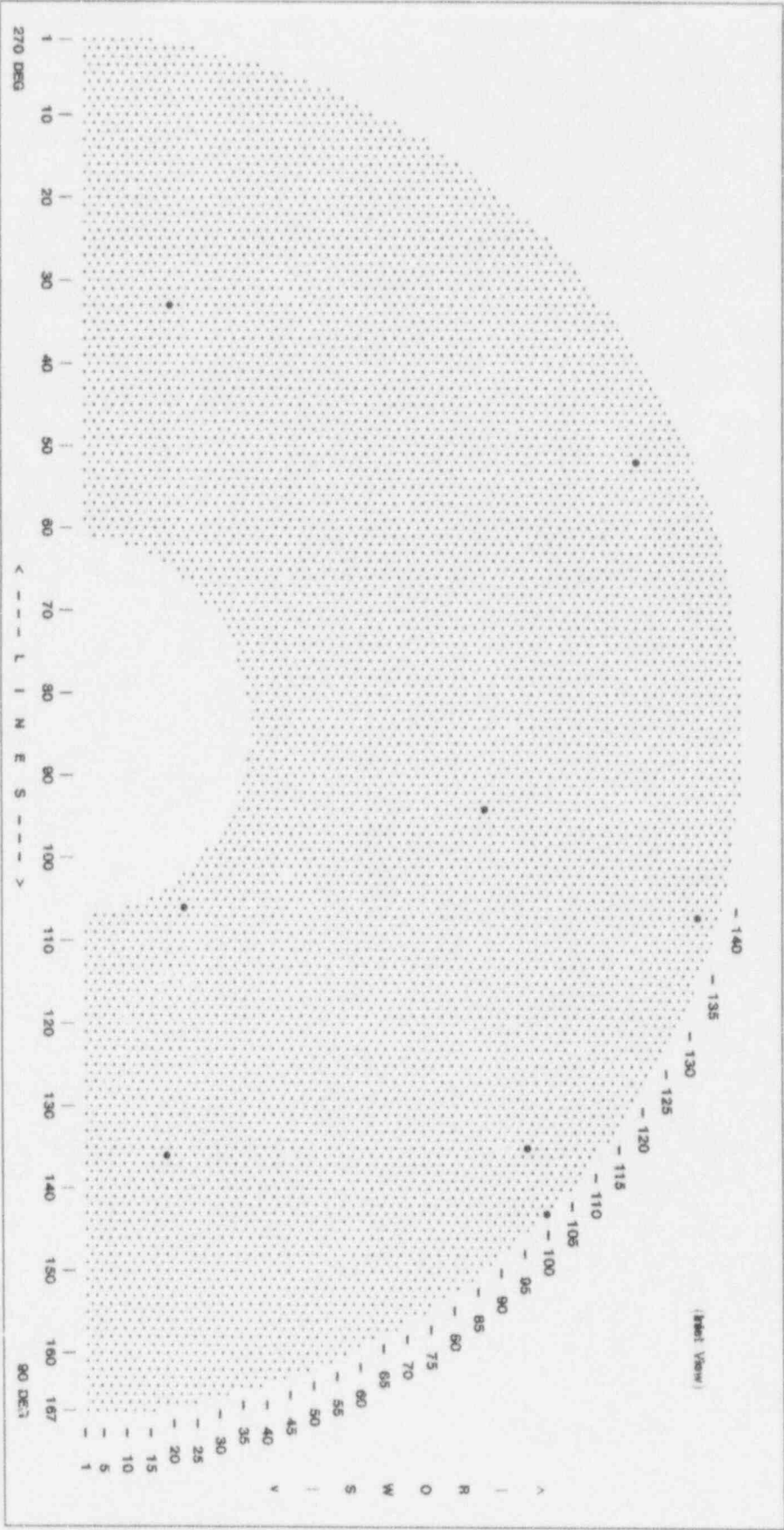
E. Plot with List of Tubes Plugged March 1993

Calvert Cliffs - Unit 2
Total Tubes : 8519

Tubes Selected : 8

S/G 22
Out Of Service () : N/A

22 STEAM GENERATOR TUBES PLUGGED IN 93 OUTAGE




```
***** BWNS TUBAN II (Version 1.0) 12/16/1993 12:33:55 *****
***** Calvert Cliffs - Unit 2 *****
***** S/G 22 *****
***** 03/93 RFO *****
***** *****
```

COLD LEG

COUNT	ROW	LINE	TYPE
1.	18	136	MECH-W
2.	19	33	MECH-W
3.	22	106	MECH-W
4.	86	94	MECH-W
5.	95	135	MECH-W
6.	99	143	MECH-W
7.	118	52	MECH-W
8.	131	107	MECH-W

Total Indications Found = 8
Total Tubes Found = 8

STEAM GENERATOR #22

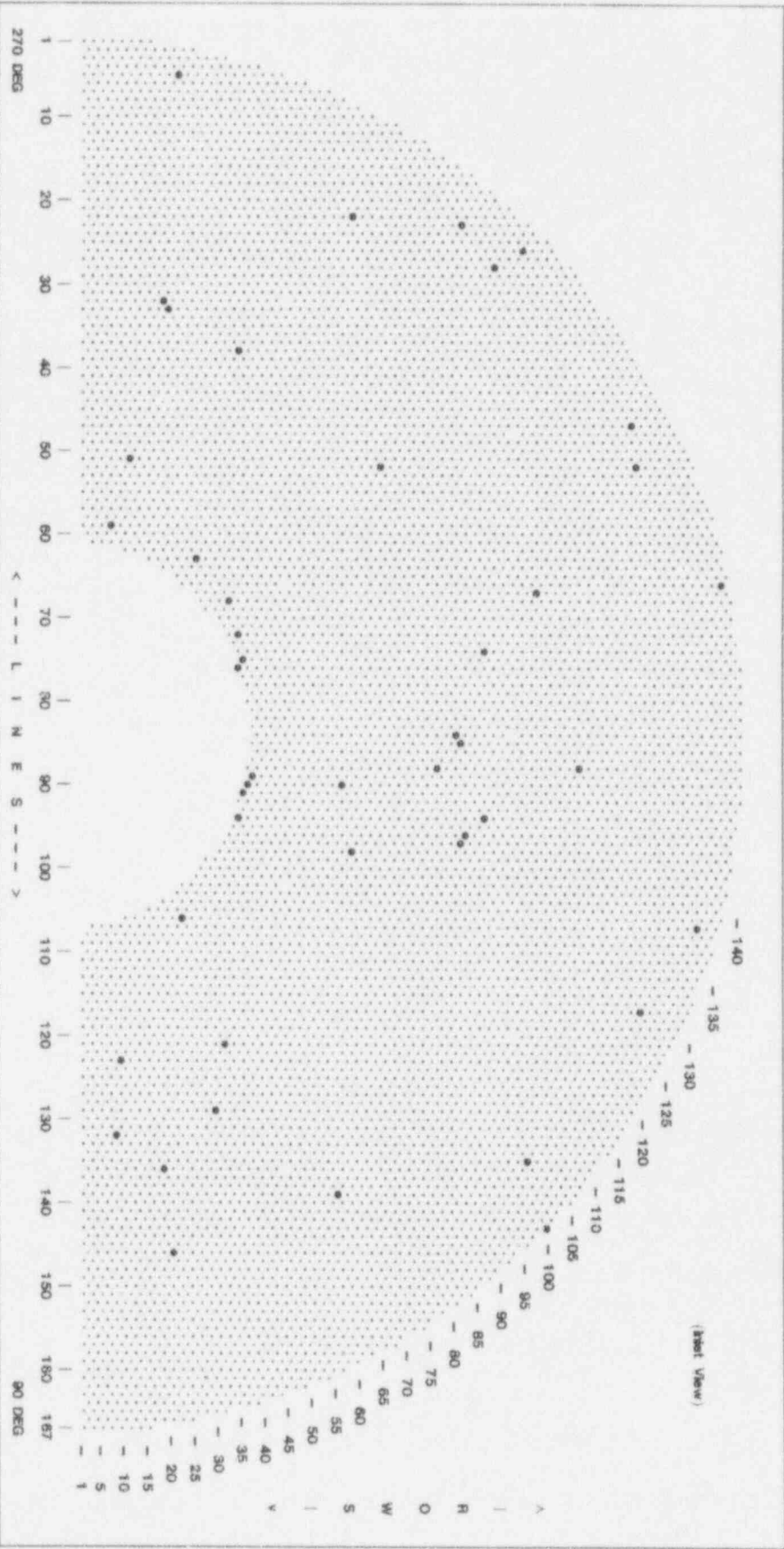
F. Plot with List of All Tubes Plugged All Outages

Convent CRFs - Unit 2
Total Tubes : 8519

Tubes Selected : 46

S/G 22
Out Of Service () : N/A

22 STEAM GENERATOR ALL TUBES PLUGGED TO THIS DATE



● PLG - 46

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*****
*****  *  BWNS TUBAN II (Version 1.0)          12/16/1993 12:39:29      *****
*****          Calvert Cliffs - Unit 2          *****
*****          S/G 22                          *****
***** 03/93 RFO,10/90,07/90,04/89,03/87,10/85,05/84,11/82,02/81 *****
*****

```

COLD LEG

COUNT	ROW	LINE	TYPE
1.	7	59	MECH-W
2.	8	132	MECH-W
3.	9	123	MECH-W
4.	11	51	MECH-W
5.	18	32	MECH-W
6.	18	136	MECH-W
7.	19	33	MECH-W
8.	20	146	MECH-W
9.	21	5	MECH-W
10.	22	106	MECH-W
11.	25	63	MECH-W
12.	29	129	MECH-W
13.	31	121	MECH-W
14.	32	68	MECH-W
15.	34	38	MECH-W
16.	34	72	MECH-W
17.	34	76	MECH-W
18.	34	94	MECH-W
19.	35	75	MECH-W
20.	35	91	MECH-W
21.	36	90	MECH-W
22.	37	89	MECH-W
23.	55	139	MECH-W
24.	56	90	MECH-W
25.	58	22	MECH-W
26.	58	98	MECH-W
27.	64	52	MECH-W
28.	76	88	MECH-W
29.	80	84	MECH-W
30.	81	23	MECH-W
31.	81	85	MECH-W
32.	81	97	MECH-W
33.	82	96	MECH-W
34.	86	74	MECH-W
35.	86	94	MECH-W
36.	88	28	MECH-W
37.	94	26	MECH-W
38.	95	135	MECH-W
39.	97	67	MECH-W
40.	99	143	MECH-W
41.	106	88	MECH-W
42.	117	47	MECH-W
43.	118	52	MECH-W
44.	119	117	CONST
45.	131	107	MECH-W
46.	136	66	MECH-W

```
***** BWNS TUBAN II (Version 1.0) 12/16/1993 12:39:29 *****
***** Calvert Cliffs - Unit 2 *****
***** S/G 22 *****
***** 03/93 RFO,10/90,07/90,04/89,03/87,10/85,05/84,11/82,02/81 *****
*****
```

COLD LEG
COUNT ROW LINE TYPE

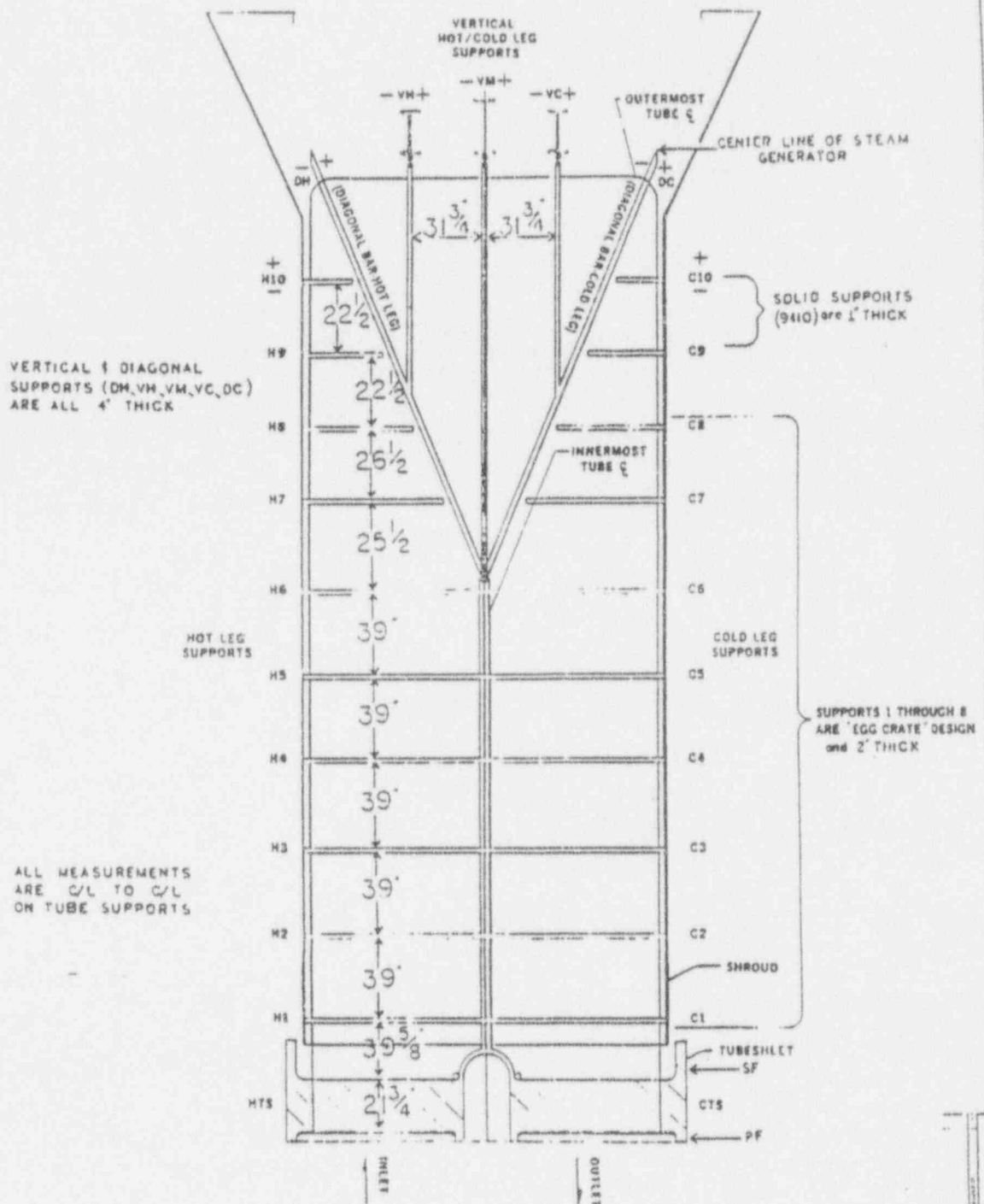
Total Indications Found = 46
Total Tubes Found = 46

APPENDIX III

Steam Generator Inspection Information

- A. Steam Generator Support Locations and Nomenclature

STEAM GENERATORS CCNPP 1 & 2



Rows Contacting Supports Above 6th TS

ROWS	NO. OF SUPPORTS	SUPPORT DESIGNATIONS
1-9	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	H9, VH, H8, H7, DH, VM, DC, C7, C8, VC, C9
116-140	13	H10, H9, VH, H8, H7, DH, VM, DC, C7, C8, VC, C9, C10