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TS 5.6.9

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

Calvert Cliffs Nuclear Power Plant, Unit No. 2
Renewed Facility Operating License No. DPR-69
NRC Docket No. 50-318

Subject: Spring 2015 – 180 Day Steam Generator Report

Reference: 1. Calvert Cliffs Nuclear Power Plant Units 1 and 2 Technical Specification 5.6.9

In accordance with Reference 1, Attachment (1) provides the results of the steam generator tube inspection conducted on Calvert Cliffs Unit 2 in 2015. This report includes the number and extent of tubes examined and indications identified.

There are no regulatory commitments contained in this correspondence.

Should you have questions regarding this matter, please contact Mr. Larry D. Smith at (410) 495-5219.

Respectfully,

Larry D. Smith
Regulatory Assurance Manager

LDS/PSF/bjm

Attachment: (1) Steam Generator Tube Inspection Report, Calvert Cliffs Unit 2, Refueling Outage 21

cc: NRC Project Manager, Calvert Cliffs
NRC Regional Administrator, Region I
NRC Resident Inspector, Calvert Cliffs
S. Gray, MD-DNR

A001
NRR

ATTACHMENT (1)

STEAM GENERATOR TUBE INSPECTION REPORT, CALVERT CLIFFS

UNIT 2, REFUELING OUTAGE 21

Calvert Cliffs Nuclear Power Plant
August 25, 2015

Exelon Generation Company, LLC

Calvert Cliffs Nuclear Power Plant

Unit 2

1650 Calvert Cliffs Parkway

Lusby, MD 20657

Calvert Cliffs Unit 2

STEAM GENERATOR TUBE INSPECTION REPORT

REFUELING OUTAGE 21

August 2015

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Calvert Cliffs Nuclear Power Plant Unit 2
CC2R21 Spring 2015 Steam Generator Inspection

1.0 Introduction

Calvert Cliffs Nuclear Power Plant Unit 2 (CCNPP2) has two recirculating steam generators designed and fabricated by Babcock and Wilcox (B&W) of Cambridge, Ontario, Canada. These replacement steam generators (RSG's), SG21 and SG22 were installed in 2003.

Each RSG contains 8471 tubes. Three tubes were plugged in SG 21 during manufacturing. The tubing material is thermally treated Inconel 690 having a nominal outer diameter (OD) of 0.75 inches and a nominal wall thickness of 0.042 inches. The RSG's were designed and fabricated to the ASME Boiler and Pressure Vessel Code, Section III, subsection NB (Class 1), 1989 Edition with no Addenda. All tubes with a bend radius of 12 inches or less (the first 18 rows) were thermally stress-relieved following bending to reduce the residual stress imparted during bending.

The straight section of the tube bundle are supported by seven 410 stainless steel (SA-240 Type 410S) lattice grid supports. The fan Bar U-Bend support system incorporates sets of SA-240 Type 410S stainless steel Fan Bars on each side of the bundle as shown in Appendix A. Appendix B shows the tube support layout for U-2 Generators.

Technical Specification (TS) 5.5.9.d provides the requirements for SG inspection frequencies and requires periodic tube inspections be performed. TS 5.5.9.d requires that 100% of the Unit-2 tubes be inspected at sequential periods of 144, 120, 96, and thereafter 72 effective full power months (EFPM)

During the CCNPP2 spring 2015 refueling outage (CC2R21) both Unit 2 steam generators (SG21 and SG22) were inspected in accordance with CCNPP TS 5.5.9. This was the fourth in-service inspection of the replacement steam generators. The SG's had been in operation for 11.205 effective full power years (EFPY) at the time of the inspection.

Below summarizes the results of the inspection in accordance with the 180-Day reporting requirements of TS 5.6.9. **Bold** wording restates the TS requirement, followed by the required CC2R21 information.

A report shall be submitted within 180 days after the initial entry into Mode 4 following completion of an inspection performed in accordance with the Specification 5.5.9, Steam Generator (SG) Program.

The report shall include:

2.0 The Scope of the inspections performed on each SG (5.6.9.a)

- Eddy Current Bobbin probe examinations (both SG's)
  - 100% Full Length (FL) of all in-service tubes with a bobbin coil probe for tube-to-support wear at the fan bars and lattice grids and for potential foreign objects and associated wear.
- Eddy Current Array Probe (both SG's)
  - 50% X-Probe examination of all in-service tubes (periphery tubes) from the bottom end of the tube to the 1st lattice grid on both the HL and CL for potential foreign objects and associated wear.
  - In addition to the 50% of the in-service tubes that were examined by X-Probe as mentioned above, the following X-probe examinations were performed.
    - Inspect all previous PLPs (part not removed) plus a one tube bounding examination of such tubes at the elevation of interest not covered by the baseline 50% peripheral X-probe scope
    - All new PLPs and foreign object wear indications between the tubesheet and first support plus a one-tube bounding examination
    - All foreign objects identified by secondary side visual inspection plus a one-tube bounding examination
- Special Interest inspection of bobbin and X-Probe indications with +Point™.
  - Sizing of all foreign object wear detected by bobbin or X-probe
  - 10 deepest FBW bobbin indications in each RSG
  - All 3 wear indications detected at lattice supports in each RSG (2 in SG21 and 1 in SG22)
  - A sample of MBMs, DNTs, and DNGs as directed by B&W or CCNPP Engineering
  - All bobbin probe or X-Probe I-codes
  - Additional bobbin indications as directed by CCNPP Engineering
  - Additional indications as needed to meet operational assessment requirements for tube integrity, as identified by B&W Engineering
- Visual Examination
  - Visual inspection of all installed tube plugs in both SGs in accordance with section 6.9 of the EPRI PWR Steam Generator Examination Guidelines, Rev 7. This included both welded and mechanical plugs.

- Visual inspections of the hot and cold leg channel heads including the divider plate/tubesheet interface, the entire bowl per Westinghouse NSAL 12-1 methods for evidence of cladding degradation and/or cracking

- The following secondary side inspections were performed (both SG's)
  - Secondary side visual inspection of tubesheet , including the inner bundle passes, the annulus, and the no-tube lane regions
  - Secondary side visual inspection of the 1st lattice grid support
  - Targeted inspection locations identified as PLP (Possible loose Part) by ECT
  - Visual Upper Bundle inspection
  - Visual inspection of moisture separators

3.0 Degradation mechanisms found (5.6.9.b)

Three degradations mechanisms were confirmed to be present in the CCNPP U2 SG's. These are: 1) fan bar wear, 2) lattice grid support wear, and 3) foreign object wear. No other degradation mechanisms, including tube-to-tube wear, were detected.

Lattice grid support wear (LGSW) had not been previously detected on U2, however as it has been found on the U1 SG's the presence of LGSW was not unexpected based on the CC2R21 degradation assessment.

The visual inspection of the cladding, previously installed plugs, and divider plate found no degradation.

The secondary side visual inspections of the steam drum, upper bundle, 1st lattice grid support, and moisture separators found no degredation.

4.0 Nondestructive examination techniques utilized for each degradation mechanism (5.6.9.c)

Table 1 below identifies NDE examination techniques utilized for each identified degradation mechanism.

4.1 Table 1 – NDE Techniques Utilized for Identified Degradation

Degradation Mechanism	Inspection Type	EPRI ETSS
Fan Bar Wear	Bobbin	96004.1
Foreign Object Wear*	MRPC +Point	27901.1**
Lattice Grid Support Wear	Bobbin	96004.1
	MRPC +Point	96910.1

* The Array probe was the primary means of detecting foreign objects and foreign object wear during the inspection. However, the +PointTM probe was used for further characterization and sizing of wear.

** There are other EPRI techniques qualified for sizing of foreign object wear depending on the shape of the flaw. ETSS 27901.1 was selected based on the circumferential groove appearance of the foreign object wear indications detected during the U2R19 inspection

5.0 Location, orientation (if linear), and measured sizes (if available) of service induced indications (5.6.9.d)

5.1 Fan Bar Wear

Fan bar wear (FBW) is a mechanical degradation process which produces volumetric tube wear at the interface between the U-bend anti-vibration supports (fan bars) and the tubes. A total of 447 FBW indications were identified in the Calvert Cliffs Unit 2 RSGs during CC2R21. One hundred and four (104) of the 447 indications were newly reported during the CC2R21 outage. There were 44 and 60 new indications in SG21 and SG22 respectively.

The deepest repeat FBW indication was 30% TW in 22 SG.. Table 2 provides a summary of the fan bar wear indications from CC2R21. The maximum depth among these indications was 30% TW which is consistent with results from previous inspections. Growth of the repeat indications was minimal and consistent with previous results.

Figure 1 provides the distribution of fan bar wear depths for both steam generators as reported with the bobbin coil probe. As shown in the figure, SG22 contained more indications. A majority of the indication in both SG's are less than 20% TW.

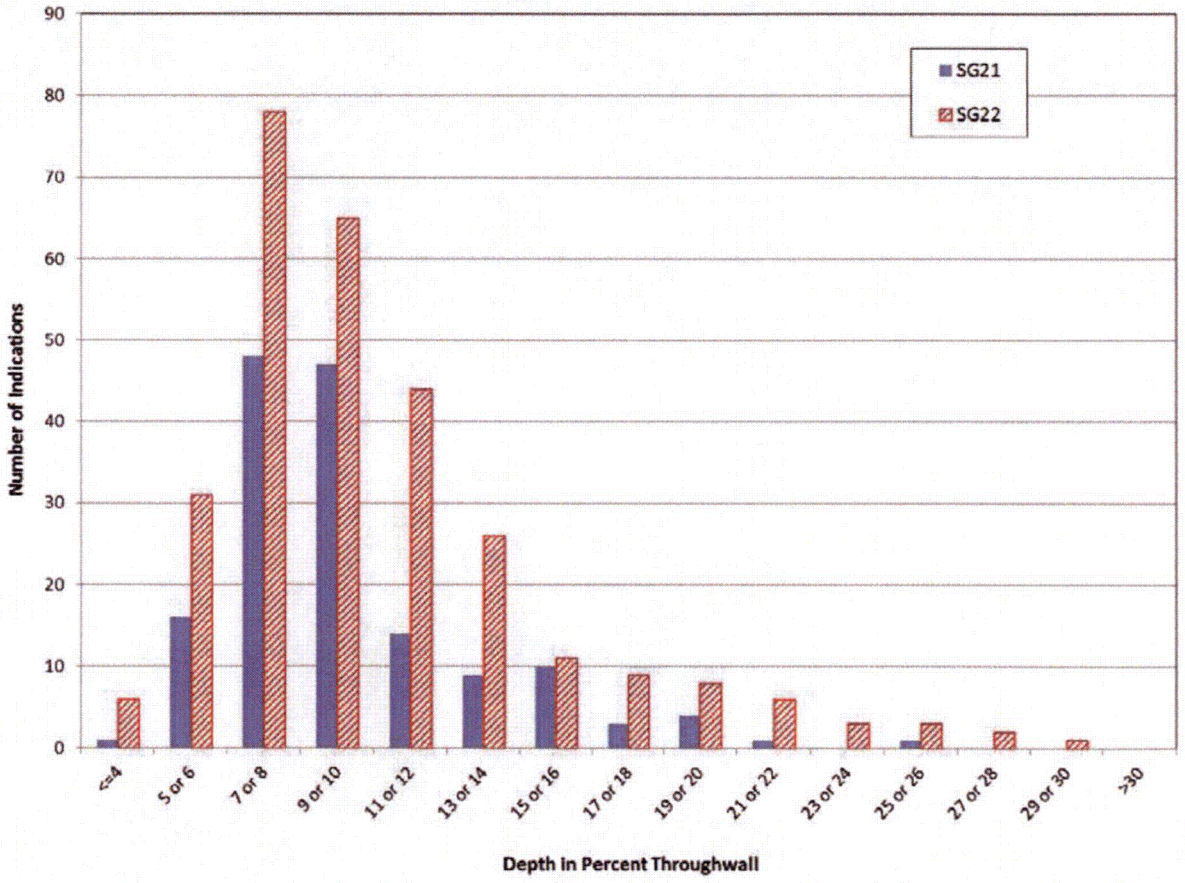
Figures 2 and 3 provide tube map locations of the reported FBW. Although the tube maps shown in Figures 2 and 3 provide a view of the tubesheet primary face from the hot leg side, both the hot leg and cold leg FBW indications are included on each map. Most of the wear continues to occur in longer tubes (i.e., larger U-bend radius), clustered towards the center-most tube columns.

Appendix C provides a complete list of FBW indications discovered.

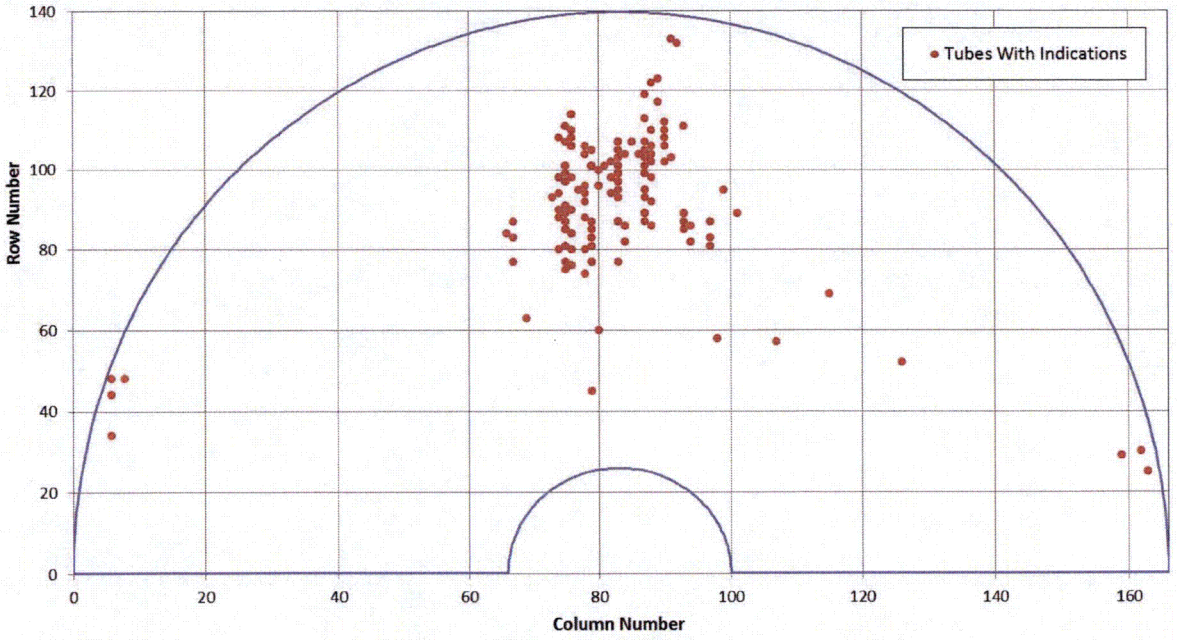
5.1.1 Table 2 – Fan Bar Wear Indication Summary

Description	SG21	SG22
Total Number of In-Service Tubes Prior to CC2R21	8434	8439
Number of FBW Indications	154	293
Maximum Depth of FBW (%TW)	25%	30%
Number of TSP Wear Indications ≥40%TW	0	0
Number of Newly-Reported Indications	44	60
Number of Tubes Plugged due to FBW	0	0

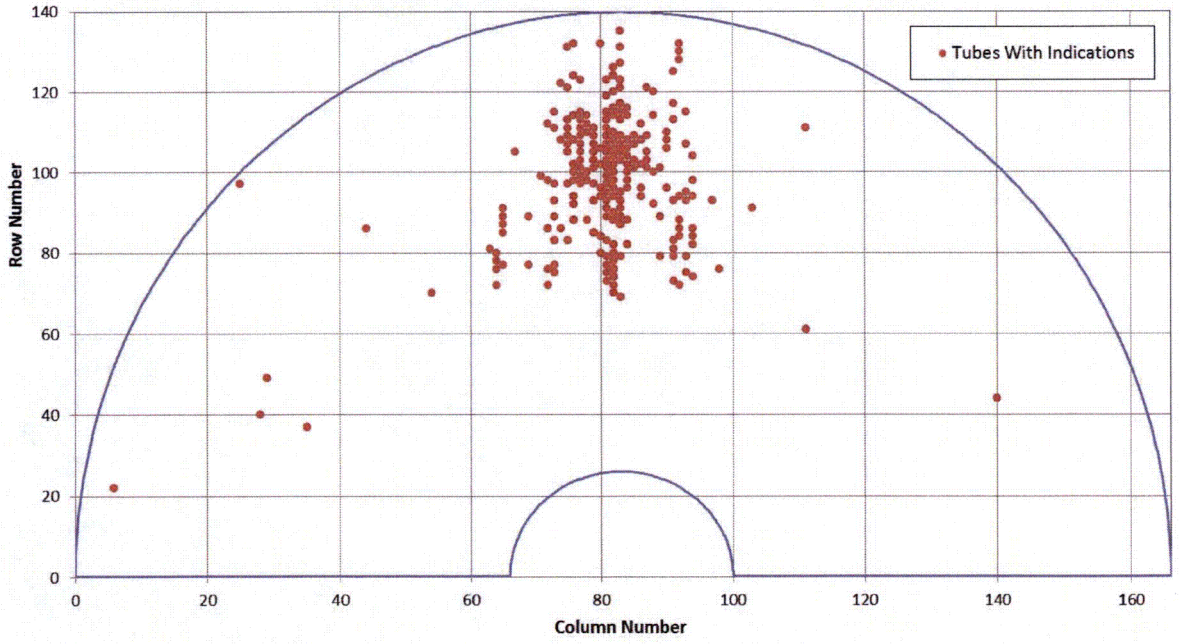
5.1.2 Figure 1 – Distribution of Fan Bar Wear Depth



5.1.3 Figure 2 – SG 21 Fan Bar Wear Map



5.1.4 Figure 3 – SG 22 Fan Bar Wear Map



5.2 Lattice Grid Support Wear

Three indications of wear related to the lattice grid supports were reported during the CC2R21 outage (two indications in SG21 and one indication in SG22). All three of these indications were inspected with +Point™ to confirm that the morphologies of the indications were consistent with lattice grid wear and not some other damage mechanism such as foreign object wear. After confirmation with +Point™, all three indications were depth sized using the bobbin coil data. All three indications have a tapered flaw shape.

This was the first occurrence of lattice grid wear at Calvert Cliffs Unit 2. However, this is not an unexpected occurrence since lattice grid wear has already been observed at Unit 1. The depths of the Unit 2 indications are consistent with the depths of the indications observed in Unit 1. Table 3 provides a listing of these indications.

5.2.1 **Table 3 – Summary of Lattice Grid Support Wear Indications**

SG	Row	Col	Location	Bobbin Depth	Axial Extent
SG21	131	65	07H +0.65 to +0.85	11% TW	0.2"
SG21	137	91	03H -1.65 to -1.52	7% TW	0.13"
SG22	102	30	02C -1.74 to -1.24	10% TW	0.5"

5.3 Foreign Object Wear

During the CC2R21 inspection, twenty-one (21) foreign object wear indications were detected in 14 tubes. These indications were reported as LPW (Loose Part Wear) in the eddy current database. Four (4) indications in three tubes were newly detected in CC2R21. The remainder were legacy and showed no change in size since previous inspections.

Three (3) of the new indications were identified on two tubes in SG21, these indications were in a cluster about 15 inches above the cold leg tubesheet. The wear was caused by weld slag that was still present at the time of inspection and has since been removed.

One (1) of the new indication was on a tube in SG22. This was the deepest indication detected during the CC2R21 inspections, sized at 36% TW. This indication was near the lower edge of the 04H lattice support. This indication was due to a foreign object based on its location between the contact points of the lattice grid. This indication was caused by a transient loose part which is no longer present based on ET inspection results.

All LPW indications were sized below the site plugging limit. There were no objects present at non-plugged LPW tube locations from previous outages. Since no objects were present to cause further wear and all LPW %TW were less than the 40% tech spec. plugging limit, all 14 tubes were returned to service.

Table 4 provides a summary of the foreign object wear indications seen in the Unit 2 RSGs.

5.3.1 Table 4 – Summary of Foreign Object Wear

SG	Row	Col	Location	%TW	Axial Extent (in.)	New in 2015
SG21	12	66	TSH -.05 to +.19	27	0.24	No
SG21	12	66	TSH .37 to +.55	24	0.18	No
SG21	12	162	TSH -.01 to +.17	27	0.18	No
SG21	13	65	TSH -.18 to +.07	28	0.25	No
SG21	14	66	TSH +.36 to +.54	19	0.18	No
SG21	14	66	TSH +.36 to +.54	17	0.18	No
SG21	72	146	TSH +.13 to +.31	34	0.18	No
SG21	75	147	TSH +17.86 to +18.09	19	0.23	No
SG21	77	147	TSH +17.52 to +17.76	21	0.24	No
SG21	77	149	TSH +20.59 to +20.82	20	0.23	No
SG21	137	73	TSC +14.89 to +15.08	21	0.19	Yes
SG21	137	75	TSC +14.4 to +14.58	24	0.18	Yes
SG21	137	75	TSC +14.72 to +14.79	19	0.07	Yes
SG22	14	4	TSC +.32 to +.5	24	0.18	No
SG22	17	1	TSC -.07 to +.13	24	0.2	No
SG22	18	2	TSC -.01 to +.23	24	0.24	No
SG22	82	42	04H -1.76 to -1.47	36	0.29	Yes
SG22	112	82	04H +37.63 to +37.82	24	0.19	No
SG22	124	116	TSC +12.58 to +12.85	18	0.27	No
SG22	126	116	TSC 12.21 to 12.44	24	0.23	No
SG22	126	116	TSC 12.52 to 12.76	38	0.24	No

6.0 Number of tubes plugged during the inspection outage for each active degradation mechanism (5.6.9.e)

Zero (0) tubes were plugged during the CC2R21 outage.

7.0 Total number and percentage of tubes plugged to date and the effective plugging percentage in each steam generator (5.6.9.f)

Table 5 provides the post CC2R21 outage tube plugging status of the CCNPP2 SG's. There are currently 37 tubes plugged in SG21 and 32 tubes plugged in SG22.

7.1 Table 5 – Tube Plugging Summary

SG	Tubes Installed	Tubes plugged to-Date
SG21	8471	37 (0.437%)
SG22	8471	32 (0.378%)
Total	16,942	69 (0.407%)

There are no sleeves installed in the CCNPP1 steam generators, therefore the effective plugging percentage is the same as stated Table 5 above.

8.0 The results of condition monitoring, including results of tube pulls and in-situ testing (5.6.9.g)

The condition monitoring assessment is summarized in Figures 4 through 6. These figures provide the condition monitoring limit curves corresponding to the NDE technique employed for each degradation type. All reported degradation falls below the applicable condition monitoring curve and therefore satisfies the Technical Specification structural performance criteria. No tube-pulls or in-situ pressure testing were required.

8.1 Fan Bar Wear

Based on the sizing parameters for this technique, the CM curve shown in Figure 4 was generated and documented in the Degradation Assessment (DA). Each of the fan bar wear indications were conservatively plotted at an axial length of 1.8 inches based on current and previous length sizing of the deepest indications. As shown, all indications lie well below the CM curve. Hence, structural integrity of the fan bar wear indications is demonstrated.

8.2 Foreign Object Wear

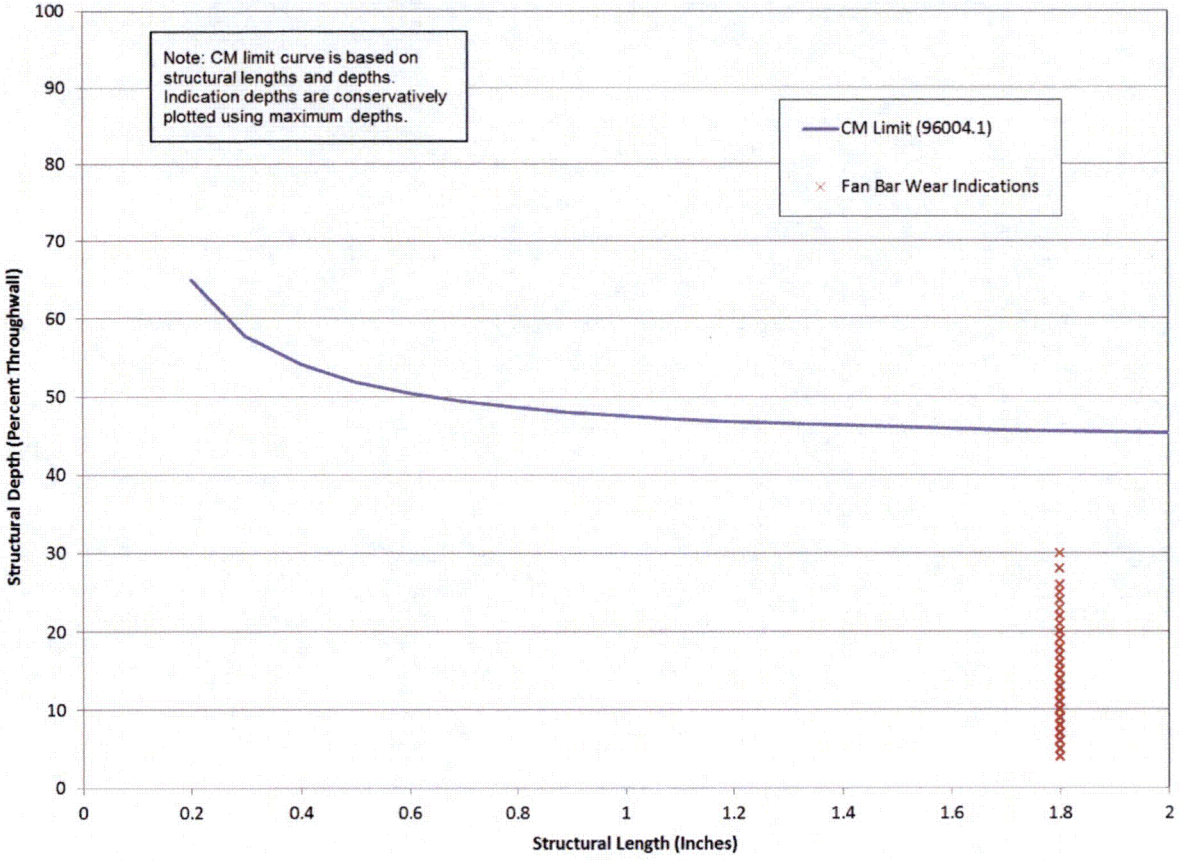
As documented in the DA, ETSS 27903.1 provides a lower CM limit compared to the other 2790X series of techniques. Hence, use of the CM limit curve from the DA is appropriate and conservative for the evaluation of foreign object wear at Calvert Cliffs Unit 2. Figure 5 shows the condition monitoring results for foreign object wear. As shown, all indications lie well below the CM curve. Hence, structural integrity of the foreign object wear indications is demonstrated.

8.3 Lattice Grid Wear

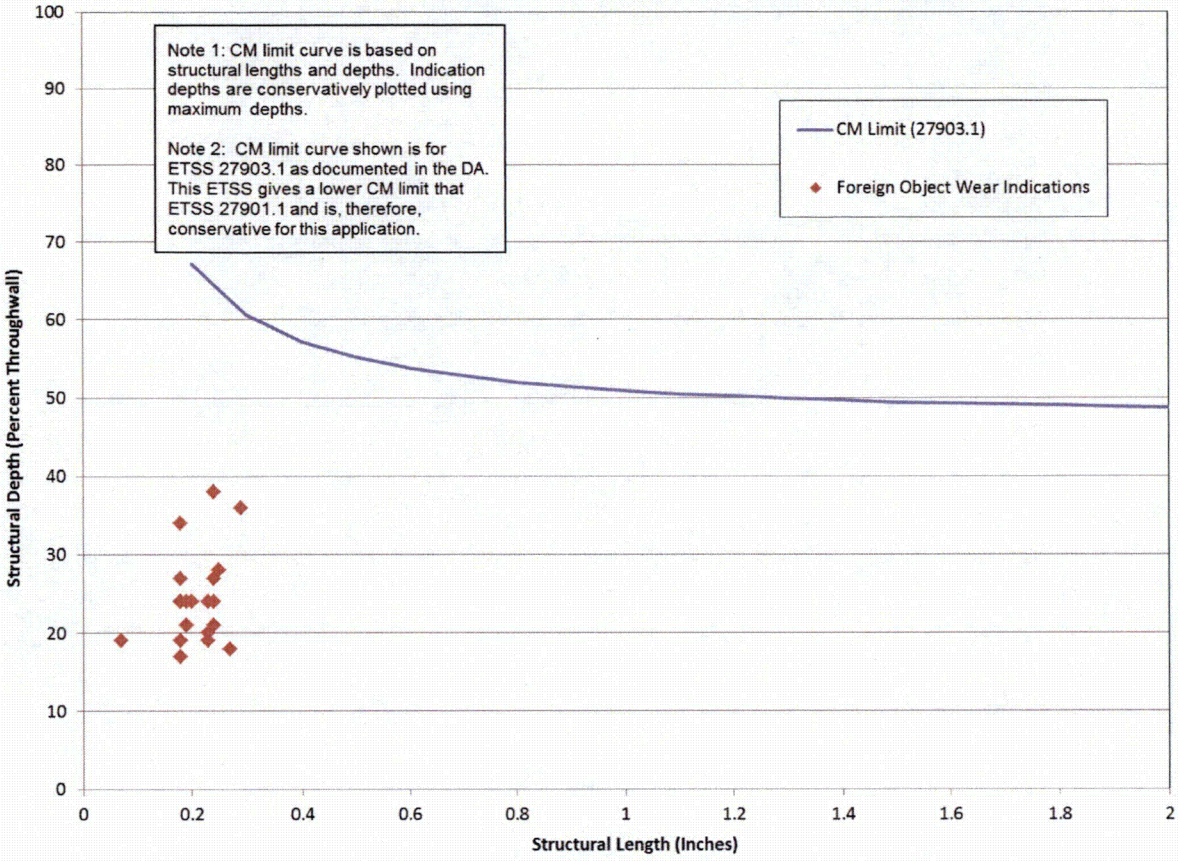
Based on the sizing parameters for this technique, the CM curve shown in Figure 6 was generated and documented in the DA. Since all three of the lattice grid wear indications were inspected with +Point™, the lengths measured from the +Point™ inspections are reflected in the figure. As shown, all indications lie well below the CM curve. Hence, structural integrity of the lattice grid wear indications is demonstrated.

Some of the detected flaws had measured axial extents <0.25". For these cases, the flaws were evaluated for leakage integrity using the flaw model for uniform 360 degree thinning of finite axial extent. This is allowed per Section 9.6.3 of the EPRI SG Integrity Assessment Guideline for situations involving pressure loading only. Using the uniform thinning equation from Section 5.3.2 of the EPRI SG Flaw Handbook the CM limit of a flaw with an axial length of 0.25" is 64.1%TW. Since none of the detected indications approached this depth, accident leakage integrity for these shorter volumetric flaws is also confirmed.

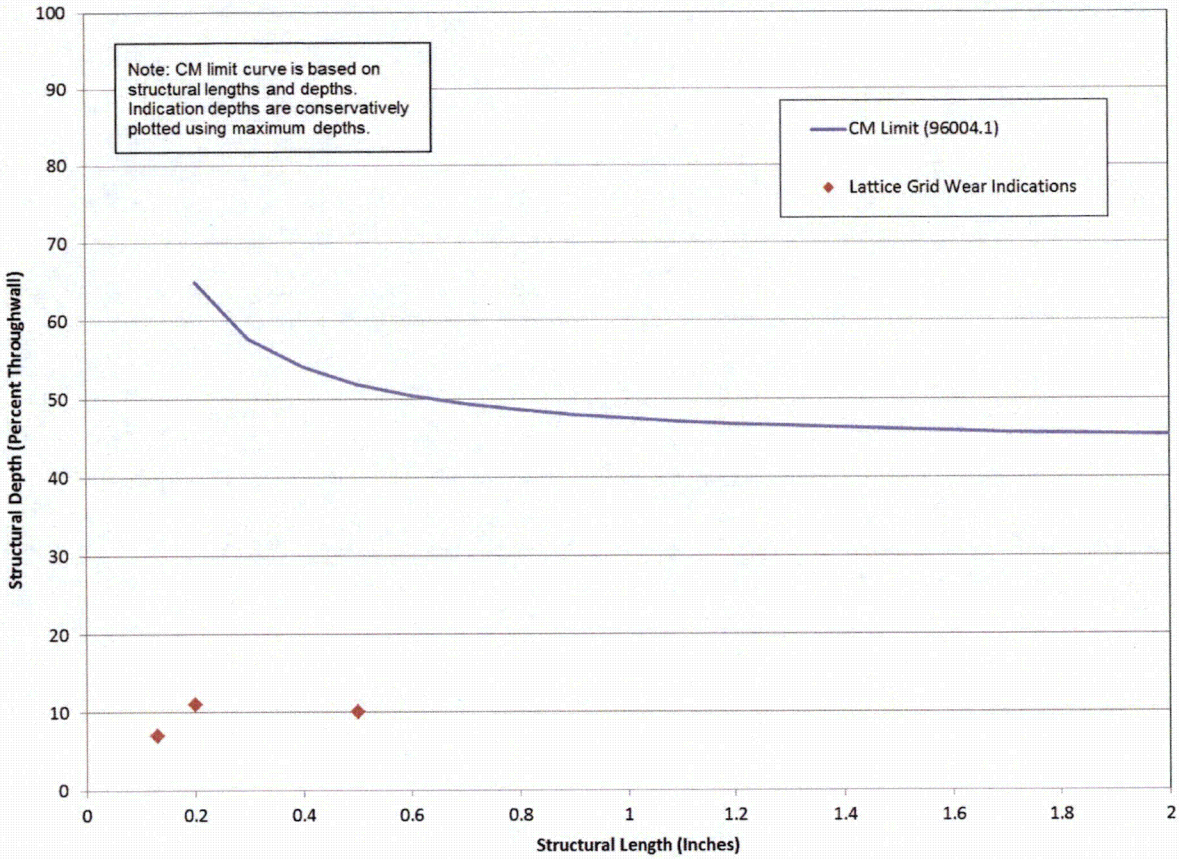
8.3.1 Figure 4 – Condition Monitoring Results for Fan Bar Wear



8.3.2 Figure 5 – Condition Monitoring for Foreign Object Wear



8.3.3 **Figure 6 – Condition Monitoring for Lattice Grid Wear**

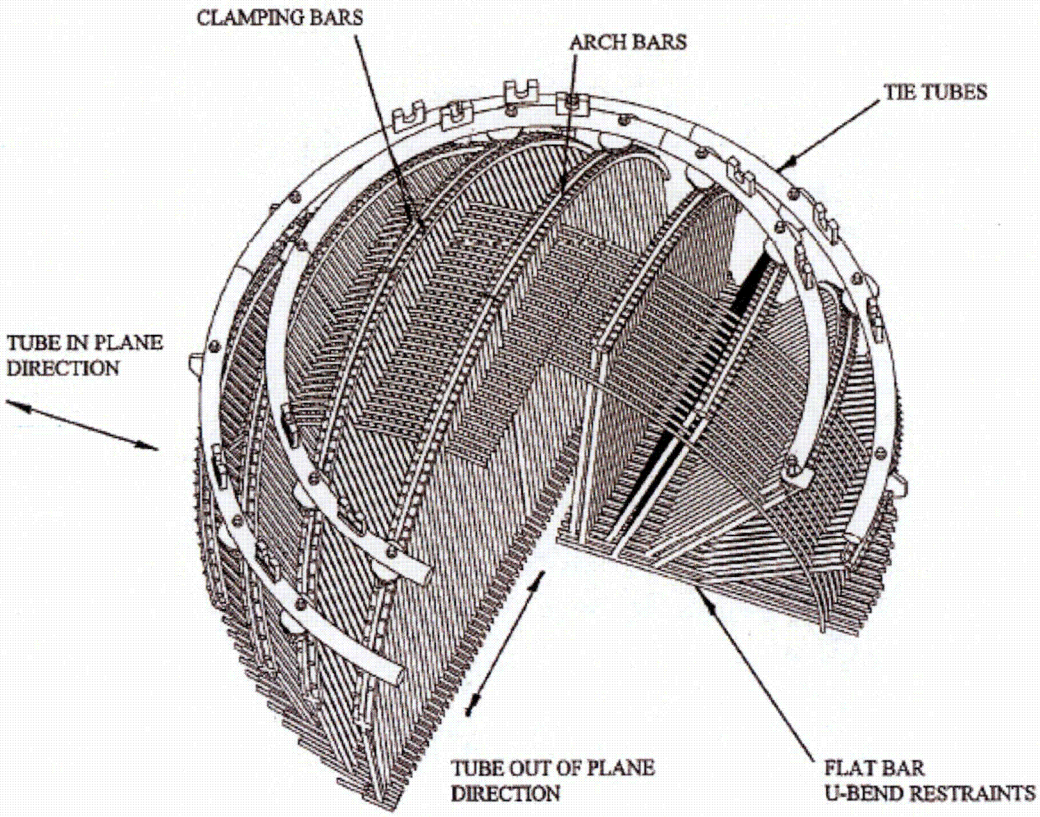


8.4 Operational Leakage Criterion and Validation of Previous OA

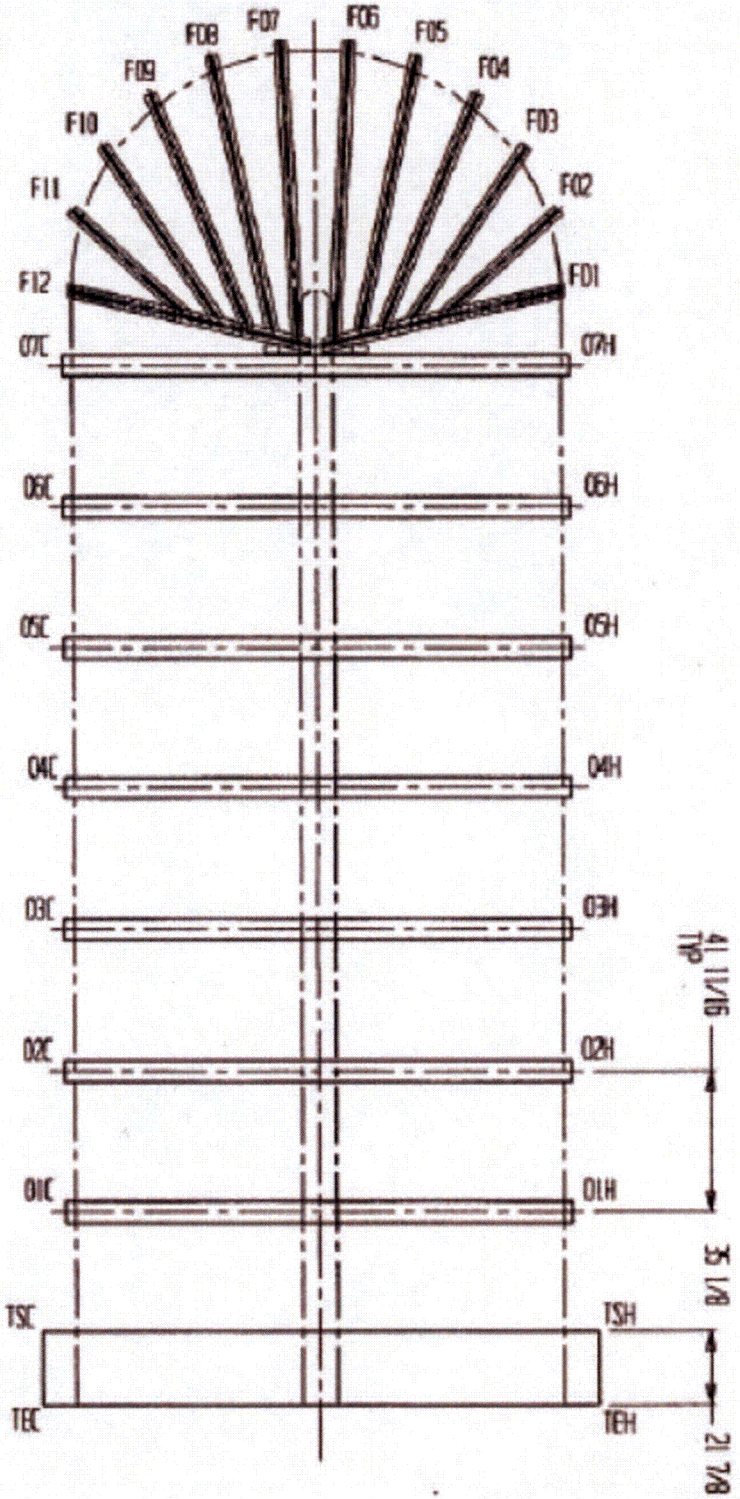
The operational leakage criterion was also satisfied by the absence of any measureable primary to secondary leakage since the previous inspection.

The results of the 2015 inspection and the condition monitoring assessment confirm that the 2011 operational assessment was appropriately bounding.

APPENDIX A – Typical U-Bend Support System



Appendix B Calvert Cliffs U-2 Tube Support Layout



APPENDIX C – CC2R21 Fan Bar Wear Summary

Table C- 1: SG21 Fan Bar Wear Summary

Row	Col	%TW	Support	Inch
25	163	9	F07	2.00
29	159	13	F06	1.66
30	162	7	F07	-0.93
34	6	15	F06	-1.15
44	6	9	F06	1.70
45	79	7	F07	0.64
48	6	9	F06	1.91
48	8	7	F06	1.86
52	126	10	F08	-0.75
57	107	14	F08	1.76
58	98	8	F05	-1.79
60	80	7	F06	0.62
63	69	6	F09	2.17
69	115	5	F04	-1.99
74	78	10	F08	1.00
75	75	9	F08	0.88
76	76	9	F07	-0.78
77	67	7	F08	0.74
77	75	10	F08	0.74
77	79	13	F08	0.74
77	83	11	F08	0.50
80	74	8	F08	1.96
80	76	11	F07	-0.67
80	78	12	F08	1.92
81	75	7	F08	0.85
81	79	15	F08	0.85
81	97	10	F08	1.75
82	84	5	F06	-1.07
82	94	9	F08	0.77
83	67	8	F08	0.70
83	79	12	F08	0.71
83	97	7	F08	1.91

Row	Col	%TW	Support	Inch
84	66	5	F09	-1.91
84	76	11	F07	-0.83
85	75	9	F08	0.81
85	75	8	F07	1.83
85	79	16	F08	0.81
85	93	11	F08	1.77
86	84	10	F06	-0.60
86	88	6	F08	0.81
86	94	11	F08	0.74
87	67	8	F08	0.72
87	75	9	F08	0.84
87	75	5	F07	1.79
87	79	9	F08	0.79
87	83	8	F08	-0.58
87	83	6	F07	-0.05
87	83	7	F06	0.00
87	87	13	F08	1.72
87	93	14	F08	1.77
87	97	8	F08	1.98
88	74	7	F08	2.04
88	78	7	F06	1.14
89	75	15	F06	-0.65
89	87	9	F08	1.93
89	87	4	F07	1.16
89	87	7	F06	-1.74
89	93	7	F06	-1.75
89	93	8	F08	1.79
89	101	6	F05	-0.83
90	74	9	F08	1.97
90	76	6	F07	-0.79
91	75	8	F08	0.79
91	75	7	F06	-0.63
92	78	13	F08	1.81
92	88	8	F06	-0.63
93	73	11	F08	0.84
93	83	12	F06	-0.44
93	87	8	F08	1.83
94	74	12	F06	-1.67
94	78	15	F08	1.65

Row	Col	%TW	Support	Inch
94	82	10	F06	-1.69
95	77	8	F06	-1.55
95	83	9	F08	-0.55
95	87	19	F08	1.89
95	87	10	F09	0.83
95	99	8	F05	-1.48
96	78	8	F08	1.52
96	80	9	F08	-1.97
97	75	10	F06	-0.60
97	75	10	F07	1.50
97	83	5	F07	0.00
97	83	10	F08	0.51
98	74	10	F06	-1.71
98	74	8	F08	1.92
98	76	8	F07	-0.65
98	82	9	F08	1.92
98	82	10	F06	-1.67
98	88	8	F08	0.86
99	75	9	F07	1.76
99	83	9	F06	-0.49
99	83	9	F07	-0.56
99	83	9	F08	-0.56
99	87	18	F06	-1.21
99	87	8	F07	0.77
100	80	8	F06	-1.64
101	75	7	F09	-1.44
101	75	20	F06	-0.58
101	75	15	F07	0.90
101	79	9	F08	0.88
101	79	7	F02	-2.02
101	79	10	F06	-0.65
101	79	7	F07	1.92
101	81	8	F07	-0.79
101	83	5	F06	0.09
101	83	8	F07	0.05
101	83	10	F08	-0.56
101	83	5	F05	0.00
101	87	11	F06	-1.72
101	87	13	F07	0.72

Row	Col	%TW	Support	Inch
102	82	5	F07	-1.34
102	88	8	F06	-0.70
102	90	10	F06	-0.69
103	83	10	F06	0.62
103	87	9	F06	-1.67
103	87	15	F07	0.76
103	91	8	F06	-1.71
104	78	9	F07	0.81
104	78	9	F08	1.85
104	84	9	F06	-0.60
104	86	7	F06	-0.70
104	88	15	F05	-1.25
104	88	22	F06	-1.11
104	88	7	F07	1.78
105	79	9	F07	1.87
105	83	14	F07	0.00
105	87	9	F07	0.81
106	76	20	F06	1.16
106	76	6	F07	-1.28
106	78	8	F07	0.79
106	88	9	F08	0.79
106	90	10	F06	-0.70
107	75	9	F07	1.72
107	83	10	F06	0.49
107	83	12	F07	0.00
107	85	8	F06	0.74
107	87	19	F07	0.74
108	74	8	F07	0.78
108	76	25	F06	1.25
108	90	12	F06	-0.74
110	76	6	F06	1.20
110	88	9	F06	-0.69
110	90	8	F06	-0.56
111	75	17	F06	-0.79
111	93	7	F07	0.77
112	90	14	F06	-0.67
113	87	10	F07	0.78
114	76	16	F06	-0.81
117	89	18	F06	-1.28

Row	Col	%TW	Support	Inch
119	87	16	F07	0.79
122	88	7	F09	1.83
123	89	7	F06	-1.86
132	92	5	F06	1.25
133	91	11	F02	0.88
Total:	**154**			

Table C- 2: SG22 Fan Bar Wear Summary

Row	Col	%TW	Support	Inch
22	6	10	F07	-0.23
37	35	7	F07	1.82
40	28	8	F09	-0.32
44	140	8	F07	-0.72
49	29	8	F07	1.80
61	111	11	F08	1.79
69	83	8	F08	-0.55
70	54	7	F06	-1.64
70	82	8	F07	0.89
70	82	8	F06	-1.82
72	64	8	F08	1.91
72	72	11	F08	2.12
72	82	7	F08	1.94
72	92	11	F08	0.70
73	81	6	F07	0.02
73	91	16	F08	1.65
74	82	8	F06	-1.80
74	82	4	F07	0.81
74	82	8	F08	1.94
74	94	13	F08	0.80
75	73	8	F08	0.76
75	81	8	F07	-0.78
75	93	7	F08	1.85
76	64	9	F08	1.99
76	72	10	F06	-1.75
76	72	16	F08	1.89
76	82	8	F07	0.81
76	82	9	F08	1.92
76	82	9	F06	-1.69
76	98	10	F08	0.81
77	65	13	F08	0.79
77	69	8	F08	0.81
77	73	9	F08	0.79
77	81	8	F07	-0.78
78	64	8	F08	1.88
78	82	13	F06	-1.80

Row	Col	%TW	Support	Inch
79	81	13	F07	-1.34
79	83	5	F07	-0.24
79	89	8	F07	0.74
79	91	9	F08	1.84
79	93	28	F08	1.42
80	64	8	F08	-1.78
80	64	9	F09	-1.92
80	80	7	F06	-1.74
80	82	8	F06	-1.81
80	82	8	F05	-0.79
81	63	8	F08	-0.91
81	91	10	F08	1.79
82	82	10	F07	0.92
82	82	7	F06	-1.87
82	84	9	F06	1.34
82	84	8	F08	0.82
82	94	9	F08	0.80
83	73	11	F07	1.69
83	73	20	F08	0.70
83	75	14	F02	0.77
83	81	10	F07	-1.27
83	91	13	F08	1.89
84	80	7	F06	-1.68
84	92	19	F08	0.78
84	94	21	F08	0.83
85	65	10	F08	0.79
85	79	11	F08	0.83
85	79	7	F08	-1.24
86	44	7	F05	1.23
86	72	9	F05	-0.87
86	72	11	F06	-1.69
86	74	11	F06	-1.70
86	92	12	F08	0.78
86	94	16	F08	0.71
87	65	14	F08	0.74
87	83	17	F08	0.00
87	83	8	F06	-0.09
87	83	25	F07	0.05
88	76	9	F06	1.81

Row	Col	%TW	Support	Inch
88	76	9	F05	1.85
88	78	9	F06	-1.22
88	82	9	F05	1.91
88	82	14	F06	1.84
88	84	9	F07	-0.87
88	92	10	F08	0.73
89	65	16	F08	0.79
89	69	12	F08	0.80
89	73	20	F08	0.76
89	81	11	F06	-0.74
89	83	8	F08	-0.56
89	83	10	F06	0.49
89	83	6	F05	0.47
89	83	6	F07	0.54
89	89	12	F08	-1.36
90	82	6	F06	-1.71
91	65	23	F08	0.86
91	81	7	F06	-0.74
91	83	6	F07	0.00
91	103	8	F05	-0.80
92	76	10	F06	1.82
92	88	6	F06	0.71
93	73	10	F06	-0.76
93	79	9	F06	-0.74
93	81	9	F06	-0.71
93	83	10	F06	0.45
93	83	9	F07	0.50
93	91	9	F08	1.77
93	93	8	F08	1.77
93	97	8	F08	1.79
94	76	10	F06	1.77
94	80	9	F06	-1.83
94	82	4	F07	0.78
94	82	19	F06	-1.34
94	86	7	F06	0.62
94	92	12	F08	0.81
94	94	11	F08	0.74
95	81	7	F07	-1.15
95	83	6	F06	0.12

Row	Col	%TW	Support	Inch
95	83	12	F07	0.42
95	93	7	F08	1.70
96	80	7	F06	-1.77
96	82	10	F06	1.31
96	82	6	F07	-1.31
96	84	20	F07	1.25
96	86	7	F06	0.00
96	90	5	F08	-1.37
97	25	7	F06	0.81
97	73	9	F06	-0.78
97	75	9	F06	-0.80
97	77	11	F06	-0.78
97	79	11	F06	-0.69
97	81	5	F06	1.34
97	81	4	F08	-1.30
97	81	9	F07	-1.30
98	72	9	F08	1.84
98	76	10	F06	1.67
98	78	13	F08	1.76
98	78	7	F07	0.76
98	82	8	F07	0.81
98	84	6	F06	-0.87
98	94	7	F08	0.76
99	71	14	F08	-0.74
99	77	18	F06	-0.79
99	81	7	F07	-0.81
99	81	7	F06	-0.76
100	76	8	F06	-1.92
100	78	11	F08	-1.90
100	78	8	F07	0.72
100	78	7	F06	-1.81
100	82	14	F07	0.76
100	82	10	F08	1.89
100	82	16	F06	-1.29
100	84	7	F07	1.34
100	88	10	F07	1.79
101	77	11	F06	-0.77
101	79	10	F07	1.82
101	81	9	F06	-0.62

Row	Col	%TW	Support	Inch
101	85	9	F09	1.30
101	87	8	F07	0.76
101	89	6	F09	0.66
102	76	13	F06	1.69
102	76	10	F07	-1.23
102	80	7	F08	2.03
102	82	7	F06	-1.69
102	82	10	F09	0.74
102	84	6	F07	1.79
102	86	8	F02	0.78
103	77	14	F06	-0.72
103	79	8	F07	1.73
103	79	11	F06	-0.69
103	81	8	F06	-0.72
103	81	6	F08	-1.18
103	83	15	F06	0.47
103	83	5	F07	-0.09
103	85	12	F08	1.30
103	87	11	F07	0.66
103	87	6	F09	0.71
104	82	11	F07	0.76
104	82	8	F09	0.69
104	82	9	F06	-1.92
104	84	10	F07	1.78
104	94	17	F06	-1.18
105	67	9	F07	-1.20
105	75	13	F06	-0.78
105	77	15	F06	-0.76
105	79	20	F06	-0.71
105	79	13	F07	1.84
105	81	9	F07	1.81
105	81	14	F08	1.39
105	81	11	F06	-0.70
105	83	14	F07	0.45
105	83	9	F06	0.50
105	83	7	F05	-0.05
105	87	8	F01	0.53
106	80	6	F07	1.20
106	82	13	F06	-1.77

Row	Col	%TW	Support	Inch
106	82	18	F07	0.71
106	84	5	F08	-1.45
106	90	22	F07	1.20
107	75	14	F06	-0.77
107	77	12	F06	-0.86
107	79	8	F06	-0.88
107	81	12	F08	-1.40
107	81	21	F06	-0.72
107	83	4	F06	-0.02
107	83	5	F05	0.02
107	83	12	F07	-0.02
107	85	11	F09	0.83
107	85	8	F06	1.18
107	93	8	F07	0.81
108	74	6	F06	-1.81
108	76	9	F09	0.76
108	76	7	F08	1.39
108	82	11	F08	1.34
108	82	20	F07	0.76
108	82	11	F09	0.74
108	84	14	F07	1.77
108	84	11	F06	-0.71
108	86	24	F06	-1.18
108	86	6	F08	1.25
108	86	12	F07	1.68
108	90	6	F06	-0.73
109	75	16	F06	-0.86
109	77	22	F06	-0.78
109	79	24	F06	-0.73
109	81	15	F08	-1.18
109	81	8	F07	-1.37
109	81	15	F06	-0.86
109	83	6	F06	0.02
109	83	7	F07	-0.14
109	85	17	F07	-1.35
109	87	12	F07	0.66
110	78	13	F07	0.76
110	82	9	F07	0.73
110	90	8	F08	-1.44

Row	Col	%TW	Support	Inch
111	73	26	F06	-1.39
111	75	22	F06	-0.57
111	77	28	F06	-0.76
111	79	18	F06	-0.69
111	79	9	F07	1.84
111	81	14	F06	-0.76
111	111	9	F03	-1.16
112	72	11	F08	1.33
112	78	13	F07	0.64
112	86	10	F06	-0.69
113	75	12	F06	-0.76
113	77	30	F06	-0.73
113	81	13	F06	-1.30
113	81	9	F08	0.83
113	83	10	F07	0.50
113	83	8	F06	0.48
113	91	20	F02	-2.18
114	76	4	F06	1.27
114	78	8	F07	0.72
114	82	9	F06	1.31
114	84	15	F06	-1.21
114	88	17	F05	1.36
115	73	7	F06	-0.72
115	77	8	F06	-0.76
115	81	7	F06	1.13
115	81	5	F07	-1.29
115	83	7	F07	0.45
115	83	9	F06	0.45
115	93	10	F07	0.65
116	82	22	F07	1.20
116	84	10	F08	-1.84
117	83	18	F06	0.00
117	83	7	F08	0.14
117	83	7	F05	0.00
117	91	18	F07	1.29
119	81	13	F06	-0.69
120	82	5	F08	1.35
120	88	12	F08	-1.25
121	75	7	F06	-0.73

Row	Col	%TW	Support	Inch
121	83	11	F08	0.43
121	87	8	F07	0.71
122	74	9	F07	0.69
123	77	7	F06	-0.81
123	81	11	F07	1.67
123	83	26	F07	0.12
123	83	4	F05	-0.07
123	83	11	F06	0.62
124	76	9	F06	0.67
124	82	5	F09	-1.60
124	82	11	F08	-1.46
124	82	13	F06	-1.41
125	91	12	F03	-2.06
126	82	12	F07	1.26
127	83	6	F07	0.07
128	92	12	F08	-1.21
130	92	11	F06	1.74
131	75	9	F06	-0.92
131	83	5	F08	0.09
132	76	6	F08	-1.32
132	80	5	F05	-1.23
132	92	10	F03	-1.83
135	83	12	F07	0.16
Total:	**293**			