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Docket Number 50-346

License Number NPF-3

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United States Nuclear Regulatory Commission  
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Subject: Technical Specifications 4.4.5.5.b and 6.9.1.5.b: Report of  
Steam Generator Tube Inservice Inspection Results

Gentlemen:

This letter is submitted in accordance with the Davis-Besse Nuclear Power Station, Unit Number 1, Operating License, Appendix A Technical Specifications. Technical Specification (TS) Surveillance Requirement 4.4.5.5.b and TS 6.9.1.5.b require Toledo Edison to submit the complete results of the Steam Generator (SG) tube inservice inspection.

During the Seventh Refueling Outage (August 31 - November 8, 1991) at the Davis-Besse Nuclear Power Station (DBNPS), the tubing in the Steam Generators (SGs) was examined using eddy current testing. Attachment 1 is a summary of the eddy current inspection results. The eddy current examinations were performed utilizing a magnetic bias bobbin probe for American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME) Code examinations and also for preventive maintenance informational examinations. A three coil Motorized Rotating Pancake Coil (MRPC) was used for defect clarification and verification. Single coil MRPC examinations were also performed in the sleeve zone regions for detection of Intergranular Attack (IGA) or high cycle fatigue indications. The extent of the steam generator tube inspections are summarized in Attachment 2 of this letter. An original six percent sample was performed in each steam generator. In addition, tubes referenced as "previous indication" tubes, lane region tubes and periphery tubes were also examined. The "previous indication" tubes examination results were compared against previous outage data (where possible) for indication of degradation progression. Attachment 3 is a summary of steam generator tube indications with depths greater than or equal to 20 percent through wall.

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Operating Companies  
Cleveland Electric Illuminating  
Toledo Edison

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Steam Generator 1-1(B) Special Interest Group A-1 tubes were examined to comply with Technical Specification Surveillance 4.4.5.0. Additional tubes were examined to provide preventive maintenance information. A total of 1898 or 12 percent of the tubes were examined utilizing the bobbin probe with 146 or one percent being examined utilizing MRPC. One tube was found with a through wall indication of less than 20 percent, two tubes had through wall indications between 20 and 39 percent, and four tubes had through wall indications greater than 39 percent. The four tubes with through wall indications greater than 39 percent were plugged.

Steam Generator 1-2(A) was examined to comply with Technical Specification Surveillance Requirement 4.4.5.0 by utilizing an original sample size of six percent. An indication requiring plugging in the original six percent random sample resulted in expanding the scope to include an additional 12 percent sample. Another indication requiring plugging in the 12 percent sample caused an additional 24 percent sample to be examined. In total, 7483 or 48 percent of the tubes were examined with the bobbin probe and included a six percent special interest tube selection. Three hundred nineteen or two percent of the tubes were also examined with MRPC. No tubes with a through wall indication of less than 20 percent were identified, eleven tubes had through wall indications between 20 and 39 percent, and nine tubes had through wall indications greater than 39 percent. The nine tubes with through wall indications greater than 39 percent were plugged.

The Seventh Refueling Outage inservice inspection process was completed on October 4, 1991. As a result of the inspection findings, the following steam generator tubes were plugged:

STEAM GENERATOR 1-1(B)

14-60  
75-60  
94-129  
98-127

STEAM GENERATOR 1-2(A)

84-66  
84-67  
84-68  
80-34  
82-68  
83-68  
58-52  
6-51  
60-09

A report on the number and extent of tubes inspected, location and percent of wall-thickness penetration for each indication of an imperfection, and identification of tubes plugged is further described in the attachments to this letter. The attachments summarize data extracted from ASEA Brown Boveri/Combustion Engineering's Steam Generator Eddy Current Examination Report (Document Number IR-ISI-127) for Davis-Besse, Unit Number 1, September/October 1991, which details the inspection findings. Tube and indication locations referenced in this summary correlate to standard Babcock and Wilcox Once Through Steam Generator tube sheet maps.

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Should further information be required, please contact  
Mr. Robert W. Schrauder, Manager - Nuclear Licensing, at  
(419) 249-2366.

Very truly yours,



RAS

Attachments

cc: A. B. Davis, Regional Administrator, NRC Region III  
J. B. Hopkins, NRC/NRR DB-1 Senior Project Manager  
W. Levis, DB-1 Senior Resident Inspector  
Utility Radiological Safety Board

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SUMMARY OF EDDY CURRENT  
INSPECTION RESULTS, DAVIS-BESSE 1991

	<u>SG 1-2(A)</u>	<u>SG 1-1(B)</u>
<u>Bobbin</u>		
Tubes Inspected	7483	1898
Qty >39% TWD	9	4
Qty 20-39% TWD	11	2
Qty <20% TWD	0	1
 <u>MRPC</u>		
Tubes Inspected	319	146
Qty >39% TWD	0	0
Qty 20-39% TWD	0	0
Qty <20% TWD	0	0

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SUMMARY OF THE EXTENT OF THE STEAM GENERATORS  
TUBE INSPECTIONS, DAVIS-BEESE 1991

LEGEND:           LTE = Lower Tube End                   LTS = Lower Tube Sheet  
                  UTE = Upper Tube End                   UTS = Upper Tube Sheet

LANDMARK NAMES:

Landmark names used for the steam generator supports are as follows from the lower head to the upper head:

LTE, LTS, 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, UTS, UTE

INSPECTION EXTENT:

All extents used during the analysis of the steam generator eddy current data are a from-to landmark designation, except for certain situations. For example, LTEUTE indicates an exam beginning at the lower head and ending at the upper head. Likewise, UTELTE would indicate an exam beginning from the upper head and ending at the lower head.

Other exams are partial exams within the tube end boundaries. An extent of 002003 indicates a test beginning from 002 and ending at 003. An exam of 009+2/-2 indicates an exam beginning 2" above support 009 and ending 2" below support 009. An extent of UTE+26" indicates the tube was tested from the upper tube end to an extent of 26" from the upper end. Most special extents such as these are indicative of MRPC probe examinations.

SUMMARY OF THE EXTENT OF THE STEAM GENERATORS  
TUBE INSPECTIONS, DAVIS-BESSE 1991

Component: SG 1-2(A)

Steam Generator Inspection Summary

*Number of Exams:	Extent:	± TWD			Probe:
		<20%	20-39%	>39%	
1	002003	0	0	0	B520MRPC3C (MRPC)
4	003004	0	0	0	B520MRPC3C (MRPC)
15	004005	0	0	0	B520MRPC3C (MRPC)
2	005006	0	0	0	B520MRPC3C (MRPC)
4	006007	0	0	0	B520MRPC3C (MRPC)
2	007008	0	0	0	B520MRPC3C (MRPC)
1	009+6/-6	0	0	0	B520MRPC3C (MRPC)
1	011010	0	0	0	B520MRPC3C (MRPC)
1	013+7/-7	0	0	0	B520MRPC3C (MRPC)
1	014	0	0	0	B520MRPC3C (MRPC)
280	015+2/-2	0	0	0	B510MRPCPH (MRPC)
1	015LTE	0	0	0	A510MULC (Bobbin)
5	015UTE	0	0	0	A510MULC (Bobbin)
2	015UTS	0	0	0	B520MRPC3C (MRPC)
7	LTEUTE	0	0	1	A480MULC (Bobbin)
4279	LTEUTE	0	15	12	A510MULC (Bobbin)
61	LTEUTE	0	0	0	D1893-1-A510 (Bobbin)
1	LTEUTS	0	0	0	A510MULC (Bobbin)
1	LTS001	0	0	0	B520MRPC3C (MRPC)
3	LTSUTE	0	0	0	A510MULC (Bobbin)
1	LTSUTE	0	0	0	D1893-1-A510 (Bobbin)
280	UTE+26"	0	0	0	B510MRPCPH (MRPC)
2	UTE+82"	0	0	0	B510MRPCPH (MRPC)
1	UTELTE	0	0	0	A480MULC (Bobbin)
3100	UTELTE	0	1	0	A510MULC (Bobbin)
2	UTELTE	0	0	0	D1893-1-A510 (Bobbin)
2	UTSLTE	0	0	0	A510MULC (Bobbin)
5	UTUTE	0	0	0	B52MRPC3C (MRPC)
TOTALS:		<20%	20-39%	>39%	

8085 EXAMINATIONS PERFORMED

No. Inds.:      0            16            13

\*See Note on page 3 of Attachment 2.

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SUMMARY OF STEAM GENERATOR TUBE INDICATIONS WITH  
DEPTHS GREATER THAN OR EQUAL TO 20% TWD, DAVIS-BESSE 1991

Steam Generator 1-2(A) (Continued)

All Indications of 20% TWD or Greater

Row/Tube No.	ITWD	Indicator Location (tube support plate - #inches)	Plugged
21 17	34	005 + 17.1	NO
26 20	27	005 + 16.5	NO
60 9	58	005 + 16.8	YES
60 9	32	005 + 16.5	
6 51	99	015 + 18.9	YES

20-39% TWD Indications:	16
>39% TWD Indications:	13
Number of >39% TWD Tubes:	9
*Total Number of Indications:	29

\*See Note on next page.



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SUMMARY OF THE EXTENT OF THE STEAM GENERATORS  
TUBE INSPECTIONS, DAVIS-BESSE 1991

Component: SG 1-1(B)

Steam Generator Inspection Summary

*Number of Exams:	Extent:	± TWD			Probe:
		<20%	20-39%	>39%	
1	005004	0	0	0	B520MRPC3C (MRPC)
1	008+2/-2	0	0	0	B520MRPC3C (MRPC)
1	009+2/-2	0	0	0	B520MRPC3C (MRPC)
1	009008	0	0	0	B520MRPC3C (MRPC)
135	015+2/-2	0	0	0	B510MRPCPH (MRPC)
3	015UTS	0	0	0	B520MRPC3C (MRPC)
778	LTEUTE	1	0	2	A510MULC (Bobbin)
12	LTEUTE	0	0	0	D1893-1-A510 (Bobbin)
135	UTE+26"	0	0	0	B510MRPCPH (MRPC)
1	UTE+82"	0	0	0	B510MRPCPH (MRPC)
1067	UTELTE	0	1	2	A510MULC (Bobbin)
12	UTELTE	0	0	0	D1892-1-A510 (Bobbin)
27	UTELTE	0	0	0	D1893-1-A510 (Bobbin)
1	UTEUTS	0	0	0	B520MRPC3C (MRPC)
2	UTS015	0	0	0	B520MRPC3C (MRPC)
6	UTSLTE	0	1	0	A510MULC (Bobbin)
1	UTSLTE	0	0	0	D1892-1-A510 (Bobbin)
TOTALS:		<20%	20-39%	>39%	

2184 EXAMINATIONS PERFORMED

No. Inds.: 1 2 4

\*NOTE: This summary details the extent tested per each examination probe used. The number of "examinations performed" (i.e., 8085 and 2184) will differ from the number of tubes tested. This is based on the fact that many tubes were tested to multiple extents and sometimes with more than one probe. The extent summary also includes the total number of indications per extent and probe.



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SUMMARY OF STEAM GENERATOR TUBE INDICATIONS WITH  
DEPTHS GREATER THAN OR EQUAL TO 20% TWD, DAVIS-BESSE 1991

Steam Generator 1-1(B)

All Indications of 20% TWD or Greater

Row/Tube No.	%TWD	Indicator Location (tube support plate - inches)	Plugged
14 60	46	UTE + 18.9	YES
140 20	33	009 + 34.5	NO
74 60	22	004 + 8.0	NO
75 60	57	008 + 37.1	YES
94 129	60	015 + 33.0	YES
98 127	47	015 + 32.9	YES

20-39% TWD Indications:	2
>39% TWD Indications:	4
Number of >39% TWD Tubes:	4
*Total Number of Indications:	6

\*NOTE: The number of indications within a given range of "% TWD" may differ from the number of tubes that have a "%TWD" within the same range. This is based on the fact that many tubes were tested to multiple extents and, therefore, may have multiple indications per tube.

SUMMARY OF STEAM GENERATOR TUBE INDICATIONS WITH  
 DEPTHS GREATER THAN OR EQUAL TO 20% TWD, DAVIS-BESSE 1991

Steam Generator 1-2(A)

All Indications of 20% TWD or Greater

Row/Tube No.	TWD	Indicator Location (tube support plate - inches)	Plugged
134 1	37	009 + 0.1	NO
83 69	36	004 + 8.8	NO
84 64	37	004 + 22.0	NO
84 66	33	004 + 17.0	YES
84 66	51	004 + 12.7	
84 66	36	004 + 11.8	
84 66	41	004 + 8.3	
84 67	42	004 + 13.1	YES
84 67	51	003 + 38.0	
84 67	50	003 + 23.5	
84 68	48	004 + 12.9	YES
84 68	51	004 + 6.7	
84 68	37	004 + 7.6	
86 66	28	004 + 0.4	NO
86 67	38	004 + 10.6	NO
76 65	35	007 + 26.2	NO
80 64	51	007 + 16.3	YES
81 68	34	007 + 0.1	NO
82 68	50	002 + 0.3	YES
83 68	26	003 + 32.2	YES
83 68	51	004 + 11.4	
65 51	36	004 + 14.7	NO
69 70	32	003 + 20.8	NO
68 52	57	004 + 15.7	YES