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CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
SPECIAL REPORT 87-04
RESULTS OF SECOND STEAM GENERATOR TUBE INSERVICE INSPECTION

Ref: ULNRC 1503, dated 4/28/87

The enclosed Special Report is submitted pursuant to the requirements of Callaway Technical Specification 4.4.5.5.b concerning the second Inservice Eddy Current Inspection of Steam Generators 'B' and 'C' performed from 4/7/87 to 4/17/87 during a planned maintenance outage. This report is also submitted to forward the final Westinghouse results of the inspection.

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Special Report 87-04
Westinghouse Field Service Report

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SPECIAL REPORT 87-04
RESULTS OF SECOND STEAM GENERATOR TUBE INSERVICE INSPECTION

This report is submitted in accordance with Technical Specification (T/S) 4.4.5.5.b which states:

"The complete results of the steam generator tube inservice inspection shall be submitted to the Commission in a Special Report pursuant to Specification 6.9.2 within 12 months following the completion of the inspection.

This Special Report shall include:

- (1) Number and extent of tubes inspected,
- (2) Location and percent of wall-thickness penetration for each indication of an imperfection, and
- (3) Identification of tubes plugged."

From 4/7/87 to 4/17/87 with the plant in Mode 5 - Cold Shutdown for a planned maintenance outage, the second Steam Generator (S/G) Eddy Current Inservice Inspection was performed on S/G's 'B' and 'C' to meet the surveillance requirements of T/S 3/4.4.5, "Steam Generators." The inspection was performed by Westinghouse Electric Corporation and their formal results are detailed in the Field Service Report (FSR) which is submitted with this Special Report.

Although the Westinghouse FSR provides details on the inspection, the results are summarized below and are numbered to correspond with the information requested by T/S 4.4.5.5.b:

- (1) Number/Extent of Inspected Tubes
 - (a) Steam Generator 'B': The initial 20% sample included a total of 1147 tubes which were inspected from the Hot Leg side; 1025 of these were full length tests and 122 were tested through the U-bend.
 - (b) Steam Generator 'C': The initial 20% sample included a total of 1165 tubes which were inspected from the Hot Leg side; 1043 of these were full length tests and 122 were tested through the U-bend.
 - (c) From this initial sample, eight tubes in S/G 'B' and 16 tubes in S/G 'C' were found to have new indications. Union Electric Company, therefore, made the decision to test an additional 59 tubes in S/G 'B' and 55 tubes in S/G 'C' in the area where the new indications were found.

- (2) Location/Percent of Wall-Thickness Penetration for Each Indication of Imperfection

See Tables 1 and 2

- (3) Identification of Tubes Plugged

<u>S/G 'B'</u>		<u>S/G 'C'</u>	
<u>Row</u>	<u>Column</u>	<u>Row</u>	<u>Column</u>
33	11	44	102
41	18	42	104
		38	108

- (4) Additional Information: Cumulative Tube Plugging for S/G's 'B' and 'C'

	<u>S/G 'B'</u>		<u>S/G 'C'</u>	
	<u>Row</u>	<u>Column</u>	<u>Row</u>	<u>Column</u>
Manufacturing	12	109	32	39
	15	41	47	26
			57	64
			58	74
Preservice Inspection	12	15	54	59
			53	87
			27	100
April 1987	33	11	44	102
Planned Outage	41	18	42	104
			38	108

TABLE 1

TUBE IMPERFECTIONS - STEAM GENERATOR 'B'

<u>Row</u>	<u>Column</u>	<u>Leg</u>	<u>Indication (% of Wall Thinning)</u>	<u>Location</u>	<u>Inch (+) (From Location)</u>
15	3	H	<20	3	9.7
9	4	H	<20	2	28.3
32	11	H	<20	V6	0.0
33	11	H	39	V6	0.0
33	11	H	PID	V6	0.0
33	11	H	22	V1	0.0
5	12	H	<20	7	37.0
5	12	H	INF	7	36.0
41	18	H	39	V4	0.0
41	18	H	PID	V4	0.0
41	18	H	<20	V1	0.0
41	20	H	24	V4	0.0
5	22	H	21	2	9.0
43	23	H	<20	3	43.5
45	24	H	<20	1	9.8
48	25	H	28	V5	0.0
47	26	C	INF	8	25.0
47	26	H	<20	V5	8.6

Key - Tables 1 and 2

PID - Pluggable Indication

INF - Indication Not Found

DI - Distorted Indication

UDS - Undefined Signal (plugging not required)

INR - Indication Not Recordable (<10%)

TS - Tube Sheet

V1,2,3,4,5,6 - Anti-Vibration Bars

1,2,3,4,5,6,7,8 - Tube Support Plate Numbers

UB - U-bend

TABLE 1 (cont.)

<u>Row</u>	<u>Column</u>	<u>Leg</u>	<u>Indication (% of Wall Thinning)</u>	<u>Location</u>	<u>Inch (+) (From Location)</u>
43	27	H	22	1	15.1
3	30	H	DI	6	36.9
45	30	H	<20	6	9.1
15	32	C	35	3	26.1
37	32	C	31	3	20.2
37	32	C	27	3	20.3
37	32	C	INF	4	20.0
45	32	C	<20	7	13.7
45	32	C	20	7	11.3
45	32	C	INF	7	37.3
1	33	H	UDS	2	15.6
5	34	H	<20	7	16.9
5	34	H	UDS	5	32.0
11	34	H	<20	1	4.0
35	34	H	INR	6	20.2
53	34	C	<20	5	13.2
32	40	H	30	2	27.9
1	43	H	<20	4	13.0
1	43	H	INF	3	13.0
12	45	H	29	3	20.4
48	50	C	23	3	25.7
48	50	C	31	3	27.0
41	52	C	23	4	16.9
41	52	C	DI	4	17.0
23	53	H	INR	5	33.3
29	56	H	<20	2	10.4
30	59	H	23	5	20.3

TABLE 1 (cont.)

<u>Row</u>	<u>Column</u>	<u>Leg</u>	<u>Indication (% of Wall Thinning)</u>	<u>Location</u>	<u>Inch (+) (From Location)</u>
9	60	C	INR	6	24.1
41	60	H	<20	3	34.5
41	64	C	21	7	32.0
45	70	H	<20	TS	15.5
11	74	C	22	7	1.1
41	74	H	<20	V4	0.0
41	74	H	<20	V5	0.0
47	74	H	<20	4	18.5
29	80	H	INR	5	34.5
29	80	C	<20	2	20.6
29	84	H	27	5	29.5
4	89	C	27	6	17.7
4	89	C	INF	5	18.0
29	90	H	<20	7	0.0
11	98	C	<20	TS	7.7
44	101	H	<20	V5	0.0
27	108	H	29	4	9.1
27	108	H	INF	4	7.0
29	113	H	<20	6	14.3
29	114	C	<20	7	21.5

TABLE 2

TUBE IMPERFECTIONS - STEAM GENERATOR 'C'

<u>Row</u>	<u>Column</u>	<u>Leg</u>	<u>Indication (% of Wall Thinning)</u>	<u>Location</u>	<u>Inch (+) (From Location)</u>
8	2	C	24	6	27.6
21	9	C	<20	5	10.7
29	9	H	<20	V5	0.0
9	10	C	<20	7	30.2
32	10	H	<20	V2	0.0
33	11	H	DI	4	7.0
36	16	H	<20	V4	0.0
43	21	H	<20	V5	0.0
43	21	H	<20	V5	0.0
44	22	H	<20	V4	0.0
44	22	H	20	V5	0.0
43	23	H	20	V5	0.0
48	25	H	28	V4	0.0
14	28	C	INF	4	1.0
14	28	C	21	3	37.8
14	28	C	INF	4	1.0
14	28	C	21	3	37.8
50	28	H	<20	V5	0.0
51	34	C	INR	7	18.0
19	42	C	<20	6	15.5
2	43	H	23	5	16.0
10	46	C	31	5	23.1
22	46	H	INF	5	10.0
22	46	H	<20	5	6.8
33	46	H	<20	7	27.7

TABLE 2 (cont.)

<u>Row</u>	<u>Column</u>	<u>Leg</u>	<u>Indication (% of Wall Thinning)</u>	<u>Location</u>	<u>Inch (+) (From Location)</u>
20	47	C	<20	2	23.1
22	47	C	33	7	25.0
11	49	C	INF	7	0.0
11	49	C	<20	6	36.6
15	50	C	DI	2	31.9
16	50	C	34	5	23.3
33	50	H	25	7	33.9
25	52	H	<20	7	39.4
39	56	C	23	3	17.6
41	56	H	<20	4	25.8
45	56	C	<20	2	3.1
50	57	H	INF	6	30.0
50	57	H	23	6	25.2
58	61	H	INF	2	15.0
58	61	H	24	3	16.9
23	62	H	<20	7	36.8
59	62	C	INF	8	35.0
59	62	C	<20	7	34.3
16	63	H	<20	2	31.0
38	68	C	34	2	37.9
7	77	H	25	TS	25.3
7	77	C	<20	3	7.4
27	78	C	22	7	20.3
49	78	H	INR	UB	0.0
13	83	C	23	TS	7.0
13	83	C	<20	4	39.1
13	83	C	INF	5	0.0

TABLE 2 (cont.)

<u>Row</u>	<u>Column</u>	<u>Leg</u>	<u>Indication (% of Wall Thinning)</u>	<u>Location</u>	<u>Inch (+) (From Location)</u>
13	84	H	<20	2	10.7
32	88	H	<20	4	28.0
32	88	H	INF	4	32.0
34	88	H	<20	7	3.4
29	90	H	23	3	26.0
49	93	H	<20	V5	0.0
50	94	H	<20	2	20.7
50	95	H	26	V5	0.0
23	96	H	<20	6	2.5
23	96	H	INR	3	15.0
31	98	H	<20	2	34.7
43	101	H	<20	4	18.5
44	101	H	<20	V3	0.0
44	102	H	36	V3	0.0
44	102	H	29	V4	0.0
44	102	H	20	V6	0.0
44	102	H	PID	V3	0.0
21	103	H	<20	2	25.6
26	103	H	INR	4	24.0
42	103	H	26	V5	0.0
33	104	H	<20	3	7.3
40	104	H	<20	V6	0.0
40	104	H	24	V5	0.0
40	104	H	<20	V3	0.0
42	104	H	37	V3	0.0
42	104	H	30	V4	0.0
42	104	H	PID	V3	0.0
40	105	H	22	V4	0.0

TABLE 2 (cont.)

<u>Row</u>	<u>Column</u>	<u>Leg</u>	<u>Indication (% of Wall Thinning)</u>	<u>Location</u>	<u>Inch (+) (From Location)</u>
14	106	H	24	7	33.3
14	106	H	INF	7	32.0
23	107	C	DI	7	20.0
38	107	H	<20	V3	0.0
38	107	H	29	V5	0.0
21	108	C	INR	3	30.0
38	108	H	40	V5	0.0
38	108	H	PID	V5	0.0
17	109	H	26	TS	15.9
33	110	H	23	V4	0.0
12	113	H	<20	5	22.5
30	114	H	23	V2	0.0
5	114	H	<20	V5	0.0
13	120	H	INR	3	0.0