

May 25, 2004

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop P1-137
Washington, DC 20555-0001

ULNRC05011



Ladies and Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 2004-006-00
"A" Steam Generator tube inspection results classified as C-3**

The enclosed licensee event report is submitted in accordance with Technical Specification 5.5.9 and 5.6.10(c) report the Refuel 13 Inservice Inspection Results for the "A" Steam Generator were classified as C-3 due to greater than one percent of the inspected tubes being defective. Included with this License Event Report is the Special Report and Attachment detailing the "A" Steam Generator tube inspection results.

This event was initially reported in Event Notification #40705 in which it stated that this report was required by an Administrative Technical Specification and that the "A" Steam Generator tubes do not meet the criteria for serious tube degradation and thus does not represent a degraded or unanalyzed condition.

This letter does not contain new commitments.

Sincerely,

A handwritten signature in black ink that reads "Warren A. Witt".

Warren A. Witt
Manager, Callaway Plant

Enclosure

JE22
A047

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NRC FORM 366 (7-2001)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104		EXPIRES 7-31-2004				
LICENSEE EVENT REPORT (LER)											
(See reverse for required number of digits/characters for each block)											
1. FACILITY NAME CALLAWAY PLANT UNIT 1					2. DOCKET NUMBER 05000 483		3. PAGE 1 OF 2				
4. TITLE "A" Steam Generator tube inspection results classified as C-3.											
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED		
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
4	26	2004	2004	- 006 - 00		5	25	2004	FACILITY NAME	DOCKET NUMBER	
										05000	
										05000	
9. OPERATING MODE		6		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR '': (Check all that apply)							
10. POWER LEVEL		0		20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)	
				20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)	
				20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)	
				20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)	
				20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		X OTHER	
				20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below or in NRC Form 366A	
				20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)			
				20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)			
				20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)			
				20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)			
12. LICENSEE CONTACT FOR THIS LER											
NAME Mark A. Reidmeyer							TELEPHONE NUMBER (Include Area Code) (573) 676-4306				
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT											
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX		
14. SUPPLEMENTAL REPORT EXPECTED							15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)					X	NO					
16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)											
At 1906 CDT, 4/26/04, in Event Notification # 40705, Callaway reported the following:											
<p>"During Refueling Outage RF13, interim results of "A" Steam Generator (S/G) tube inspections indicate 59 tubes out of 5341 tubes (i.e., greater than 1 percent) have been determined to be defective. This S/G tube inspection result for the "A" S/G is classified as category C-3 in accordance with Technical Specification 5.5.9, Table 5.5.9-2. Per NUREG 1022, Section 3.2.4 Discussion (A)(3), the present C-3 classification of the "A" S/G tubes does not meet the listed criteria for serious S/G tube degradation and thus is not a degraded or unanalyzed condition. Since this report is required by Administrative Technical Specification 5.5.9, this notification is being listed as an "Other Unspecified Requirement".</p> <p>All defective tubes will be removed from service before the S/G is returned to service. There were no adverse safety consequences or implications as a result of this event. This event did not adversely affect the safe operation of Callaway Plant or the health and safety of the public."</p> <p>This LER is submitted in compliance with Technical Specification 5.5.9 and 5.6.10c requirements and not due to an actual serious S/G tube degradation. Final results from Steam Generator A examinations resulted in a total of 100 tubes being plugged.</p>											

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
Callaway Plant Unit 1	05000483	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 2
		2004	- 006	- 00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

I. DESCRIPTION OF THE REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION

This condition is being submitted per Technical Specification 5.5.9 and 5.6.10c requirements and reported as an "Other Unspecified Requirement" because this does not represent an actual serious S/G tube degradation as discussed in NUREG 1022 Revision 2, Section 3.2.4.

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

This condition was discovered during Refuel 13 while in Mode 6 with the core off loaded.

C. STATUS OF STRUCTURES, SYSTEMS OR COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

Callaway Plant was in Mode 6 with the core off loaded during Refuel 13.

D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIMES

See attached "Special Report to the NRC – Steam Generator A (EBB01A) Categorized as C-3 Condition In Refuel 13" and "Attachment 1 – Indications Identified in Steam Generator A During RF13".

SPECIAL REPORT TO THE NRC
STEAM GENERATOR A (EBB01A) CATEGORIZED AS C-3 CONDITION IN
REFUEL 13

At 1711 on 04/26/04, AmerenUE Callaway Plant determined that Steam Generator 'A' qualified as Category C-3 in accordance with the requirements of Technical Specification (T/S) 5.5.9, Table 5.5.9-2. At 1906 that same day, the required ENS notification #40705 was made to the NRC Operations Center per 10CFR50.72(b)(2).

Additionally, T/S 5.5.9 refers to T/S 5.6.10 for further reporting requirements. T/S 5.6.10(c) states, "Results of steam generator tube inspections, which fall into Category C-3, shall be reported to the Commission within 30 days and prior to resumption of plant operations. This report shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence."

This report is intended to satisfy that requirement.

Callaway Steam Generator History

The Westinghouse Model F steam generators installed at Callaway consist of approximately 78% low temperature mill annealed (LTMA) Alloy 600 tubing and 22% (innermost 10 rows) Alloy 600 thermally treated (TT) tubing.

Callaway Plant first identified primary and secondary side Stress Corrosion Cracking (SCC) of the steam generator tubes in 1995 (Refuel 7). Since that outage, all four steam generators have been inspected each refueling, with the result that an increasing number of tubes have been repaired due to corrosion of the tubes at the hot leg top-of-tube sheet as shown in Figure 1 and Table 1. Sample Rotating Pancake Coil (RPC) inspections are performed each outage at the support plates (dents), low row U-bends, and free span (dings) areas to provide early identification of any cracking that may occur in these locations. None have been identified to date.

The trend of top-of-tube sheet indications in all four steam generators is provided in Figure 1.

The extent of the tube degradation found in Refuel 13 was not unexpected. Past inspection results and tube degradation prediction models indicated that the degradation of the mill-annealed tubing would accelerate as the plant ages. This has generally been true of other plants with original Westinghouse steam generators fabricated with Alloy 600 LTMA tubing.

The tube degradation model for Callaway was updated prior to Refuel 12. Based on past experience, plant operating conditions, and experience at other plants, 163 tubes were predicted to be defective due to SCC (ID and OD) and Intergranular Attack / Stress Corrosion Cracking (IGA/SCC). The actual number identified was 150 in all four steam generators at the expansion transition or in the expanded portion of the tubing found using a Rotating Pancake Coil (RPC). Of the tubes found with tube sheet defects, 100 were found in steam generator A, as shown in Table 2 and Attachment 1. Since the number of defective tubes exceeded 1% of the inspected population for RPC inspection, the inspection results are classified as C-3.

As Figure 1 demonstrates, steam generator A has consistently had more SCC indications than any other steam generator. No service-induced degradation was identified in the 600 TT tubing.

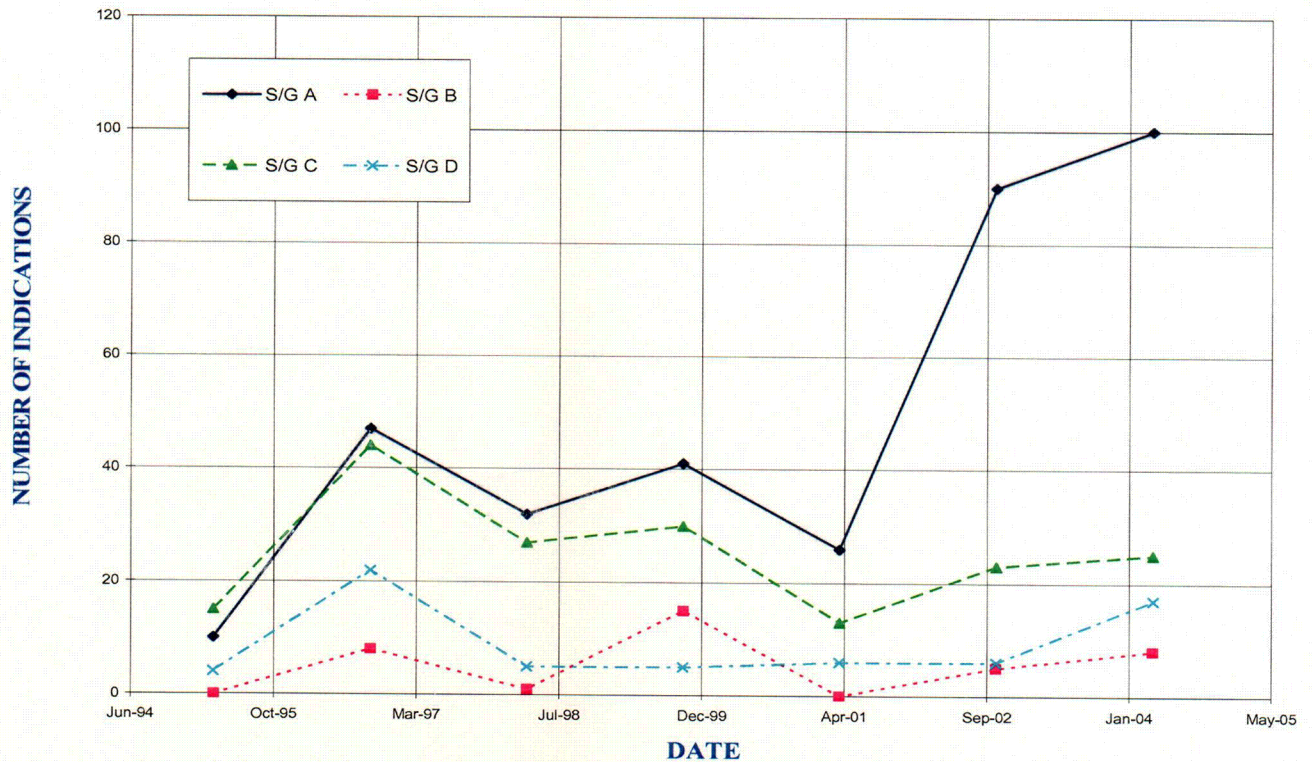


Figure 1 Top-of-Tube Sheet Cracks-Trending by Steam Generator

Examination of Steam Generator A

The original inspection scope for 'A' steam generator was as follows:

- 100% (5341 tubes) of the hot leg top-of-tubesheet with a +Point RPC probe
- 100% inspection of the full-length of all the tubes. All straight sections were inspected with a standard bobbin coil probe. 5100 U-bends were inspected with a standard bobbin coil probe, the remaining 241 U-bends were inspected with a +Point RPC probe.

Upon completion of the original scope of inspection, a total of one hundred (100) tubes (as shown on Table 1) required repair due to stress-corrosion cracking or IGA indications at the expansion transition region or in the expanded portion of the tube.

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No indications were discovered in the extended region added to the inspection scope in Refuels 12 and Refuel 13 using the new H-star requirements for the top-of-tube sheet inspections.

Investigation of Cause of Degradation

Stress Corrosion Cracking (PWSCC/ODSCC) has been identified in the hot leg tube sheet expansion and transition regions in all Westinghouse designed steam generators (operating at 607°F or above) fabricated with LTMA tubing which were not peened prior to the start of plant operations.

Callaway Plant has determined that, based on the definition of an active damage mechanism provided in the EPRI PWR Steam Generator Examination Guidelines, hot leg expansion axial/circumferential PWSCC and hot leg top-of-tube sheet ODSCC/IGA are active damage mechanisms in Callaway's steam generators.

Stress Corrosion Cracking occurs in the high stress expansion transition located at or below the top of the tube sheet and can initiate from either the primary or secondary side. Stress Corrosion Cracking occurs due to the combination of the following:

- High residual stresses in the expanded portion of the tubes and particularly at the expansion transition,
- Elevated temperature for an extended period of time,
- Susceptible material such as Alloy 600 LTMA tubing

All indications identified at the top of the tube sheet are small in size as shown in Figures 2 and 3. None exceeded the condition monitoring limits for the specific type of degradation identified. No in-situ testing was performed based on screening criteria developed in the Plant's Degradation Assessment in accordance with the EPRI Steam Generator In-Situ Pressure Test Guidelines. The screening criterion are specified based on the type of degradation that exists or could potentially exist in the steam generators. No indications in Steam Generator A exceeded these screening criterion.

There were no new forms of degradation found in Steam Generator A. All forms of degradation were anticipated and addressed in the Refuel 13 Degradation Assessment.

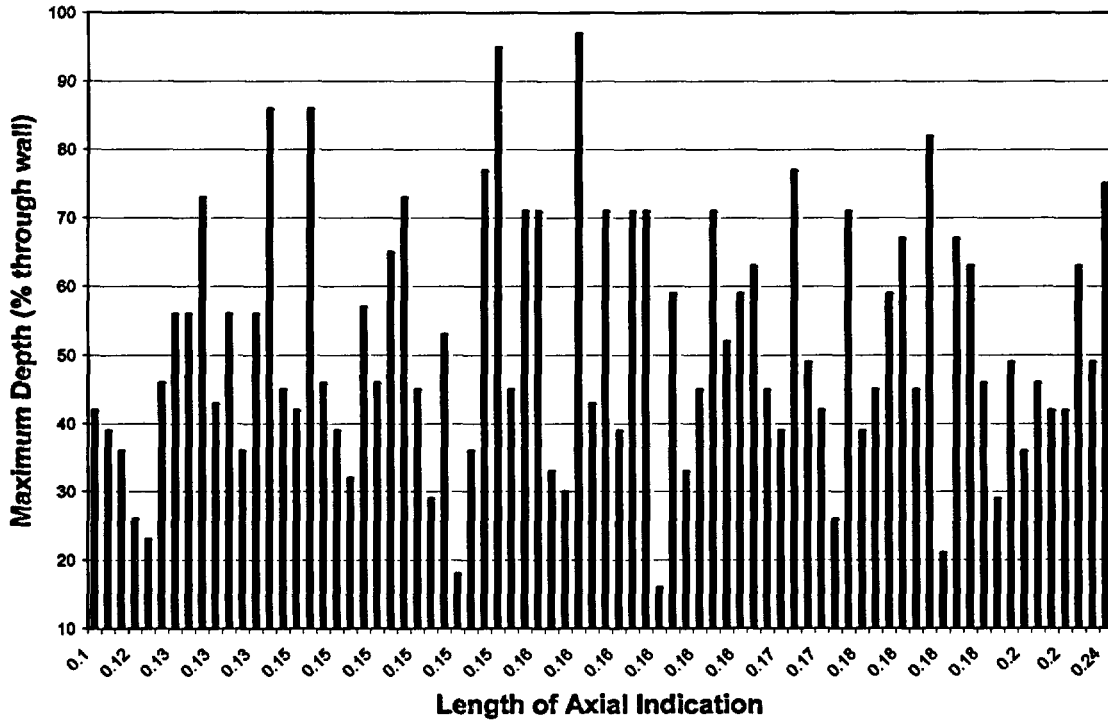


Figure 2 Refuel 13 Steam Generator Axial Indications

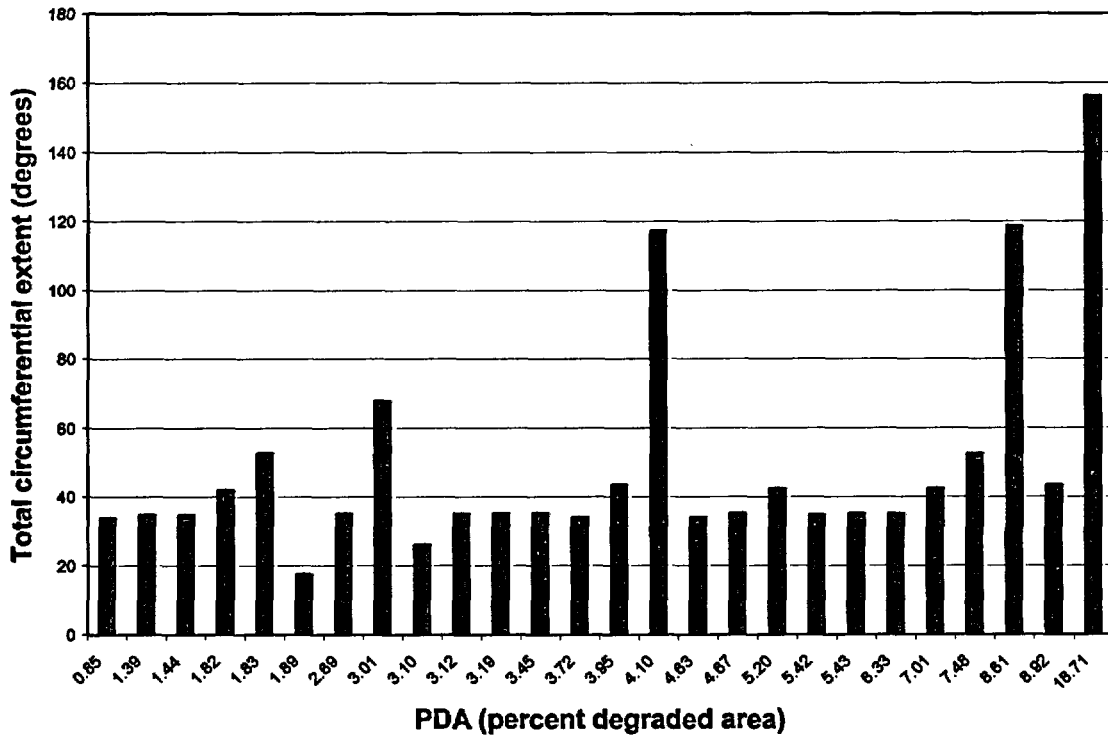


Figure 3 Refuel 13 Steam Generator A Circumferential Indications

Table 1 Steam Generator A Indications and Tubes Repaired Since Refuel 7

Indication	RF07	*RF08	RF09	**RF10	RF11	RF12	RF13
Axial ID	5	9	14	15	23	39	77
Circumferential ID	4	26	17	21	2	43	25
Axial OD	0	0	1	0	0	0	0
Axial unknown	1	3	0	0	0	0	0
Circumferential OD	2	1	0	3	1	0	0
Circumferential unknown	0	6	0	0	0	0	0
Volumetric indications	0	5	0	3	0	4	0
Mixed Mode ID indications	0	0	0	0	0	0	1
Total tubes with TTS indications	11	47	32	41	26	84	100
Tubes plugged for AVB wear	0	0	0	0	0	3	0
Tube plugged for TSP wear	0	0	0	1	0	4	0
Tube plugged for loose parts	0	0	0	0	0	0	0
Total tubes repaired	11	48	32	42	26	91	100

* 44 tubes sleeved with Westinghouse Laser Welded Sleeves at the top of the tube sheet.

** 31 tubes sleeved with Framatome Electrosleeves at the top of the tube sheet.

Refuel 7 – 1 tube has both axial and circumferential PWSCC
 Refuel 12 – 2 tubes have both axial and circumferential PWSCC
 Refuel 13 – 1 tube has both axial and circumferential PWSCC

Table 2 Steam Generator A Tubes Plugged

Inspection Period	Steam Generator A
Pre-service	8
Refuel 1	0
Spring '87	--
Refuel 2	3
Refuel 3	--
Refuel 4	6
Refuel 5	--
Refuel 6	19
Refuel 7	11
Refuel 8	4
Refuel 9	32
Refuel 10	11
Refuel 11	26
Refuel 12	91
Refuel 13	100
Total	311

Steam Generator A is 5.53% plugged
 Equivalent plugging due to sleeves is 5.57%

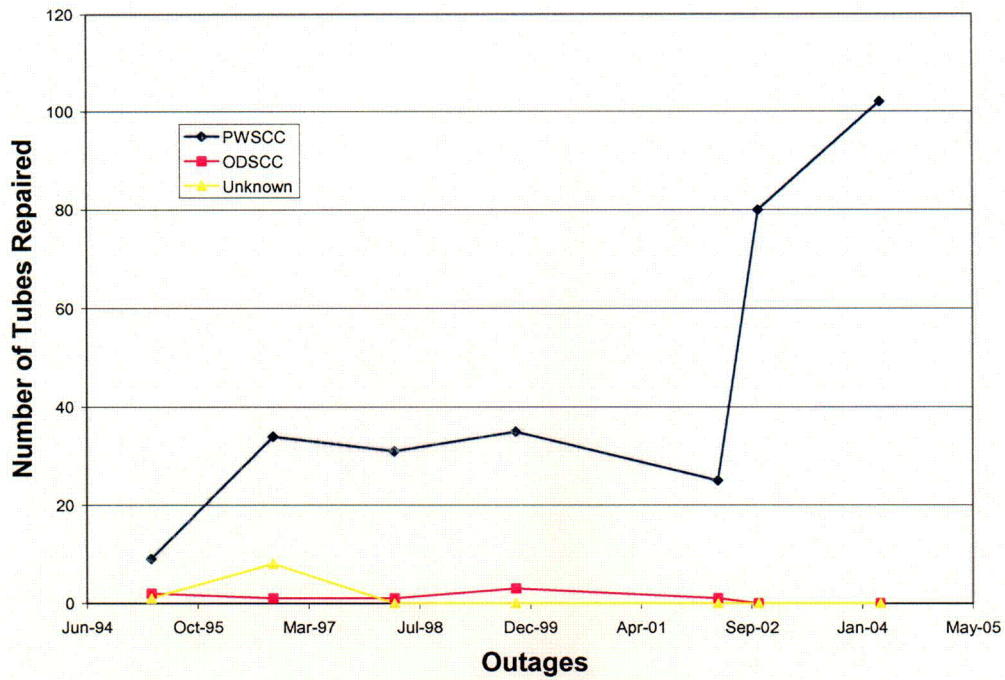


Figure 4 Steam Generator A Cumulative TTS Degradation

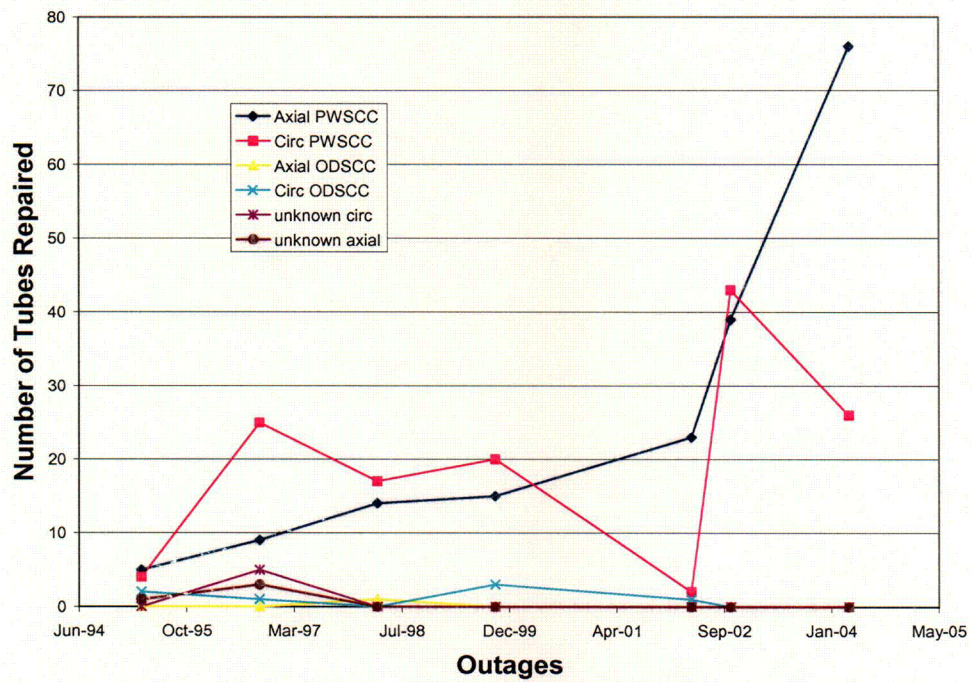


Figure 5 Steam Generator A Cumulative TTS Degradation by Type

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Actions to Prevent Recurrence

All tubes with detected degradation at the top of the tube sheet were plugged in Steam Generator A. Additionally, all tubes with circumferential crack indications were stabilized. Callaway Plant anticipates similar degradation will be present in the steam generators at the end of Cycle 14. This is based on industry operating experience with Alloy 600 LTMA tubing and plant specific inspection results for the last 7 inspections. Callaway will replace all four steam generators in Refuel 14.

Callaway Plant will continue to follow the requirements of NEI 97-06 and the referenced EPRI guidelines for future cycles of operation. These guidelines include requirements for primary and secondary water chemistry, primary to secondary leakage monitoring, inspection scope and frequency, pressure testing of degraded tubes, and integrity assessments to ensure tube structural and leakage integrity.

Condition Monitoring and Operational Assessments were performed in accordance with the EPRI Integrity Assessment Guidelines to address the as-found condition of the steam generator tubing to justify operation through Cycle 14. The assessments are based on identified degradation and use conservative analysis to assure tube structural and leakage integrity for the entire cycle length.

ATTACHMENT 1 – INDICATIONS IDENTIFIED IN STEAM GENERATOR A DURING RF 13

ROW	COL	REPAIR		REASON FOR REPAIR	IN-SERVICE
		HOT LEG	COLD LEG		
11	33	PLUGGED	PLUGGED	SAI @ TSH +0.05	NO
11	48	PLUGGED	PLUGGED	SAI @ TSH -0.35	NO
"	"	PLUGGED	PLUGGED	SAI @ TSH +0.06	NO
11	53	PLUGGED	PLUGGED	SAI @ TSH +0.14	NO
11	54	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
11	57	PLUGGED	PLUGGED	SAI @ TSH +0.11	NO
12	59	PLUGGED	PLUGGED	SAI @ TSH +0.08	NO
12	74	PLUGGED	PLUGGED	SAI @ TSH +0.12	NO
12	96	PLUGGED	PLUGGED	SAI @ TSH -0.00	NO
13	51	PLUGGED	PLUGGED	SAI @ TSH +0.00	NO
14	60	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
15	40	PLUGGED	PLUGGED	SAI @ TSH +0.04	NO
16	55	PLUGGED	PLUGGED	SAI @ TSH -0.18	NO
16	57	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
16	65	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.18	NO
16	68	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
17	36	PLUGGED	PLUGGED	SAI @ TSH +0.06	NO
18	20	PLUGGED	PLUGGED	MAI @ TSH +0.06	NO
18	47	PLUGGED	PLUGGED	SAI @ TSH +0.06	NO
19	44	PLUGGED	PLUGGED	MAI @ TSH +0.03	NO
19	50	PLUGGED	PLUGGED	SAI @ TSH +0.05	NO
19	67	PLUGGED	PLUGGED	SAI @ TSH +0.15	NO
19	74	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.15	NO
19	86	PLUGGED	PLUGGED	SAI @ TSH +0.09	NO
19	97	PLUGGED	PLUGGED	SAI @ TSH +0.04	NO
19	100	PLUGGED	PLUGGED	SAI @ TSH -0.06	NO
20	52	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.08	NO
20	67	PLUGGED	PLUGGED	SAI @ TSH +0.12	NO
20	85	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
21	36	PLUGGED	PLUGGED	SAI @ TSH +0.09	NO
21	46	PLUGGED	PLUGGED	MAI @ TSH +0.05	NO
21	52	PLUGGED	PLUGGED	MAI @ TSH +0.09	NO
21	85	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.13	NO
22	38	PLUGGED	PLUGGED	SAI @ TSH +0.15	NO
22	52	PLUGGED	PLUGGED	MAI @ TSH -0.09	NO
22	68	PLUGGED	PLUGGED	SAI @ TSH +0.04	NO
22	71	PLUGGED	PLUGGED	MAI @ TSH +0.07	NO
22	90	PLUGGED	PLUGGED	MAI @ TSH -0.03	NO
23	71	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH -0.25	NO
"	"	PLUGGED-STABILIZED	PLUGGED	SAI @ TSH +0.14	NO
23	83	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.02	NO
23	88	PLUGGED	PLUGGED	SAI @ TSH -0.03	NO
23	94	PLUGGED	PLUGGED	MAI @ TSH +0.09	NO
24	101	PLUGGED	PLUGGED	MAI @ TSH +0.08	NO
25	66	PLUGGED	PLUGGED	MAI @ TSH +0.10	NO

ATTACHMENT 1 – INDICATIONS IDENTIFIED IN STEAM GENERATOR A DURING RF 13

26	43	PLUGGED	PLUGGED	SAI @ TSH +0.07	NO
26	52	PLUGGED	PLUGGED	SAI @ TSH +0.11	NO
26	56	PLUGGED	PLUGGED	SAI @ TSH +0.05	NO
26	72	PLUGGED	PLUGGED	SAI @ TSH +0.06	NO
27	73	PLUGGED	PLUGGED	SAI @ TSH -0.00	NO
27	75	PLUGGED	PLUGGED	SAI @ TSH +0.06	NO
27	85	PLUGGED	PLUGGED	SAI @ TSH +0.06	NO
27	88	PLUGGED	PLUGGED	SAI @ TSH +0.03	NO
30	45	PLUGGED	PLUGGED	SAI @ TSH -0.02	NO
30	61	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.10	NO
30	96	PLUGGED-STABILIZED	PLUGGED	MMI @ TSH +0.11	NO
31	53	PLUGGED	PLUGGED	MAI @ TSH +0.11	NO
32	52	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.08	NO
32	61	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH -0.17	NO
32	93	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.06	NO
33	69	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.05	NO
33	100	PLUGGED	PLUGGED	SAI @ TSH +0.03	NO
35	53	PLUGGED-STABILIZED	PLUGGED	MCI @ TSH +0.11	NO
35	63	PLUGGED	PLUGGED	SAI @ TSH +0.05	NO
35	94	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.12	NO
35	108	PLUGGED	PLUGGED	SAI @ TSH +0.05	NO
36	99	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
36	102	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
37	103	PLUGGED	PLUGGED	SAI @ TSH +0.05	NO
38	89	PLUGGED	PLUGGED	MAI @ TSH +0.11	NO
38	91	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.13	NO
38	97	PLUGGED	PLUGGED	SAI @ TSH +0.14	NO
39	84	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.10	NO
39	89	PLUGGED	PLUGGED	SAI @ TSH +0.04	NO
40	51	PLUGGED	PLUGGED	SAI @ TSH +0.09	NO
40	53	PLUGGED	PLUGGED	SAI @ TSH -0.01	NO
40	58	PLUGGED	PLUGGED	SAI @ TSH +0.03	NO
40	60	PLUGGED	PLUGGED	SAI @ TSH +0.08	NO
41	62	PLUGGED-STABILIZED	PLUGGED	MCI @ TSH +0.11	NO
41	85	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
41	86	PLUGGED	PLUGGED	SAI @ TSH +0.10	NO
42	54	PLUGGED	PLUGGED	SAI @ TSH +0.04	NO
42	57	PLUGGED	PLUGGED	SAI @ TSH +0.03	NO
43	57	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.05	NO
43	62	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH -0.03	NO
44	50	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.04	NO
44	54	PLUGGED	PLUGGED	MAI @ TSH +0.06	NO
45	71	PLUGGED	PLUGGED	SAI @ TSH +0.01	NO
45	74	PLUGGED	PLUGGED	MAI @ TSH +0.08	NO
45	82	PLUGGED	PLUGGED	SAI @ TSH +0.05	NO
46	59	PLUGGED-STABILIZED	PLUGGED	MCI @ TSH +0.11	NO
46	74	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.11	NO
47	73	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH +0.04	NO
49	66	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH -0.03	NO

ATTACHMENT 1 – INDICATIONS IDENTIFIED IN STEAM GENERATOR A DURING RF 13

50	61	PLUGGED	PLUGGED	MAI @ TSH +0.06	NO
50	62	PLUGGED	PLUGGED	MAI @ TSH +0.05	NO
51	55	PLUGGED	PLUGGED	SAI @ TSH -0.06	NO
51	62	PLUGGED-STABILIZED	PLUGGED	MCI @ TSH +0.06	NO
51	80	PLUGGED-STABILIZED	PLUGGED	SCI @ TSH -0.13	NO
54	61	PLUGGED	PLUGGED	SAI @ TSH +0.11	NO
55	60	PLUGGED	PLUGGED	SAI @ TSH +0.17	NO
55	61	PLUGGED	PLUGGED	MAI @ TSH +0.14	NO

SAI Single Axial Indication
 MAI Multiple Axial Indication
 SCI Single Circumferential Indication
 MCI Multiple Circumferential Indication
 MMI Mixed Mode Indication
 TSH Tube Sheet Hot