

May 19, 2005

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

ULNRC05154



Ladies and Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 2005-002-00
Plant Shutdown required by Technical Specification 3.7.8 for an Inoperable
train of Essential Service Water**

The enclosed licensee event report is submitted in accordance with 10CFR50.73(a)(2)(i)(A) to report an event where a plant shutdown occurred because the Essential Service Water system was not returned to an Operable status within the time allowed by Technical Specifications.

This letter does not contain new commitments.

Sincerely,

A handwritten signature in black ink, appearing to read "C. R. Younie".

C. R. Younie
Manager, Callaway Plant

Enclosure

JE22

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Mr. Bruce S. Mallett
Regional Administrator
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-4005

Senior Resident Inspector
Callaway Resident Office
U.S. Nuclear Regulatory Commission
8201 NRC Road
Steedman, MO 65077

Mr. Jack N. Donohew (2 copies)
Licensing Project Manager, Callaway Plant
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Mail Stop 7E1
Washington, DC 20555-2738

Missouri Public Service Commission
Governor Office Building
200 Madison Street
PO Box 360
Jefferson City, MO 65102-0360

Records Center
Institute of Nuclear Power Operations
700 Galleria Parkway
Atlanta, GA 30339

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Callaway Plant Unit 1	2. DOCKET NUMBER 05000 483	3. PAGE 1 OF 4
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4. TITLE
Plant shutdown required by Technical Specification 3.7.8 for an Inoperable train of Essential Service Water

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
3	26	2005	2005	- 002 -	00	5	19	2005	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE
1

10. POWER LEVEL
100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFRs: (Check all that apply)

<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(v)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME M. A. Reidmeyer, Regional Regulatory Affairs Supervisor	TELEPHONE NUMBER (Include Area Code) (573) 676-4306
--	--

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED
 YES (If yes, complete 15. EXPECTED SUBMISSION DATE) NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

At 0300, 3/23/05, 72-hour Technical Specification Action 3.7.8.A was entered when a pinhole leak was discovered in "B" Essential Service Water (ESW) system between the "B" ESW pump strainer and discharge isolation valve. Subsequent ultrasonic testing (UT) determined that approximately seven linear feet of piping in the "B" ESW train was affected and required replacement. UT testing was satisfactorily performed on the identical section of "A" ESW train to ensure a similar problem did not exist.

"B" ESW train piping replacement was performed in accordance with planned work documents, however at 2100, 3/25/05 all necessary repairs and retests had not been completed. Although only 66 hours had expired since entering 72-hour Technical Specification Action 3.7.8.A, Callaway Plant proactively decided to commence a reactor plant shutdown in accordance with Technical Specification Action 3.7.8.B for an Inoperable "B" Essential Service Water train.

At 0624, 3/26/05 the reactor was declared shutdown and Callaway Plant entered Mode 3. At 0249, 3/27/05 all repairs and retests were completed on the "B" ESW train and it was declared Operable. Instead of beginning a return to operation, plant management decided to perform additional discretionary work to enhance unit reliability and as a result, Callaway did not return to power until 1907, 4/2/05.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Callaway Plant Unit 1	05000483	2005	- 002	- 00	2 OF 4

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 event is reportable per 10CFR50.73(a)(2)(i)(A), plant shutdown required by Technical Specifications.

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

Callaway Plant was in Mode 1 at 100 percent power.

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

"B" train of Essential Service Water (ESW) was Inoperable with repairs in progress to restore the "B" train to Operable status.

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

At 0300, 3/23/05, 72-hour Technical Specification Action 3.7.8.A was entered when a pinhole leak was discovered in "B" Essential Service Water (ESW) system between the "B" ESW pump strainer and discharge isolation valve. Subsequent ultrasonic testing (UT) determined that approximately seven linear feet of piping in the "B" ESW train was affected and required replacement. UT testing was satisfactorily performed on the "A" ESW train to ensure a similar problem did not exist.

"B" ESW train piping replacement was performed in accordance with planned work documents, however at 2100, 3/25/05 all necessary repairs and retests had not been completed. Although only 66 hours had expired since entering 72-hour Technical Specification Action 3.7.8.A, Callaway Plant proactively decided to commence a reactor plant shutdown in accordance with Technical Specification Action 3.7.8.B for an Inoperable "B" Essential Service Water train. Per 10CFR50.72(b)(2)(i), any initiation of a plant shutdown required by T/S requires notification of the NRC within 4 hours of the initiation. At 2112, Event Notification 41527 was filed with the NRC Operations Center concerning the initiation of the plant shutdown.

At 0300, 3/26/05, with reactor power at 28 percent, Callaway entered Technical Specification Action 3.7.8.B.1 which required the reactor plant to be in Mode 3 within 6 hours and Mode 5 in 36 hours. At 0624, 3/26/05 the reactor was declared shutdown and Callaway Plant entered Mode 3. At 0249, 3/27/05 all repairs and retests were completed on the "B" ESW train and it was declared Operable.

Although all repairs to the "B" train of ESW had been completed, it was decided to maintain the unit shutdown and perform additional discretionary work to enhance unit reliability. Examples of the work additions included:

- Repair of a leak on the gas system used to cool the main electrical generator
 - Examine and adjust valves used to control the flow of non-radioactive water through the main condenser.
- All discretionary repairs were completed and Callaway Plant entered Mode 2 reactor startup, at 0316, 4/2/05. At 1904, Callaway Plant paralleled the main electrical generator to the grid and returned to service.

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

E. METHOD OF DISCOVERY OF EACH COMPONENT, SYSTEM FAILURE, OR PROCEDURAL ERROR

The leak on the "B" ESW train was identified during the performance of regularly scheduled surveillances.

II. EVENT DRIVEN INFORMATION

A. SAFETY SYSTEMS THAT RESPONDED

Not applicable for this event.

B. DURATION OF SAFETY SYSTEM INOPERABILITY

"B" train of ESW was Inoperable from 0300, 3/23/05 until 0249, 3/27/05. The duration of Inoperability was 95 hours 49 minutes.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT.

This event was determined to be of very low risk significance.

III. CAUSE(S) OF THE EVENT AND CORRECTIVE ACTION(S)

This event is documented in Callaway Action Request (CAR) 200501838. A Root Cause Analysis (RCA) team was assembled to review this event, determine the cause of the event, and develop corrective action to prevent reoccurrence. The final RCA report was documented in CAR 200501838.

ROOT CAUSE (RC)

RC-1: Under-Deposit Corrosion that was exacerbated by Microbiologically Influenced Corrosion (MIC).

In a report provided by an outside consultant, it was documented:

"...the primary root cause of the failure is a combination of influencing factors that occurred over an extended period, perhaps years. These factors include:

1. Under-deposit corrosion caused by an oxygen concentration gradient at a barrier between the base metal surface and the bulk water was responsible for the initiation of the lateral corrosion.
2. The barrier consisted of corrosion products and debris deposited at the failure site because of flow and design factors, i.e. stagnant conditions at the corrosion site and the continuous flow to the prelube tank. Although not documented, the presence of the welds may have been a contributing factor to the initiation of the lateral anodes.
3. MIC was not a primary factor in the root cause, but there is sufficient evidence to indicate microorganisms have affected the corrosion process to the degree that the mechanisms of corrosion persisted over a long period of time."

CORRECTIVE ACTION to PREVENT RECURRENCE (CATPR)

CATPR-1: Horizontal piping sections upstream and downstream of ESW Pump B Discharge Isolation Valve EFV0005, up to each 90 degree elbow, were replaced with new carbon steel piping.

The root cause team could not determine what the actual mechanism was for the initiation of the under-deposit corrosion. The identical section of piping in the "A" train of ESW was tested using Ultrasonic Testing (UT) and determined to not have the same degradation as the "B" train.

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

The team looked at pump operating history, pump replacement due to degraded flow, potential impact due to the pH excursions in the Ultimate Heat Sink, MIC sample results, piping inspection videos, etc. and all data failed to identify a failure starting mechanism.

Due to the corrosion mechanism identified, the pipe replacement is adequate to prevent the reoccurrence of under-deposit corrosion in the discharge of the "B" ESW pump. The extent of condition UT evaluations was an adequate sample population to provide confidence that there is not wholesale under-deposit corrosion in the ESW system.

IV. PREVIOUS SIMILAR EVENTS

A review of the Callaway Action Request System (CARS) was conducted to determine if there were any previous similar events. This review encompassed the time frame of 3/25/02 to 3/25/05. Eleven previous CAR documents were identified that documented leaks in the ESW system. None of these events resulted in a reportable condition. A review was also conducted of LERs submitted within the last three years and no similar LERs were found.

V. ADDITIONAL INFORMATION

The system and component codes listed below are from the IEEE Standard 805-1984 and IEEE Standard 803A-1984 respectively.

System: BI

Component: Not Applicable – there were no individual component failures associated with this event.