

May 19, 2005

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

ULNRC05153



Ladies and Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 2005-003-00
Lo-Lo Steam Generator level results in actuation of Reactor Protection System
and Auxiliary Feedwater System**

The enclosed licensee event report is submitted in accordance with 10CFR50.73(a)(2)(iv)(A) to report an event which resulted in actuation of the Reactor Protection System and Auxiliary Feedwater System.

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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NRC FORM 366 (6-2004)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0104	EXPIRES: 06/30/2007
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 5
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4. TITLE
Lo-Lo Steam Generator level results in actuation of Reactor Protection System and Auxiliary Feedwater System

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	29	2005	2005	- 003 -	00	5	19	2005	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 3	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)									
10. POWER LEVEL 0	<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)(iii)(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)(iii)(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)(iii)(A)	<input checked="" 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 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
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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	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO				

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

On 3/29/05 while in Mode 3, preparations were underway to perform a leak test of "C" Steam Generator (S/G) Main Feedwater Isolation Valve AEFV0041. While establishing necessary initial conditions, S/G level oscillations began to occur. As part of the leak test, main feedwater flow was isolated to the "C" S/G. Due to a low differential between the discharge pressure of the condensate pump being used to maintain S/G levels and main steam header pressure, leakage past AEFV0041 sustained "C" S/G level until the "C" S/G Bypass Feedwater Regulating Valve was manually isolated. This isolation of flow to "C" S/G resulted in level decreasing until a low level alarm actuated. After initiating auxiliary feedwater flow, level initially increased but subsequently began decreasing until a reactor trip occurred due to low-low water level in "C" S/G. Plant systems responded as required and all systems were stabilized at normal Mode 3 conditions. A Root Cause Analysis team concluded that this event occurred because the general operating procedure and the leak test procedure were deficient and on-shift operators decided not to utilize a start-up feed pump verses the condensate pump. Corrective actions included revising the test procedure and covering this event in future licensed operator training.

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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 under 10CFR50.73(a)(2)(iv)(A), as an actuation of the Reactor Protection System (RPS) and Auxiliary Feedwater System (AFW).

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

Callaway Plant was in Mode 3 at 0 percent power.

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

On 3/26/05, Callaway Plant completed a shutdown in compliance with Technical Specifications in order to complete repairs to the "B" train of Essential Service Water (ESW). Repairs had been completed and "B" ESW train had been declared Operable at 0249, 3/27/05, however Callaway elected to remain shutdown in order to perform additional discretionary work to enhance future unit reliability.

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

On 3/29/05, preparations were underway to perform a leak test of "C" Main Feedwater Isolation Valve (MFIV) AEFV0041 in accordance with plant procedure ETP-AE-ST011, STEAM GENERATOR "C" FWIV LEAK TEST-IPTE.

Initial plant conditions at 0700, 3/29/05, were Reactor Coolant System (RCS) temperature was 415 degrees F and RCS pressure was 1525 psig. Level in all four Steam Generators was being controlled at 50 percent using the "B" Condensate Pump. To establish initial conditions for performing the leak test, Control Room staff had been directed to raise RCS temperature to 485 degrees F which would provide a correspondingly higher RCS pressure and result in a more accurate leak rate determination for "C" MFIV. The Control Room operators initiated the RCS heatup using condenser steam dumps to control RCS temperature. As RCS temperature was being raised, indications of level oscillations began in "A", "B", and "D" Steam Generators (S/G). "C" S/G level indication remained steady state, but subsequently at 0854, "C" S/G low level alarm revealed that the pen in trend recorder AEFR0530 had stuck and level deviations were occurring in "C" S/G also. When the recorder door was opened, the pen began to properly track "C" S/G level again. A work request was generated to correct the problem with AEFR0530.

As RCS temperature approached 485 degrees F, S/G level oscillations continued, with "A" and "D" S/G experiencing the greatest changes. ETP-AE-ST011 Initial Conditions required isolating main feedwater flow to "C" S/G and establishing a "C" S/G narrow range level of approximately 40 percent. At 1031, "A" Motor Driven Auxiliary Feedwater Pump (MDAFP) was started in preparation for use in controlling "C" S/G level. Actual flow from the auxiliary feedwater system was not utilized at this time because main feedwater supplied by the "B" Condensate pump was still being utilized to maintain level in "C" S/G.

At 1034, with "C" S/G narrow range level at approximately 47 percent and slowly decreasing toward the prerequisite 40 percent narrow range level, AEFV0041 was closed which isolated main feedwater flow to "C" S/G. Computer trends indicate that with the low pressure differential between condensate pump discharge pressure (608 psig) and main steam header pressure (565 psig), sufficient leakage existed through AEFV0041 so that level in "C" S/G followed the same decreasing level trend as "A", "B", and "D" S/G. Feedwater flow to the "C" S/G was not effectively isolated until 1048 when a manual isolation valve

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for AEFCV0570, "C" SG Bypass Feedwater Regulating Valve, was closed.

"C" S/G continued to be used for heat removal and level slowly decreased until a "C" S/G Low Level alarm actuated at 1054. As a result of this alarm, auxiliary feedwater flow was initiated to "C" S/G. Initial operator expectation was that S/G level would initially decrease further due to the addition of auxiliary feedwater which was colder than the water currently contained within the S/G. Instead, "C" S/G level increased causing the operator to believe the transient was of a lesser consequence than expected, and due to continuing level deviations in "A" and "D" S/G, the operator focused on restoring level in "A" and "D" S/G. In reality, all feedwater flow to "C" S/G had been stopped for approximately 6 minutes, allowing the auxiliary feedwater contained within the feed ring located at the "C" S/G to increase in temperature to that rivaling S/G temperature. When auxiliary feedwater flow was initiated, pre-warmed water was added to the S/G resulting in an immediate increase in indicated level. As additional AFW was added to the S/G, colder AFW was added to the S/G and level reversed and began to decrease until at 1056, a S/G LoLo Level Reactor Trip signal was generated accompanied with an Auxiliary Feedwater (AFW) system (AFS) actuation.

After receipt of the Reactor Protection System (RPS) reactor trip signal and AFW actuation, plant procedures were utilized to recover from the event and re-establish stable conditions in the primary and secondary systems.

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

Not applicable for this event. There were no component/system failures or procedural errors associated with this event.

II. EVENT DRIVEN INFORMATION

A. SAFETY SYSTEMS THAT RESPONDED

Reactor Protection System and Auxiliary Feedwater system actuations occurred as a result of the low water level in "C" S/G.

B. DURATION OF SAFETY SYSTEM INOPERABILITY

Not applicable. There were no safety systems inoperable because of this event.

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) 200501949. A Root Cause Analysis team was assembled to review this event with the intent of determining the Root Causes (RC) of this event, Corrective Actions (CA) and Corrective Actions To Prevent Recurrence (CATPR).

Root Cause – 01A (RC-01A):

OTG-ZZ-00001, Plant Heatup Cold Shutdown to Hot Standby, did not require placing PAE02, Start-Up Main Feedwater Pump, in service until the Reactor Coolant System (RCS) reached 485 degrees F. This RCS

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temperature correlates to a S/G pressure near the shutoff pressure of a Condensate Pump.

Corrective Action to Prevent Recurrence – 01A1 (CATPR-01A1):

OTG-ZZ-00001 is being revised to ensure that the Start-Up Main Feedwater Pump is placed in service prior to exceeding 464 degrees F in the RCS.

Corrective Action to Prevent Recurrence – 01A2 (CATPR-01A2):

OTG-ZZ-00006, Plant Cooldown Hot Standby to Cold Shutdown, is being revised to ensure that either a Main Feedwater Pump or the Start-Up Main Feedwater Pump remain in service until the RCS is below 464 degrees F.

Root Cause – 01B (RC-01B):

The crew elected not to place PAE02 in service. The crew had discussed placing the pump in service but elected not to for several reasons. They believed that the Condensate Pump should have been able to provide sufficient feedwater to the Steam Generators at an RCS temperature of 485 degrees F because OTG-ZZ-00001 did not require placing PAE02 in service until after the RCS exceeded 485 degrees F.

Corrective Action to Prevent Recurrence – 01B (CATPR-01B):

This event will be covered in Licensed Operator Continued Training to emphasize the following items:

- Conservative Decision Making
- Use of redundant instrumentation

Corrective Action – 01B (CA-01B):

Issue a "Lessons Learned" Communication to all Callaway personnel. This Communication will emphasize to all personnel to take conservative actions when faced with abnormal or uncertain conditions.

Root Cause – 02 (RC-02):

ETP-AE-ST011 had the following deficiencies:

- ETP-AE-ST011 did not require Auxiliary Feedwater to be placed in service prior to isolating Main Feedwater.
- ETP-AE-ST011 required 'C' S/G level to be at approximately 40 percent narrow range.

Corrective Action to Prevent Recurrence 02 (CATPR-02):

ETP-AE-ST011 has been revised as follows:

- As an Initial Condition, 'C' S/G level was changed from approximately 40 percent to be between 45 and 55 percent narrow range.
- As an Initial Condition, Auxiliary Feedwater was placed in service prior to isolating main feedwater to the 'C' S/G.

The seat leakage test of the 'C' FWIV was successfully performed with these changes.

These CATPR's resolve this issue by ensuring sufficient feedwater flow is provided to the Steam Generators. This is accomplished by ensuring that the Start-Up Main Feedwater Pump is placed in service during a plant heatup prior to reaching a steam generator pressure equivalent to the shut-off head of a Condensate Pump. In addition, the CATPR also provides corrective action to ensure that either a Main Feedwater Pump or the Start-Up Feedwater Pump remain in service during a plant cooldown until a Condensate Pump can supply adequate feedwater flow to the Steam Generators.

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IV. PREVIOUS SIMILAR EVENTS

A review of the Callaway Action Request System (CARS) was conducted to determine if similar events had previously occurred within the past three years. Only one event was identified involving steam generator level oscillations and ensuing reactor trip. This event does not constitute a similar occurrence because it was the result of not initiating feedwater preheating when required.

Additionally, no LERs were identified that involved a similar event.

V. ADDITIONAL INFORMATION

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

System: Not Applicable. There were no failures during or because of this event.

Component: Not Applicable. There were no failures during or because of this event.