

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Callaway Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 8 3 1	PAGE (3) 1 OF 0 4
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TITLE (4)
Reactor Trip on Low Steam Generator Level Oscillations During Troubleshooting of a Faulty Amber Light Condition for Main Feedwater Isolation Valve

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES			DOCKET NUMBER(S)
0	1	0 4	8 8	0 0	1	0	2	0 3				0 5 0 0 0
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OPERATING CODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.38(e)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(e)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.38(e)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)							
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)							
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME Jerry F. Hogg - Superintendent, I&C		AREA CODE 3 1 4	NUMBER 6 7 6 - 1 8 1 9 1 3

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)		
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On 1/4/88 at 0236 CST, a Reactor Trip occurred as a result of low level in Steam Generator (S/G) 'A'. The plant was in Mode 1 - Power Operations, at 100 percent reactor power. The Reactor Coolant System (RCS) temperature was 589°F (average). RCS pressure was 2234 psig.

The low S/G level occurred during the troubleshooting of the S/G 'A' main feedwater isolation valve (FWIV), AE-FV-0039, amber light condition on the Engineering Safety Features (ESF) Status Panel SA066X. While troubleshooting the indication circuit for the accumulator pressure switch, AE-PSL-0039A, the control voltage for AE-FV-0039 was shorted by Instrumentation and Control (I&C) technicians causing a blown fuse. The blown fuse resulted in valve AE-FV-0039 fast closing. This was followed by flow mismatch on all four steam generators, with an accompanying reactor trip on S/G 10-10 level in S/G 'A' at 0236. The operators recovered from the trip via plant procedures. All of the available wiring details of the circuit were not used.

Technicians replaced the blown fuse and satisfactorily completed the troubleshooting. To prevent recurrence, I&C technicians have been instructed to review design drawings before troubleshooting. Additional training will be given to I&C technicians on the SA066 cabinet power distribution.

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TEXT (if more space is required, use additional NRC Form 306A's) (17)

Basis For Reportability

On 1/4/88 at 0236 CST, a Reactor Protection System (RPS) reactor trip occurred due to the water level in Steam Generator (S/G) ⁽¹⁾ 'A' decreasing to the lo-lo level trip setpoint.

This Licensee Event Report is submitted pursuant to 10CFR50.73(a)(2)(iv) to report the automatic actuation of the RPS.

Conditions at Time of Event

Mode 1 - Power Operations

Reactor Power - 100%

Reactor Coolant System (RCS) ⁽²⁾ - temperature (average) - 589°F
pressure - 2234 psig

Description of Events

On 1/4/88, Instrumentation and Control (I&C) Generic Work Request (WR) G428997 was issued to I&C technicians to troubleshoot and repair the Engineering Safety Features (ESF) ⁽³⁾ Status Panel accumulator pressure alarm for the main feedwater isolation valve (FWIV) ⁽⁴⁾ for S/G 'A', AE-FV-0039. The ESF Status Panel, SA066X, is located on the Main Control Board. ⁽⁶⁾ The accumulator pressure switch, AE-PSL-0039A, ⁽⁵⁾ for valve AE-FV-0039 was tested and found to be within calibration accuracy the previous day. The I&C technicians determined that the problem was in either the logic or relay card in ESF Status Panel SA066A.

An amber light was illuminating for valve AE-FV-0039, which did not coincide with the actual accumulator pressure. The Beta System technical manual (E-094-0063) was used to determine that a jumper could be used to simulate AE-PSL-0039A switch actuation. Drawing #301474, Sheet 13 of 18, showed the AE-FV-0039 inputs to the Beta System to be on Terminal Block 14, terminals 12 and 13. While troubleshooting AE-PSL-0039A indication in SA066A, a jumper was placed across terminals 12 and 13 on Terminal Block 14 to simulate a closed switch for AE-PSL-0039A. This blew ⁽⁷⁾ a fuse in the adjacent Main Steam Feedwater Isolation System (MSFIS) cabinet resulting in the fast closing of valve AE-FV-0039. This was followed by a flow mismatch on all four steam generators with an accompanying reactor trip on steam generator lo-lo level in S/G 'A'.

Immediate Actions Taken

The licensed operators recovered from the reactor trip via plant procedures EO and ESO.1.

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

Root Cause

The I&C technicians involved in the troubleshooting of the abnormal indication for AE-FV-0039 on SA066X, failed to obtain and use all of the available wiring details of the AE-PSL-0039A circuit prior to troubleshooting.

Contributing factors to this event were:

- (1) The decision to jumper terminals 12 & 13 on Terminal Block 14 was based on their past field experience, review of the ESF status panel Tech Manual, and assumptions that they could not cause any actuations while working on plant status board indication. The technicians failed to verify their assumptions by review of the E-23AE16 drawing prior to taking action.
- (2) The design of the ESF Status Panel indication does not protect the FWIV control circuit from a short or ground fault in the indication circuit.

Corrective Actions and Actions to Prevent Recurrence

- (1) I&C technicians replaced the blown fuse and completed troubleshooting the amber light condition on the ESF status panel. Valve AE-FV-0039 light condition was found to be due to a defective relay card (RC-7) (8) in Beta panel. (9) The defective relay card was replaced. The plant was returned to power operations at 0237 on January 5, 1988.
- (2) A Request for Resolution (RFR) was written to evaluate isolating the ESF Actuation System status panel indications from the control circuitry with additional fuses.
- (3) Technicians involved in the troubleshooting have been counseled for their failure to obtain and use the appropriate wiring details of the circuit for AE-PSL-0039A prior to troubleshooting.
- (4) I&C personnel have been instructed that before troubleshooting, all activities should be verified by a review of the appropriate design information. Additional training is being given to I&C technicians on SA066 cabinets power distribution.

Safety Significance

The safety features included in the plant design performed as required in response to the low S/G level and no detrimental effects on plant equipment were noted.

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TEXT (If more space is required, use additional NRC Form 305A's) (17)

Previous Occurrences

None

Footnotes

The system and component codes listed below are from IEEE Standards 805-1983 and 803A-1983, respectively.

- (1) System - AB, Component - SG
- (2) System - AB
- (3) System - JE
- (4) System - AE, Component - ISV
- (5) System - AE, Component - PSL
- (6) System - RL
- (7) System - AB, Component - CAB
- (8) System - RP, Component - RLY
- (9) System - RZ



Callaway Plant

January 27, 1988

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

ULNRC-1714

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 88-001-00
REACTOR TRIP ON LOW STEAM GENERATOR
LEVEL OSCILLATIONS DURING TROUBLESHOOTING OF A FAULTY
AMBER LIGHT CONDITION FOR MAIN FEEDWATER ISOLATION VALVE

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73(a)(2)(iv) concerning an unplanned reactor trip on low Steam Generator level. The low level was due to the fast closing of a Main Feedwater Isolation Valve initiated by a blown fuse during troubleshooting.

J. D. Blosser
Manager, Callaway Plant

TPS
TPS/LAM:jlh

Enclosure

cc: Distribution attached

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cc distribution for ULNRC-1714

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