

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Callaway Plant Unit 1 DOCKET NUMBER (2) 050004831 OF 04 PAGE (3)

TITLE (4) Engineered Safety Feature Actuations on a High Steam Generator Level Due To Insufficient Operator Action in Controlling Feedwater Flow

Table with columns: EVENT DATE (5), LER NUMBER (6), REPORT DATE (7), OTHER FACILITIES INVOLVED (8). Includes sub-columns for month, day, year, sequential number, revision number, and facility names.

Table for operating mode and power level. Includes checkboxes for regulatory requirements (20.402-20.406, 50.73) and a section for 'OTHER' specifications.

LICENSEE CONTACT FOR THIS LER (12) NAME: W. R. Robinson - Asst. Mgr. Ops & Mtce. TELEPHONE NUMBER: 314676-8293

Table for component failures: COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13). Columns include Cause, System, Component, Manufacturer, and Reportable to NRC.

SUPPLEMENTAL REPORT EXPECTED (14) YES (17) NO (18) EXPECTED SUBMISSION DATE (15)

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

On 3/31/89 at 0122 CST, a Feedwater Isolation and an Auxiliary Feedwater actuation occurred due to a high water level in the 'A' Steam Generator (S/G). The plant was in Mode 2 - Startup at the time the actuations occurred. The reactor power was approximately 3% and decreasing.

The plant was being shutdown to begin a refueling outage. The S/G levels were being controlled using the main Feedwater Regulating Valve bypass valves. The 'A' bypass valve was in manual control. At 0114, the turbine was manually tripped in accordance with plant procedures. This caused the level in the 'A' S/G to increase. The Reactor Operator (RO) was monitoring the steam and feedwater flows on a Main Control Board computer monitor trend display. The 'A' S/G steam flow trend had reached the lower limit of the display's range, giving the appearance of a stable value. Consequently, the RO made only minor adjustments to feedwater flow to correct the increasing level. Steam flow was actually decreasing at a faster rate than feedwater flow and the S/G level continued to increase. At 0122, the 'A' S/G level reached the high level trip setpoint resulting in the FWIS and AFAS actuations.

The root cause of this event was the failure of the RO to take sufficient actions to curb the S/G level increase. He overrelied on steam and feedwater flow indications rather than S/G level indications. The RO will receive additional training in controlling S/G levels at low power levels.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT IF more space is required, use additional NRC Form 366A's (17)

Basis for Reportability

On 3/31/89 at 0122 CST, a Feedwater Isolation (FWIS) and an Auxiliary Feedwater Actuation (AFAS) occurred due to the water level in the 'A' Steam Generator (S/G)⁽¹⁾ increasing to the high level trip setpoint. This report is submitted pursuant to 10CFR50.73(a)(2)(iv) to report an event which resulted in the automatic actuation of Engineered Safety Features (ESF).

Conditions at the Time of Event

Mode 2 - Startup
Reactor Power - approximately 3% and decreasing

Description of Event

On 3/31/89, the plant was being shutdown to begin a refueling outage. At 0114, the turbine was manually tripped in accordance with plant procedures, and at 0115, Mode 2 - Startup was entered. The S/G water levels were being controlled⁽³⁾ using the main Feedwater Regulating Valve (FRV)⁽²⁾ bypass valves. With the 'A' bypass valve control in manual, the level in the 'A' S/G began to increase following the turbine trip. The RO was monitoring the 'A' S/G⁽⁴⁾ steam and feedwater flows on a Main Control Board (MCB) computer monitor trend display. He noted that the steam flow trend was stable but he did not realize that the steam flow trend display had reached its lower range limit (500 lbm/hr) and was no longer displaying the actual trend. Consequently, he made minor adjustments to the 'A' bypass valve position, incorrectly assuming that a small decrease in feedwater flow would curb the increasing level and return it to a normal value. Steam flow was actually decreasing at a faster rate than feedwater flow and the S/G level continued to increase. The RO continued to make minor adjustments but he did not make sufficient changes to stop the level increase. At 0122, the 'A' S/G level reached the high level trip setpoint of 78%⁽⁵⁾ causing the FWIS and AFAS actuations. Auxiliary Feedwater (AFW)⁽⁵⁾ flow was then reduced until the level increase was brought under control at approximately 84%. The S/G levels were returned to normal and the plant was stabilized in Mode 3 - Hot Standby. All equipment functioned properly following the event.

Root Cause

The root cause of this event was attributable to cognitive personnel errors. The RO did not take sufficient action in reducing the feedwater flow to stop the 'A' S/G level increase. He overrelied on steam and feedwater flow indications rather than S/G level. A contributing factor was the RO's reluctance to make any rapid changes which might overcompensate or cause the S/G level to swell and compound the problem.

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

Corrective Actions

The RO will receive additional training in controlling S/G levels at low power levels. This event will also be covered with other licensed operators during regular requalification training.

Safety Significance

The ESF systems performed as designed in response to the S/G water level. There were no detrimental effects on any plant equipment as a result of the actuations. The plant was at a low power level, 3%, with the main turbine shutdown prior to the high S/G level. This event had no adverse affect on the public health and safety.

Previous Occurrences

The following events were similar to the current event in that FWIS and AFAS actuations occurred while in Mode 2 - Startup as the result of a S/G level exceeding the high level trip setpoint.

LER 85-044-00; ULNRC-1197 dated 11/4/85
LER 88-005-00; ULNRC-1773 dated 5/16/88

LER 85-044-00 described an event in which a FWIS and an AFAS occurred due to operator error in overfeeding the S/G's. The operator had just transferred feedwater supply from the AFW pumps⁽⁶⁾ to the Main Feedwater pump⁽⁷⁾ when the S/G levels began to decrease. He restarted the AFW pumps and consequently overfed the S/G's. To prevent recurrence, a note was added to the startup procedures to re-emphasize the effects of "cold" AFW on S/G levels.

LER 88-005-00 described an event in which a FWIS and an AFAS occurred due to an erroneous decision by the operator. This event was similar in that the MCB computer monitor display indicated that the feedwater flow was less than steam flow with the S/G level increasing. In anticipation of the impending decrease in level, the operator decided to increase the feedwater flow to minimize the expected level swings. In so doing, he overfed the S/G and caused the level to increase above the high level trip setpoint. As a result of this event, the procedures controlling shutdowns and startups were revised to provide an improved method for transferring between the main FRV's and the FRV bypass valves.

These two events were similar to the current event but the root causes and corrective actions were different and could not have been expected to prevent this event.

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

Footnotes

The system and component codes listed below are from IEEE Standards 805-1984 and 803A-1983, respectively.

- 1) System - AB, Component - SG
- 2) System - SJ, Component - FCV
- 3) System - SJ, Component - FCV
- 4) System - ID, Component - CRT
- 5) System - BA
- 6) System - BA, Component - P
- 7) System - SJ, Component - P



Callaway Plant

May 1, 1989

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

ULNRC-1998

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 89-003-00
ENGINEERED SAFETY FEATURE ACTUATIONS
ON A HIGH STEAM GENERATOR LEVEL DUE TO
INSUFFICIENT OPERATOR ACTION IN CONTROLLING FEEDWATER FLOW

The enclosed Licensee Event Report is submitted pursuant to
10 CFR 50.73(a)(2)(iv) to report the automatic actuation of Engineered
Safety Features due to a high Steam Generator level.

J. D. Blosser
Manager, Callaway Plant

TPS JKB
TPS/JKB:jlh

Enclosure

cc: Distribution attached

IE22
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cc distribution for ULNRC-1998

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