



December 3, 1996

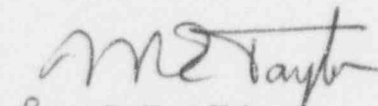
U. S. Nuclear Regulatory Commission
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ULNRC- 3498

Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 96-005-00
TURBINE TRIP AND ENGINEERED SAFETY FEATURES
ACTUATIONS DUE TO 'A' STEAM GENERATOR HIGH LEVEL
FOLLOWED BY PLANT SHUTDOWN DUE TO HIGH VIBRATIONS ON
'B' REACTOR COOLANT PUMP**

The enclosed licensee event report is submitted pursuant to 10CFR50.73(a)(2)(iv) due to automatic actuation of an Engineered Safety Feature and 10CFR50.73(a)(2)(i)(A) due to a plant shutdown required by Callaway's Technical Specifications.


for R. D. Affolter
Manager, Callaway

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RDA/HDB/MAH

Enclosure

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Callaway Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 8 3	PAGE (3) 1 OF 0 4
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TITLE (4) **Turbine Trip and Engineered Safety Features Actuations Due to 'A' Steam Generator High Level Followed By Plant Shutdown Due to High Vibrations On 'B' Reactor Coolant Pump**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
1	1	96	96	005	00	1	2	96			05000

OPERATING MODE (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 2	20.402(b)			20.405(c)			<input checked="" type="checkbox"/> 50.73(a)(2)(iv)			73.71(b)		
	20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)			73.71(c)		
	20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)			OTHER (Specify in		
	20.405(a)(1)(iii)			<input checked="" type="checkbox"/> 50.73(a)(2)(i)			50.73(a)(2)(viii)(A)			Abstract below and in		
	20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)			Text, NRC Form 366A)		
	20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)									
NAME H. D. Bono, Supervising Engineer, Site Licensing								TELEPHONE NUMBER	
								AREA CODE 5 7 3	6 7 6 - 4 4 2 8

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

SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<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 11/11/96, at 2304 CST, an Engineered Safety Features (ESF) Feedwater Isolation Signal (FWIS) and a Motor Driven Auxiliary Feedwater Actuation Signal (MDAFAS) occurred due to the water level in the 'A' Steam Generator (S/G) increasing to the high level trip setpoint. The Main Feedwater Regulation Valve (MFRV) bypasses were being transferred to the MFRVs during a plant startup. Subsequently, on 11/12/96, at 0234 hours, a high vibration alarm was received on 'B' Reactor Coolant Pump (RCP). The licensed operators tripped the RCP at 0242 hours. The plant entered Technical Specification (T/S) 3.4.1.1 which required that, with less than all reactor coolant loops in operation, the plant be shutdown. The T/S was exited when the plant entered Mode 3 at 0430 hours. This event is reportable under 10CFR50.73(a)(2)(iv) due to automatic actuation of ESF and 10CFR50.73(a)(2)(i)(A) due to completion of a T/S required plant shutdown.

The cause of 'A' S/G high level trip was difficulty in controlling S/G water. Reactor output was not maintained ahead of steam demand which made S/G water level control difficult with a positive moderator temperature coefficient. The cause of the high shaft vibration on the 'B' RCP was pump imbalance coupled with reactor coolant system temperature change that occurred following the FWIS. Corrective actions included evaluating procedures that control the plant from 5% to 30% reactor power to provide more efficient sequencing of operator actions to control S/G water level during MFRV transfers. The 'B' RCP was rebalanced prior to restarting the RCP.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

FACILITY NAME (1) Callaway Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 8 3	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REV NO.			
		9 6	- 0 0 5	- 0 0	0 2	OF	0 4

TEXT (If more space is required, use additional NRC Form 365A's)(17)

BASIS FOR REPORTABILITY:

On 11/11/96, at 2304 CST, an Engineered Safety Features (ESF)⁽¹⁾ Feedwater Isolation Signal (FWIS) and a Motor Driven Auxiliary Feedwater Actuation Signal (MDAFAS) occurred due to the water level in the 'A' Steam Generator (S/G)⁽²⁾ increasing to the high level trip setpoint. This event is reportable under 10CFR50.73(a)(2)(iv) due to automatic actuation of Engineered Safety Features (ESF).

Subsequent to the above event, the 'B' Reactor Coolant Pump (RCP)⁽³⁾ was tripped due to high vibration levels and the plant was shut down per the Action Statement of Technical Specification (T/S) 3.4.1.1. Completion of a T/S required plant shutdown is reportable pursuant to 10CFR50.73(a)(2)(i)(A).

PLANT CONDITION AT TIME OF EVENT DISCOVERY:

Mode 1 - Power Operations

Reactor Power - 12%

Reactor Coolant System Temperature (average) - 563 degrees F

Reactor Coolant System Pressure - 2233 psig

DESCRIPTION OF EVENT:

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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TEXT (If more space is required, use additional NRC Form 365A's)(17)

On 11/11/96, a plant startup was in progress in accordance with OTG-ZZ-00003, "Plant Startup Hot Zero Power to 30% Power." Reactor power was at 6 %, with S/G water levels stable at 50%, when the licensed operators closed the generator output breaker at 2241 hours. Power ascension continued and at 2257 hours, with reactor power at approximately 12% and generator load at approximately 100 MWe, the Main Feedwater Regulation Valve (MFRV)⁽⁴⁾ bypasses were transferred to the MFRVs in accordance with OTN-AE-00001, "Feedwater System." During this transfer, S/G water level fluctuations occurred and at 2304 hours, level in the 'A' S/G increased to the high level trip setpoint. This led to a Main Turbine⁽⁵⁾ Trip, FWIS, and a Main Feedwater Pump (MFP)⁽⁶⁾ trip with resultant MDAFAS. The licensed operators responded to the event in accordance with OTO-AC-00001, "Turbine Trip," and stabilized reactor power at 0.3%.

Subsequent to the above event, on 11/12/96, at 0234 hours, a high vibration alarm was received on 'B' RCP with shaft vibration above 15 mils. The licensed operators responded to this event in accordance with OTO-BB-00002, "RCP Off-Normal" which required tripping the pump due to greater than 2 mils/hour increase in the shaft vibration when the shaft vibration is above 15 mils. The 'B' RCP was tripped at 0242 hours and the plant entered the Action Statement for T/S 3.4.1.1 which required that, with less than all reactor coolant loops in operation, the plant be shutdown to Mode 3 within 6 hours. The Action Statement was exited when the plant entered Mode 3 at 0430 hours.

ROOT CAUSE:

The root cause of 'A' S/G high level trip was difficulty in controlling S/G water levels during the transfer of feedwater flow from the MFRV bypasses to the MFRVs. The primary contributor to this event was reactor output was not maintained ahead of steam demand which made S/G water level control difficult with a positive moderator temperature coefficient.

The root cause of the high shaft vibration on the 'B' RCP was pump imbalance coupled with reactor coolant system temperature change that occurred following the FWIS.

CORRECTIVE ACTIONS:

1. Operations procedures that control the plant startup / shutdown from 5% to 30% reactor power have been evaluated to enhance precautions / limitations and provide a more efficient sequencing of operator actions to control S/G water level during MFRV transfers.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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TEXT (If more space is required, use additional NRC Form 365A's)(17)

2. The 'B' RCP was rebalanced prior to restarting the RCP. In addition, guidance for operating the 'B' RCP at higher vibration levels was incorporated in OTO-BB-00002.

SAFETY SIGNIFICANCE:

The ESF systems performed as designed in response to high S/G water level. The ESF actuations had no impact on plant safety. The plant shutdown, in response to the high vibration level on the 'B' RCP, was performed in accordance with T/S. This event did not affect public health and safety.

PREVIOUS OCCURRENCE:

The following event was similar to this event in that the ESF actuations occurred due to a S/G water level exceeding the high level trip setpoint. However, the previous occurrence involved testing at low power which created plant conditions different than this reported event.

LER 92-003-00; ULNRC - 2568 dated 2/24/92.

FOOTNOTES:

The system and component codes listed below are from IEEE Standard: 805-1985 and 803A-1984.

- (1) System - JE
- (2) System - AB, Component - SG
- (3) System - AB, Component - P
- (4) System - SJ, Component - FCV
- (5) System - TA, Component - TRB
- (6) System - SJ, Component - P