

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) DIABLO CANYON UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 3 2 3	PAGE (3) 1 OF 04
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TITLE (4) **REACTOR TRIP DUE TO LOW-LOW STEAM GENERATOR WATER LEVEL CAUSED BY SLOW RESPONSE OF THE STEAM DUMP CONTROL SYSTEM**

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)								
1	2	5	8	5	0	2	4	8	0	1	2	4	8	6			0	0	0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more)

OPERATING MODE (9)	<input type="checkbox"/> 20.402(b)	<input checked="" type="checkbox"/> 20.406(c)	<input type="checkbox"/> 50.73(a)(2)(iv)
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 50.36(e)(1)	<input type="checkbox"/> 50.73(a)(2)(v)
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.36(e)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)

POWER LEVEL (10) **11010**

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE TELEPHONE NUMBER
WILLIAM J. KELLY, REGULATORY COMPLIANCE ENGINEER	8 0 5 5 9 5 - 7 3 5 1

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

At 0100 PST, December 25, 1985, with Unit 2 in Mode 1 (Power Operation) at 100 percent power, automatic reactor and turbine trips occurred during a full load rejection test due to low-low steam generator water level. Following the load rejection, the slow response of the steam dump control system resulted in an increase in steam generator pressure. The steam pressure increase caused a reduction in steam generator water level due to steam generator level "shrink."

The steam dump control system was modified to improve the steam dump valve response time.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

I. Initial Conditions

The unit was in Mode 1 (Power Operation) at 100 percent power.

II. Description of Event

A. Event:

At 0100 PST, December 25, 1985, automatic reactor and turbine trips occurred during the performance of Startup Test Procedure 43.2 "Full Load Rejection Test." The reactor (AB)(RCT) tripped on low-low level in the steam generators. The low-low water level was caused by the slow response time of the steam dump control system (JI). Following the load rejection, the slow response in the steam dump system (JI) resulted in an increase in steam generator pressure. The steam pressure increase caused a reduction in steam generator water level due to steam generator level "shrink."

The appropriate emergency procedures were followed and the unit was stabilized in Mode 3 (Hot Standby) at approximately 0135 PST.

B. Inoperable structures, components, or systems that contributed to the event:

None

C. Dates and approximate times for major occurrences.

1. Event date: December 25, 1985, 0100 PST.
2. Stable conditions achieved: December 25, 1985, 0135 PST.

D. Other systems or secondary functions affected:

None

E. Method of discovery:

The event was immediately apparent due to alarms in the control room.

F. Operator actions:

The operators followed the appropriate emergency procedures and placed the unit in a stable condition.

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G. Safety system responses:

1. The reactor trip breakers opened.
2. The control rod drive mechanism (AA)(DRIV) allowed the control rods (AA)(ROD) to drop into the reactor.
3. The turbine tripped.
4. The reactor coolant pumps (AB)(P) tripped on 12 kV busses (EB)(BU) underfrequency as a result of the turbine-generator decelerating and generator frequency and auxiliary power frequency dropping subsequent to the reactor trip. The reactor coolant pumps (RCPs) were manually restarted.

While automatic tripping of the RCPs on underfrequency is per the system design, their tripping could possibly have been avoided by manual operator action discussed in the governing startup test procedure and the companion abnormal operating procedure. To ensure a transfer to startup power, the procedures direct the operator to manually initiate a unit trip if a reactor trip occurs during a load rejection. Instead, following the reactor trip, the operator went directly to the applicable emergency procedure, EP E-0, "Reactor Trip on Safety Injection," which does not provide exceptions for this specific scenario. Therefore, a manual unit trip was not initiated by the operator.

III. Cause of Event

A. Immediate cause:

The steam generator water level dropped below the low-low steam generator level reactor trip setpoint, causing a reactor trip.

B. Root cause:

1. The steam dump control system did not allow the steam dump valves to open quickly enough to compensate for the large load rejection, resulting in an increase in steam generator pressure. The steam generator pressure increase caused a reduction in steam generator water level due to steam generator level "shrink."
2. Tripping of the RCPs was caused by operator failure to follow the startup test procedure and abnormal operating procedure AP-2, "Full Load Rejection".

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

IV. Analysis of Event

The slow response of the steam dump control system resulted in the automatic actuation of the Reactor Protection System (RPS). Since the RPS responded as designed, there were no adverse safety consequences or implications resulting from this event. Further, this load rejection test portion of the Unit 2 startup test program served to determine the optimum steam dump control system setpoints.

V. Corrective Actions

Volume boosters have been installed on all 40 and 35 percent steam dump valve actuators to improve their response time.

Before performing later load rejection tests, operations personnel were more thoroughly briefed on the contingency steps contained in the governing startup test. The adequacy of this briefing was demonstrated during a subsequent load rejection test when, after a similar reactor trip occurred, the operators manually initiated a unit trip correctly. Operators have also been reminded of the necessity to initiate a unit trip (which causes a timely bus transfer) if a reactor trip occurs during a load rejection in accordance with abnormal operating procedure AP-2. Procedural changes are presently being considered to further clarify appropriate operator response under this circumstance.

VI. Additional Information

A. Failed components:

None

B. Previous LERs on similar events:

Unit 2 LER 85-013-00

PACIFIC GAS AND ELECTRIC COMPANY

PG&E

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JAMES D. SHIFFER
VICE PRESIDENT
NUCLEAR POWER GENERATION

January 24, 1986

PGandE Letter No.: DCL-86-015

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

Re: Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
Licensee Event Report 2-85-024-00
Reactor Trip Due to Low-Low Steam Generator Water Level
Caused by Slow Response of the Steam Dump Control System

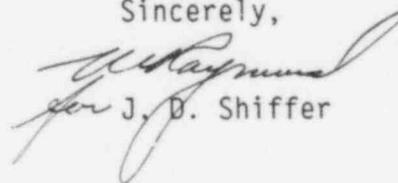
Gentlemen:

Pursuant to 10 CFR 50.73(a)(2)(iv), PGandE is submitting the enclosed Licensee Event Report concerning the slow response of the steam dump control system resulting in a low-low steam generator water level reactor trip.

This event has in no way affected the public's health and safety.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,


for J. D. Shiffer

Enclosure

cc: L. J. Chandler
R. T. Dodds
J. B. Martin
B. Norton
H. E. Schierling
CPUC
Diablo Distribution
INPO

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