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PG&E Letter DCL-03-050

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
Licensee Event Report 2-2003-003-00
Technical Specification 3.4.12 Not Met Due to Personnel Error

Dear Commissioners and Staff:

In accordance with 10 CFR 50.73 (a)(2)(i)(B), Pacific Gas and Electric (PG&E) is submitting the enclosed licensee event report regarding the violation of Technical Specification 3.4.12, "Reactor Coolant System, Low Temperature Over Pressure Protection (LTOP) System," not met due to personnel error.

This event did not adversely affect the health and safety of the public.

Sincerely,

David H. Oatley

jmb/2246/Q0012318

Enclosure

cc: Ellis W. Merschoff
David L. Proulx
Girija S. Shukla
Diablo Distribution
INPO

IE22

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 7
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TITLE (4)
Technical Specification 3.4.12 Not Met Due to Personnel Error

EVENT DATE (5) MO DAY YEAR			LER NUMBER (6) YEAR SEQUENTIAL NUMBER REVISION NUMBER				REPORT DATE (7) MO DAY YEAR			OTHER FACILITIES INVOLVED (8) FACILITY NAME DOCKET NUMBER															
03	10	2003	2003	-	0	0	3	-	0	0	04	25	2003												

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11) X 10 CFR 50.73(a)(2)(i)(B) OTHER _____														
POWER LEVEL (10) 0 0 0	(SPECIFY IN ABSTRACT BELOW AND IN TEXT, NRC FORM 366A)														

LICENSEE CONTACT FOR THIS LER (12)

Lawrence M. Parker – Senior Regulatory Services Engineer	TELEPHONE NUMBER AREA CODE	805	545-3386
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14) <input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MON	DAY	YR
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ABSTRACT (Limit to 1400 spaces i.e., approximately 15 single-spaced typewritten lines) (16)

On March 9, 2003, at 0829 PST, with Unit 2 in Mode 5 (cold shutdown) during a refueling outage, the Limiting Condition for Operation for Technical Specification (TS) 3.4.12, "Reactor Coolant System (RCS), Low Temperature Over Pressure Protection (LTOP) System," was not met when the Power Operated Relief Valve's (PORV) control switches were placed in the CLOSED position while the Technical Specifications required them to be in the AUTO position.

On March 10, 2003, at 0731 PST, with Unit 2 in Mode 5 (cold shutdown) the error was discovered and the PORV control switches were placed in the AUTO position, exiting TS 3.4.12.

The root cause of the event was a combination of procedure deficiency and personnel error.

The immediate corrective actions taken were to place the PORV control switches in AUTO position, thus restoring the TS condition for LTOP to the RCS. Corrective actions to prevent recurrence include revising the associated operating procedure and coaching the operations crews on the details of the event.

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TEXT

I. Plant Conditions

Unit 2 was in the eleventh refueling outage (2R11) in Mode 5 (cold shutdown) with the RCS at 75 degrees Fahrenheit and 0 psig.

II. Description of Problem

A. Background

The Low Temperature Overpressure Protection (LTOP) system protects the Reactor Coolant System (RCS) [AB] from overpressure transients that could occur at low operating temperature, for example during startup and shutdown, to prevent brittle fracture of the Reactor Vessel (RV).

The LTOP system consists of two redundant and independent systems utilizing the pressurizer Power Operated Relief Valves (PORVs) [PCV]. When the system is enabled and reactor coolant temperature is below 330 degrees Fahrenheit, a high pressure signal (above 435 psig) will automatically activate and open a PORV until the pressure drops below the reset value.

The Pressurizer [PZR] PORVs provide a safety function during an inadvertent safety injection by keeping the RCS within its pressure limits. The PORVs are required to automatically operate to prevent challenging the pressurizer safety valves.

The PORV control switches have three settings:

- OPEN
- AUTO
- CLOSED

In Mode 5, LTOP becomes applicable any time RCS temperature is below 330 degrees Fahrenheit, pressure is below 390 psig, and the unit enters LTOP system configuration. This system is used to protect the reactor vessel from exceeding its nil ductility limit during low temperature operations.

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TEXT

Technical Specification (TS) 3.4.12, "Reactor Coolant System (RCS), Low Temperature Over Pressure Protection (LTOP) System," requires LTOP to be operable in Modes 4, 5, and 6 with:

- No safety injection pumps capable of injecting into the RCS
- A maximum of one centrifugal charging pump capable of injecting into the RCS
- The accumulators isolated
- with one of the following pressure relief capabilities:
 - Two Class I PORVs with lift setting within limits specified in the Pressure Temperature Limits Requirement (PTLR), or
 - The RCS depressurized and an RCS vent of ≥ 2.07 square inches.

Two exceptions are noted in TS 3.4.12, during LTOP:

- 1.) Two charging pumps may be made capable of injecting for ≤ 1 hour for pump swap operation.
- 2.) An accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.

One procedure that operations uses to place LTOP in service is Operating Procedure OP A-2:IX, "Reactor Vessel - Vacuum Refill of the RCS." OP A-2:IX provides instructions for using the vacuum refill method to fill and vent the RCS following refueling and for establishing a steam bubble in the Pressurizer.

The procedure steps for placing LTOP in service are:

- 6.3 Align Pressurizer PORVs as follows:
 - 6.3.1 Verify RCS temperature is greater than 70 degrees Fahrenheit
 - 6.3.2 Verify PORVs 456 and /or 455C are OPERABLE and block valve(s) are open for operable PORVs
 - 6.3.3 Perform channel check on PT-403A and/or 405A
 - 6.3.4 Cut in LTOP for the OPERABLE PORVs
 - 6.3.5 Shut all PZR PORVs, PCVs 455C, 456, and 474.

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TEXT

B. Event Description

On March 9, 2003, at 0829 PST, with the RCS at 75 degrees Fahrenheit, 0 psig and Residual Heat Removal (RHR) in service, utility licensed plant operation personnel placed the PORV control switches in the CLOSED position rather than placing the PORV control switches in the AUTO position, thus violating TS 3.4.12.

On March 10, 2003, at 0731 PST, with the RCS at 180 degrees Fahrenheit and 350 psig, a utility licensed plant operator observed the PORV control switches in the CLOSED position, and placed the PORV control switches in the AUTO position, thus complying with TS 3.4.12.

The TS was not met for a period of 23 hours and 2 minutes, during which two shift changes occurred. During each shift change the "Unit 2 Outage Safety Checklist – Mode 5 Loops Filled," was reviewed and approved. This checklist contains verification of LTOP availability.

C. Status of Inoperable Structures, Systems, or Components that Contributed to the Event

During this event RHR pump 2-2 was in service, Safety Injection Pump 2-2 and Centrifugal Charging Pump 2-1 were operable, and Diesel Generator (D/G) 2-3 was available.

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

A utility licensed plant operator identified the incorrect alignment during a walkdown of Administrative Procedure AD8.DC55, "Unit 2 Outage Safety Checklist – Mode 5 Loops Filled."

F. Operator Actions

The utility licensed plant operator appropriately placed the PORVs in the AUTO, thus complying with TS 3.4.12.

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TEXT

G. Safety System Responses

None.

III. Cause of the Problem

A. Root Cause

1. Personnel Error. The operators performing OP A-2:IX failed to recognize the intent of step 6.3.5. The subsequent operations crews did not recognize that the PORVs were not in the AUTO position during shift change while reviewing the "Unit 2 Outage Safety Checklist – Mode 5 Loops Filled."

2. Procedure Deficiency. The procedure OP A-2:IX was not explicit regarding the PORV control switch position required in the LTOP system. The procedure directs the operator to place the PORV control switch in a closed position and the operator is expected to recognize that the PORVs need to be closed and operable. Once the PORV control switches are placed in AUTO they are both closed and operable.

Even though OP A-2:IX gives guidance for the LTOP system, the specific actions of the operator to comply with TS 3.4.12 are not stated. In step 6.3.4, operators physically activate the LTOP by placing the LTOP toggle switch to "cut in." Step 6.3.5, "Shut all PRZ PORVs" is meant to make the PORVs operational and satisfy the LTOP system requirements by physically turning the control switch to CLOSED and returning the control switch to AUTO. The correct control switch position of AUTO is not stated. This step is misleading because it does not say close the PORVs and then place them in AUTO.

The procedure addresses the importance of the correct LTOP system parameters, but the physical interpretation of the control knob position for the PORVs is left to operator.

IV. Assessment of Safety Consequences

The RHR system was in service during the event. The system contains RHR suction pressure relief valve RHR-8707, which is operable whenever the system is in service. The safety function of RHR-8707 is to protect the RHR system from exceeding its design pressure rating. The valve is sized to relieve a postulated

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TEXT

overpressure condition caused by an RCS mass input transient equal to the combined flow of both charging pumps (900 gpm). Although not a basis for sizing this valve, it can act as a pressure relief device for the RCS when the RCS is at low pressure (<500 psi) and water solid.

Relief valve RHR-8707 is located inside containment on the RHR pump suction line from the RCS Loop 4 hot leg. This valve relieves to the pressurizer relief tank at a setpoint of 450 psig and a capacity of 900 gpm.

The safety function of RHR-8707 is detailed in WCAP 11117, "Residual Heat Removal System Autoclosure Interlock Removal (ACI) Support for Diablo Canyon Power Plant, section 7.7, Assessment of the effect of the proposed change on RHRS availability, as well as Low Temperature Overpressure Protection,":

This change will increase the availability of the RHRS relief valve to mitigate low temperature overpressure occurrences, thereby reducing challenges to the power operated relief valves, and keeping RCS pressure at cold temperatures in an acceptable range.

The WCAP details many types of transients that could occur and states that at low temperature and pressure "the LTOP system and the RHRS suction relief valve is capable of mitigating these transients. The probability of the failure of the RHRS relief valve coupled with the failure of two trains of the LTOP system is extremely small."

While the LTOP PORVs were inoperable, the RHR suction relief valve was operable and able to provide an alternate means of satisfying the overpressure protection safety function.

At no time during this event were the setpoints of either LTOP or the RHR-8707 relief valve challenged.

Due to the secondary means of protection provided by valve RHR-8707, this event is not considered risk significant and it did not adversely affect the health and safety of the public.

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TEXT

V. Corrective Actions

A. Immediate Corrective Actions

1. The utility licensed plant operator who identified the incorrect alignment placed the PORV control switches in AUTO, thereby establishing operability of the LTOP System.

B. Corrective Actions to Prevent Recurrence

1. Operations Procedure OP A-2:IX, "Reactor Vessel – Vacuum Refill of the RCS," step 6.3.5 will be revised to clearly specify the PORV control switch position.
2. This event will be incorporated into operations training and presented to all crews.

VI. Additional Information

A. Failed Components

None.

B. Previous Similar Events

A similar event was reported in LER 1-2000-005-00, "Entry into TS 3.0.3 When Power was Restored to Reactor Coolant System Accumulator Isolation Valves Due to Personnel Error," DCL 00-089, dated June 14, 2001. While in Mode 3, an operator misinterpreted a procedure and closed accumulator isolation valves, which were required to be open and operational while pressurizer pressure was above 1000 psig.