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March 31, 2014

PG&E Letter DCL-14-026

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

10 CFR 50.73

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Power Plant, Units 1 and 2
Licensee Event Report 1-2014-001-00, Technical Specification 3.4.3, RCS Pressure
Limit Violation During Vacuum Refill Due to Human Error

Dear Commissioners and Staff;

Pacific Gas and Electric Company (PG&E) submits the enclosed Licensee Event Report in accordance with 10 CFR 50.73(a)(2)(i)(B).

PG&E makes no new or revised regulatory commitments (as defined by NEI 99-04) in this report. All the corrective actions identified in this letter will be implemented in accordance with the Diablo Canyon Power Plant Corrective Action Program.

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

Sincerely,

Barry S. Allen

Imp/3386/50609672

Enclosure

cc/enc: Peter J. Bamford, NRC Project Manager
Marc L. Dapas, NRC Region IV Administrator
Thomas R. Hipschman, NRC Senior Resident Inspector
INPO
Diablo Distribution

**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Diablo Canyon Power Plant, Unit 1

2. DOCKET NUMBER**05000 275****3. PAGE****1 OF 4****4. TITLE**

Technical Specification 3.4.3, Reactor Coolant System Pressure Limit Violation During Vacuum Refill Due to Human Error

5. EVENT DATE

MONTH	DAY	YEAR
01	28	2014

6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO.
2014	001	00

7. REPORT DATE

MONTH	DAY	YEAR
03	31	2014

8. OTHER FACILITIES INVOLVEDFACILITY NAME
Diablo Canyon Unit 2DOCKET NUMBER
05000 323

FACILITY NAME

DOCKET NUMBER
05000**9. OPERATING MODE****11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)****1**☐ 20.2201(b)☐ 20.2203(a)(3)(i)☐ 50.73(a)(2)(i)(C)☐ 50.73(a)(2)(vii)☐ 20.2201(d)☐ 20.2203(a)(3)(ii)☐ 50.73(a)(2)(ii)(A)☐ 50.73(a)(2)(viii)(A)☐ 20.2203(a)(1)☐ 20.2203(a)(4)☐ 50.73(a)(2)(ii)(B)☐ 50.73(a)(2)(viii)(B)☐ 20.2203(a)(2)(i)☐ 50.36(c)(1)(i)(A)☐ 50.73(a)(2)(iii)☐ 50.73(a)(2)(ix)(A)**10. POWER LEVEL****100**☐ 20.2203(a)(2)(ii)☐ 50.36(c)(1)(ii)(A)☐ 50.73(a)(2)(iv)(A)☐ 50.73(a)(2)(x)☐ 20.2203(a)(2)(iii)☐ 50.36(c)(2)☐ 50.73(a)(2)(v)(A)☐ 73.71(a)(4)☐ 20.2203(a)(2)(iv)☐ 50.46(a)(3)(ii)☐ 50.73(a)(2)(v)(B)☐ 73.71(a)(5)☐ 20.2203(a)(2)(v)☐ 50.73(a)(2)(i)(A)☐ 50.73(a)(2)(v)(C)☐ OTHER☐ 20.2203(a)(2)(vi)☒ 50.73(a)(2)(i)(B)☐ 50.73(a)(2)(v)(D)

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Joe Loya, Regulatory Services Supervisor

TELEPHONE NUMBER (include Area Code)

805-545-4486

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
D	N/A	N/A	N/A	N/A					

14. SUPPLEMENTAL REPORT EXPECTED☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE)☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On January 28, 2014, Pacific Gas and Electric (PG&E) recognized Regulatory Operating Experience at another station to be applicable to Diablo Canyon Power Plant (DCPP). An NRC inspection report describes a failure to comply with reactor coolant system (RCS) Pressure and Temperature (P/T) Limits when RCS pressure drops below 0 pounds per square inch gauge (PSIG). At the time of discovery, DCPP's Pressure Temperature Limit Report (PTLR) only described pressures above 0 PSIG. However, since 2001, DCPP's analyses and procedures allow drawing a vacuum during RCS refill following refueling. Therefore, PG&E is conservatively reporting RCS pressure below 0 PSIG as a violation of Technical Specification 3.4.3 "RCS Pressure and Temperature (P/T) Limits."

The apparent cause of not maintaining RCS pressure within the limits described in the PTLR was legacy design error. PG&E interpreted the PTLR to only apply to upper pressure limits, and therefore did not consider it in conflict with the adoption of the vacuum refill analysis and procedure. Corrective actions included revising the PTLR to specify 0 pounds per square inch absolute as the lower limit. Therefore, the explicit PTLR compliance error during vacuum refill did not adversely affect the health and safety of the public or station personnel.

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

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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NARRATIVE**I. Plant Conditions**

At the time of discovery, both units were in Mode 1 (Power Operation) at 100 percent power.

II. Description of Event**A. Background**

Technical Specification (TS) 3.4.3, "RCS Pressure and Temperature (P/T) Limits," requires the reactor coolant system (RCS) [AB] pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within the limits specified in the pressure temperature limits report (PTLR) at all times.

All components of the RCS are designed to withstand effects of cyclic loads due to system pressure and temperature changes. These loads are introduced by startup (heatup) and shutdown (cooldown) operations, power transients, and reactor trips. This limiting condition of operation (LCO) limits the pressure and temperature changes during RCS heatup and cooldown, within the design assumptions and the stress limits for cyclic operation.

The PTLR contains P/T limit curves for heatup, cooldown, inservice leak and hydrostatic testing, and data for the maximum rate of change of reactor coolant temperature. Each P/T limit curve defines an acceptable region for normal operation. The usual use of the curves is operational guidance during heatup or cooldown maneuvering, when pressure and temperature indications are monitored and compared to the applicable curve to determine that operation is within the allowable region.

The LCO references the PTLR, which establishes operating limits that provide a margin to brittle failure of the reactor vessel and piping of the reactor coolant pressure boundary (RCPB). The vessel is the component most subject to brittle failure, and the PTLR limits therefore assure low temperature overpressure protection of the RCS.

The P/T limits are not derived from design basis accident (DBA) analyses. They are prescribed during normal operation to avoid encountering pressure, temperature, and temperature rate of change conditions that might cause undetected flaws to propagate and cause nonductile failure of the RCPB, an unanalyzed condition. Administrative Controls Section 5.6.6, identifies the NRC reviewed and approved methodology for determining the P/T limits. Although the P/T limits are not derived from any DBA, the P/T limits are acceptance limits since they preclude operation in an unanalyzed condition. RCS P/T limits satisfy Criterion 2 of 10 CFR 50.36 (c)(2)(ii).

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NARRATIVE

Returning from a refueling outage involves refilling and venting noncondensable gas from the RCS to achieve loops filled, which is a condition where natural circulation can be used as a backup means of decay heat removal if forced circulation via residual heat removal (RHR) [BP] is lost. Prior to 2001, refilling the RCS was an iterative, time and dose-intensive process to ensure each loop, including steam generator U-tubes are filled and capable of natural circulation.

B: Event Description

In May of 2001, Pacific Gas and Electric (PG&E) implemented Design Change DCP N-049532 for Unit 1 and DCP N-050532 for Unit 2, "Reactor Coolant System Vacuum Refill (RCSVR)." The design change was implemented via Diablo Canyon Power Plant (DCPP) Operating Procedure OP A-2:IX, "Reactor Vessel – Vacuum Refill of the RCS," starting with Unit 2 tenth refueling outage in May 2001 and followed by Unit 1 eleventh refueling outage in May 2002. This procedure significantly reduced the time needed to reach "loops filled" and capable of natural circulation. It also reduced dose to workers, and improved initial primary water chemistry.

During the last three years, RCS pressure was reduced below 0 PSIG during the vacuum refill process in DCPP Units 1 and 2. Specifically, vacuum refill was performed during the Spring Unit 2 sixteenth refueling outage in 2011, the Spring Unit 1 seventeenth refueling outage in 2012, and Spring Unit 2 seventeenth refueling outage in 2013.

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

N/A

D. Other Systems or Secondary Functions Affected

N/A

E. Method of Discovery

In accordance with Procedure XI1.DC2, "Regulatory Operating Experience," PG&E Regulatory Services personnel screen various industry regulatory operating experience (ROE) sources. On January 28, 2014, PG&E recognized the generic implications of a unique violation in NRC Inspection Report 05000440/2013007 dated January 3, 2014, and created SAPN 50606432, "ROE: Review NRC Finding (Perry) PTLR."

F. Operator Actions

N/A

G. Safety System Responses

N/A

CONTINUATION SHEET

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NARRATIVE

III. Cause of the Event

A. Apparent Cause

The apparent cause of not maintaining RCS pressure within the limits described in the PTLR was a legacy design error. PG&E interpreted the PTLR to only apply below the upper pressure limits, and therefore did not consider it in conflict with the adoption of the vacuum refill analysis and procedure.

B. Contributory Cause

Vacuum refill was a vendor-supported process being implemented throughout the industry without prior NRC approval or expanded P/T curves down to 0 PSIA.

IV. Assessment of Safety Consequences

The design change implementing RCSVR evaluated physical effects of the sub-atmospheric RCS pressure and determined there were no adverse impact on the reactor vessel and RCPB structural integrity.

OP A-2:IX ensures sufficient RCS pressure to assure adequate net positive suction head for the RHR system, over an operating band of temperatures, pressures and RHR flows.

Therefore, the explicit PTLR compliance error during vacuum refill did not adversely affect the health and safety of the public or station personnel.

V. Corrective Actions

On February 26, 2014, the PTLR for DCP, "PTLR-1," Revision 14, became effective, which includes figures showing acceptable operation down to 0 PSIA.

VI. Additional Information

There were no prior similar events at DCP.