Pacific Gas and Electric Company®

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March 4, 2013

PG&E Letter DCL-13-018

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

10 CFR 50.73

Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Licensee Event Report 1-2013-001, Noncompliance with Technical Specification 3.4.12, "Low Temperature Overpressure Protection System" due to Human Error

Dear Commissioners and Staff;

Pacific Gas and Electric Company (PG&E) is submitting the enclosed Licensee Event Report in accordance with 10 CFR 50.73(a)(2)(i)(B) as an operation or condition which was prohibited by the plant's Technical Specification. On January 3, 2013, at 19:32 PST, with Units 1 and 2 in Mode 1 and at 100 percent power, Diablo Canyon Power Plant (DCPP) determined that the Limiting Condition for Operation for TS 3.4.12, "Low Temperature Overpressure Protection System," was not met during Unit 1 and Unit 2 refueling outages over the past 3 years.

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 DCPP Corrective Action Program.

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

Sincerely,

Barry Allen
Site Vice President

J8L3/50531685
Enclosure
cc/: Diablo Distribution
cc/enc: Elmo E. Collins, NRC Region IV
Thomas R. Hipschman, NRC Senior Resident Inspector
James T. Polickoski, NRR Project Manager
INPO

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

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 Section (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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE

Noncompliance with TS 3.4.12, Low Temperature Overpressure Protection System due to Human Error

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									Diablo Canyon, Unit 2	05000-323
01	03	2013	2013	- 001 -	00	03	04	2013	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☑ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Joe A. Loya, Senior Regulatory Services Engineer	(805) 545-6980

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

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 3, 2013, at 19:32 PST, with Units 1 and 2 in Mode 1 and at 100 percent power, Diablo Canyon Power Plant (DCPP) determined that the Limiting Condition for Operation of Technical Specification (TS) 3.4.12, low temperature overpressure protection (LTOP) system, was not met during Unit 1 and Unit 2 refueling outages over the past 3 years. Specifically, when TS 3.4.12 was applicable, DCPP operated with more than one centrifugal charging pump (CCP) capable of injecting into the reactor coolant system. DCPP determined this condition was reportable pursuant to 10 CFR 50.73(a)(2)(i)(B). The noncompliance was identified based on a Nuclear Regulatory Commission TS Interpretation letter dated January 3, 2013, to Wolf Creek Nuclear Operating Company. DCPP concluded that it had not complied with TS 3.4.12 since it replaced the positive displacement pump (PDP) with a CCP in Unit 1 (2005) and in Unit 2 (2007). Immediate corrective actions in response to this event included revising the affected procedures to ensure compliance with TS 3.4.12.

The apparent cause for this event includes a deficiency in DCPP's 10 CFR 50.59 procedure and human error. The procedure did not provide guidance regarding proposed design changes that may maintain the original intent but create new literal compliance issues. The human error occurred when DCPP staff interpreted that the operability requirements outlined in TS 3.4.12 as being equivalent with respect to the PDP to CCP design change.

Corrective actions included revising the associated 10 CFR 50.59 procedure, revising the Current Licensing Basis Determination Procedure and providing a lessons-learned discussion to the staff.

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

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NARRATIVE

I. Plant Conditions

Diablo Canyon Power Plant (DCPP) Units 1 and 2 were in Mode 1, with reactor power at approximately 100 percent.

II Description of the Problem

A. Background

The low temperature overpressure protection system (LTOP) controls reactor coolant system (RCS) [AB] pressure at low temperatures so the integrity of the reactor coolant pressure boundary is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G. The potential for vessel over-pressurization is most acute when the RCS is water solid during plant shutdown conditions. At this time, a pressure fluctuation can occur more quickly than an operator can react to relieve the condition. Exceeding the RCS P/T limits could cause brittle cracking of the reactor vessel. Technical Specification (TS) Limiting Conditions for Operation (LCO) 3.4.3, RCS P/T Limits, requires administrative control of RCS pressure and temperature during heat-up and cool-down to prevent exceeding the pressure temperature limits report (PTLR) limits.

TS 3.4.12 LCO 3.4.12 assures RCS overpressure protection by limiting coolant input capability to no safety injection (SI) [BQ, P] pumps and a maximum of one centrifugal charging pump (CCP) [CB, P] being capable of injecting into the RCS, and isolating the RCS accumulators. However, CCPs in excess of the above limitations can be momentarily capable of injection into the RCS for swapping of inservice CCPs. Although not addressed in LCO 3.4.12, the plant design includes two emergency core cooling system (ECCS) CCPs and also a third CCP (CCP-3). Operation of CCP-3 is controlled administratively in accordance with the PTLR.

TS 3.4.12 is applicable during the following plant modes of operation:
- Mode 4, when any RCS cold leg temperature is less than or equal to LTOP arming temperature specified in the PTLR (approximately 280 degrees).

- Mode 5

-Mode 6, when the reactor vessel head is on and the vessel head closure bolts are not fully de-tensioned.

The LTOP system for pressure relief consists of two Class I power operated relief valves (PORVs) [AB, RV] with reduced lift settings, or a depressurized RCS and an RCS vent of sufficient size. Two RCS Class I PORVs are required for redundancy. One RCS Class I PORV has adequate relieving capability to prevent over pressurization from the allowable coolant input capability.

DCPP LTOP analysis concluded that RCS limits would not be exceeded given that 1) all SI pumps were secured, 2) one ECCS CCP was secured, 3) all SI accumulators were isolated, and 4) CCP-3 was aligned for LTOP operation prior to entering the LTOP mode of operation.

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B. LTOP Operating Experience and Impact on DCPP

Wolf Creek Nuclear Operating Company (WCNOC) has a charging system and licensing history similar to DCPP's in that it originally had a normal-use reciprocating charging pump and two ECCS CCPs. WCNOC replaced its reciprocating pump with a CCP (similar to DCPP) without revising its LTOP TS. Similar to DCPP, WCNOC's LTOP TS specifies that only one CCP can be capable of injecting to the RCS while LTOP is required to be operable.

On January 3, 2013, the U. S. Nuclear Regulatory Commission (NRC) issued a TS interpretation clarifying that the WCNOC TS 3.4.12 does not permit more than a single CCP to be capable of injecting into the RCS while LTOP is required to be operable.

C. Event Description

On January 3, 2013, at 19:32 PST, DCPP reviewed the NRC's interpretation of WCNOC TS 3.4.12 and determined that DCPP had been in non-compliance with TS 3.4.12 (when applicable) since the positive displacement pump (PDP) replacement modifications in Unit 1 in 2005 and in Unit 2 in 2007. DCPP determined this condition was reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) as an operation or condition which was prohibited by the plant's TS.

PG&E maintained CCP configurations in accordance with the LTOP analysis and the PTLR by having procedural requirements as indicated below:

A. with RCS temperature below 280 degrees F and above 156 degrees F, two CCPs are capable of injecting into the RCS, one of which is CCP-3 aligned for LTOP operation.

B. with RCS temperature at or below 156 degrees F, only one CCP is capable of injecting into the RCS.

The following is a list of the approximate dates in the prior 3 years in which DCPP relied on LTOP and was in configuration A listed above and not in compliance with TS 3.4.12:

Unit 1:
Refueling outage 16 (10/03/10 at 06:50 - 10/03/10 at 17:40)
(11/02/10 at 07:30 - 11/05/10 at 0130)

Refueling outage 17 (04/22/12 at 22:20 – 04/23/12 at 17:40)
(06/08/12 at 13:50 – 06/10/12 at 16:00)

Unit 2:
Refueling outage 16 (05/01/11 at 08:50 – 05/01/11 at 22:00)
(05/31/11 at 09:40 – 06/02/11 at 12:50)

NARRATIVE

D. Status of Inoperable Structures, Systems or Components that contributed to the Event

None.

E. Other Systems or Secondary Functions Affected

None.

F. Method of Discovery

This condition was discovered during a review of operating experience associated with the NRC's TS Interpretation letter dated January 3, 2012, indicating that TS 3.4.12 does not permit operation of more than a single CCP while LTOP is required to be operable.

G. Operator Actions

None.

H. Safety System Responses

None.

III. Cause of the Event

A. The two apparent causes identified with this condition are summarized below:

1. A deficiency in DCPP's 10 CFR 50.59 procedure was identified as the apparent cause. The procedure did not provide guidance regarding proposed design changes that may maintain the original intent but create new literal compliance issues.

2. Human Error - The DCPP staff interpreted the operability requirements outlined in TS 3.4.12 as being equivalent with respect to the PDP to CCP design change.

IV. Assessment of Safety Consequences

The plant configuration controls using the new CCP ensured DCPP operated within the limits of the LTOP analysis, ensuring that the (P/T) limits of 10 CFR 50, Appendix G would not be exceeded. Nuclear or radiological safety was not affected. This event had no impact to safety of the public or station personnel. This event did not impact the reliability of plant operation or production capacity.

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V. Corrective Actions

A. Immediate Corrective Actions

1. Revised all affected procedures (shutdown and startup) to require disabling two CCPs consistent with TS 3.4.12 requirements.

B. Other Corrective Actions

1. Revise the Licensing Basis Impact Evaluations Procedure TS3.ID2 to provide clear guidance regarding equivalent replacements that may create new literal compliance issues.

2. Revise Current Licensing Basis Determination Procedure XI3.ID12 to discuss the importance of literal compliance with DCPP TS and license.

3. Provide lessons-learned discussion to staff associated with design changes including staff from other key departments.

VI. Previous Similar Events

There have been no similar reportable events within the last 3 years.

VII. Additional Information

None