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August 31, 2012

PG&E Letter DCL-12-082

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 Units 1 and 2
Licensee Event Report 1-2012-005-00, Unanalyzed Condition due to Nonconservative Change in Atmospheric Dispersion Factor

Dear Commissioners and Staff:

Pacific Gas and Electric Company (PG&E) submits the enclosed Licensee Event Report (LER) regarding the discovery of a nonconservative historical change in the control room ventilation system atmospheric dispersion factor methodology on July 5, 2012. PG&E is submitting this LER in accordance with 10 CFR 50.73(a)(2)(i)(B), 10 CFR 50.73(a)(2)(ii)(B), 10 CFR 50.73(a)(2)(v)(D), and 10 CFR 50.73(a)(2)(vii). PG&E will submit a supplemental LER explaining the safety consequences of this issue following completion of our assessment.

This LER also mentions a related issue identified on August 28, 2012 (Event Notification 48246), that PG&E is still investigating. PG&E will either withdraw that notification or submit a separate LER to the NRC for the August 28, 2012, issue based on the outcome of its investigation.

PG&E makes no new or revised regulatory commitments (as defined by NEI 99-04) in this report.

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

Sincerely,

James M. Welsch
Interim Site Vice President

wrl8/6980/50497328
Enclosure
cc/enc: Elmo E. Collins, NRC Region IV
Dean H. Overland, NRC Senior Resident Inspector
Michael S. Peck, NRC Senior Resident Inspector
Joseph M. Sebrosky, NRR Senior Project Manager
INPO
Diablo Distribution

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

Unanalyzed Condition due to Nonconservative Change in Atmospheric Dispersion Factor

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
07	05	2012	2012	- 005 -	00	08	31	2012	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)	☐ 20.2203(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)
☐ 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	TELEPHONE NUMBER *(Include Area Code)*
Wilbert R. Landreth, 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
04	01	2013

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

On July 5, 2012, Pacific Gas and Electric Company (PG&E) identified a nonconservative change in the Diablo Canyon Power Plant (DCPP) Updated Final Safety Analysis Report (UFSAR) Chapter 15, "Accident Analyses," control room (CR) atmospheric dispersion factor (X/Q) methodology, made in Revision 2 of the DCPP UFSAR in 1986. The change in methodology under-predicted the overall radiological dose received by the CR operators in the event of various design basis accidents. On July 26, 2012, PG&E completed a Prompt Operability Assessment that concluded the CR operator dose limit of 30 Rem thyroid following a large-break loss-of-coolant accident (LBLOCA) would not be exceeded using compensatory actions to restrict allowable emergency core cooling system leakage and containment leakage. PG&E also established a compensatory measure prohibiting fuel movement inside the fuel handling building and inside the containment. On August 28, 2012, PG&E identified additional release pathways that could affect the CR operator dose following a LBLOCA (see Event Notification 48246). Consequently, PG&E declared the control room envelope inoperable and established mitigative actions in accordance with Technical Specification 3.7.10, Actions B.1 and B.2.

PG&E will revise the X/Qs and incorporate them into the DCPP licensing basis. PG&E will submit a supplemental report on the July 5, 2012, issue following completion of its safety consequences assessment. PG&E will either retract the notification or submit a separate report for the August 28, 2012, issue mentioned in this report.

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NARRATIVE

I. Plant Conditions

On July 11, 2012, Units 1 and 2 were in Mode 1 (Power Operation) at 100 percent power. The Unit 1 control room envelope (CRE) was inoperable due to preplanned maintenance on a Unit 1 control room ventilation system (CRVS) subtrain.

II. Problem Description

A. Background

Units 1 and 2 CRVS provides a protected environment from which operators can control the units from the common control room (CR) following an uncontrolled release of radioactivity, hazardous chemicals, or smoke. The CRVS consists of two trains (one CRVS train from each unit) that recirculate and filter the air in the common CRE, and a CRE boundary that limits the in-leakage of unfiltered air. Each train is comprised of two redundant, full-capacity, active components such that each train is composed of two subtrains.

The CRVS is an emergency system, parts of which may also operate during normal unit operations. Upon receipt of an actuating signal, the normal air supply to the CRE is isolated, and the stream of outside ventilation air from the pressurization system and recirculated CR air is passed through a system filter [FLT]. The pressurization system draws outside air from either the north end or the south end of the turbine building [NM]. The prefilters remove any large particles in the air to prevent excessive loading of the charcoal adsorbers [ADS].

The CRVS is designed to maintain a habitable environment in the Units 1 and 2 common CRE for the duration of the most severe design basis accident (DBA) without exceeding 5 Rem whole-body dose or its equivalent to any part of the body (calculated over 30 days) to assure compliance with General Design Criteria (GDC) 19. Updated Final Safety Analysis Report (UFSAR) Chapter 15 dose analyses use atmospheric dispersion factors (X/Qs) to determine the dose CR operators receive after an accident.

B. Event Description

On July 5, 2012, Pacific Gas and Electric Company (PG&E) identified a nonconservative change in the Diablo Canyon Power Plant (DCPP) UFSAR Chapter 15, "Accident Analyses," CR X/Q values made in Revision 2 in 1986. Before Revision 2 of the DCPP UFSAR, the CR X/Q calculation used the Murphy-Campe (MC) methodology. Revision 2 of the DCPP UFSAR replaced the MC methodology with a modified-Halitsky (MH) methodology for determining X/Qs. PG&E did not evaluate the UFSAR Revision 2 change in accordance with 10 CFR 50.59 to determine whether or not NRC review and approval of the change was required prior to implementation. The UFSAR change request did identify that the change increased the radiological dose the CR operators would receive in the event of an accident, but that dose would not exceed GDC 19 limits.

On July 11, 2012, at 0345 PDT, CR operators declared the CRE inoperable because the CR dose calculations used a X/Q value that was neither evaluated per 10 CFR 50.59 nor reviewed and approved by the NRC for use at DCPP, and thus constituted an unanalyzed condition. The NRC Resident Inspector identified PG&E's delay in reviewing operability

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between July 5 and July 11, 2012. The delay was due to personnel errors in communicating the concern to control room licensed operators for evaluation. Preliminary dose calculations, using the originally-licensed methods, concluded the CR operator dose limit of 30 Rem thyroid would be exceeded following a large-break loss-of-coolant accident (LBLOCA). Plant operators had already entered Technical Specification (TS) 3.7.10, "Control Room Ventilation System (CRVS)," Condition B, which states: "One or more CRVS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4," due to preplanned maintenance on a Unit 1 CRVS subtrain. Since plant operators had already completed Action B.1, "Initiate action to implement mitigating actions immediately," and Action B.2, "Verify mitigating actions ensure CRE occupant exposures to radiological hazards will not exceed limits, and CRE occupants are protected from smoke and chemical hazards within 24 hours," because of the preplanned maintenance, operators reevaluated the mitigating actions (i.e., availability of self-contained breathing apparatus and staging of potassium iodide) that were already in place and found them to be adequate. However, Action B.3, "Restore CRE boundary to OPERABLE status," had not yet been completed.

On July 26, 2012, at 1152 PDT, PG&E established new compensatory actions to restrict allowable emergency core cooling system (ECCS) leakage, and containment [NH] leakage, and declared the CRE operable after completing a Prompt Operability Assessment (POA) that concluded the CR operator dose limit of 30 Rem thyroid following a LBLOCA would not be exceeded under accident conditions with the compensatory actions in place. The POA additionally identified the fuel handling accident analyses also used the MH methodology X/Qs. Compensatory actions were established to prohibit fuel movement until the issue was resolved.

Emergency planning models and offsite dose analyses do not rely on the X/Qs derived from MH methodology and are not impacted by this incorrect analysis change. Therefore, this condition is limited to the CR post-accident dose for both Units 1 and 2.

As a result of further investigation into this issue, on August 28, 2012, PG&E identified additional release pathways that could affect the CR operator dose following a LBLOCA (see Event Notification 48246). Consequently, PG&E declared the CRE inoperable and established mitigative actions in accordance with TS 3.7.10, Actions B.1 and B.2. Accordingly, PG&E has concluded that, pending reanalysis, the CRVS would not have been capable of performing its safety function of mitigating the CR operator dose consequences of a LBLOCA. PG&E will either withdraw that notification or submit a separate licensee event report (LER) on the August 28, 2012, issue based on the outcome of its investigation.

PG&E has not completed reanalysis of the fuel handling accidents. PG&E conservatively assumed that the CR operator dose limits would be exceeded, pending reanalysis of the fuel handling accidents. Therefore, PG&E has concluded that, pending reanalysis, the CRVS would not have been capable of performing its safety function of mitigating the consequences of a fuel handling accident for past fuel handling activities. PG&E has implemented a compensatory measure prohibiting fuel movement inside the fuel handling building (FHB) [ND] and inside the containment until this issue is resolved.

C. Status of Inoperable Structure, Systems, or Components That Contributed to the Event

None.

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D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

PG&E discovered this incorrect change to the X/Qs during a licensing basis review of UFSAR Chapter 15, Section 15.5, "Environmental Consequences of Plant Accidents."

F. Operator Actions

On July 11 and August 28, 2012, plant operators entered TS 3.7.10, "Control Room Ventilation System (CRVS)," Condition B, and implemented mitigative actions as directed by TS Actions B.1 and B.2, as previously discussed in Section B, "Event Description."

G. Safety System Responses

None.

III. Cause of the Problem

The incorrect change of the X/Qs was determined to have been caused by inadequate design control processes in 1986, whereby the analysis change was made without evaluating the change in accordance with 10 CFR 50.59 to determine whether prior NRC review and approval was required.

IV. Assessment of Safety Consequences

To be provided in a supplemental LER.

V. Corrective Actions

1) PG&E will revise the accident analyses which used the MH X/Qs and incorporate the revised analyses into the DCPP licensing basis.

2) PG&E will complete its licensing basis verification project that is reviewing, validating, and revising the current DCPP licensing basis where found to be necessary. This project was initiated in 2010. This project identified the problem described in this LER.

3) Additional corrective actions will be addressed and reported in a supplemental LER as necessary.

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A. Immediate Corrective Actions

Operators reviewed the mitigating actions in place for adequacy to assure that CR operator dose would remain acceptable following a LBLOCA. PG&E has implemented a compensatory measure prohibiting fuel movement inside the FHB and inside the containment and revised operational restrictions on ECCS leakage and containment leakage.

VI. Additional Information

A. Failed Components

None.

B. Previous Similar Events

On September 12, 2011, at 1745 PDT, operators declared the Units 1 and 2 CRE boundary inoperable and entered TS 3.7.10, "Control Room Ventilation System (CRVS)." This was due to discovery of inadequately-documented CRE in-leakage test data. At 2257 PDT on September 12, 2011, PG&E made an 8-hour nonemergency report under 10 CFR 50.72(b)(3)(ii)(B). Human error affected the interpretation of test results and led to the nonconservative determination of zero in-leakage in 2005. Plant staff verified that administrative controls were in place to maintain post-LOCA ECCS leakage at a rate that would ensure that CR operator doses would not exceed GDC 19 limits. PG&E performed an assessment of the testing and revised procedures to specify separate acceptance criteria for each of the tested CRVS configurations in accordance with RG 1.197. (Reference LER 1-2011-007-01)

On November 3, 2011, at 1550 PDT, PG&E determined that the DCPP CRVS had a design vulnerability; whereby, unfiltered air supplied to the control room could exceed the flow rates used in the licensing-basis analysis of design basis accident consequences. PG&E discovered this vulnerability during performance of control room in-leakage testing required by TS Surveillance Requirement 3.7.10.5. On November 3, 2011, at 2051 PDT, PG&E made an 8-hour nonemergency report under 10 CFR 50.72(b)(3)(ii)(B). (Reference LER 1-2011-008-00)

C. Industry Reports

None.