



**Pacific Gas and
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October 14, 2014

PG&E Letter DCL-14-090

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

10 CFR 50.73

Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
Licensee Event Report 2014-002-00, Unit 2 Plant Shutdown Required
by Technical Specifications

Dear Commissioners and Staff:

Pacific Gas and Electric Company (PG&E) submits the enclosed Licensee Event Report (LER) regarding the completion of a Unit 2 plant shutdown required by Technical Specifications as a result of two inoperable emergency diesel generators. PG&E is submitting this LER in accordance with 10 CFR 50.73(a)(2)(i)(A) Plant Shutdown Required by Technical Specifications, 10 CFR 50.73(a)(2)(v) Event or Condition that Could Have Prevented Fulfillment of a Safety Function, and 10 CFR 50.73(a)(2)(vii) Common Cause Inoperability of Independent Trains or Channels.

PG&E is currently evaluating the cause of the event and will submit a supplemental LER no later than January 29, 2015.

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,

Barry S. Allen

JY1E/4609/50652048

Enclosure

cc\enc.: Marc L. Dapas, NRC Region IV Administrator
Thomas R. Hipschman, NRC Senior Resident Inspector
Eric R. Oesterle, NRR Project Manager
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 2

2. DOCKET NUMBER

05000 323

3. PAGE

1 OF 4

4. TITLE

Unit 2 Plant Shutdown Required by Technical Specifications

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
08	14	2014	2014	02	- 00	10	14	2014	FACILITY NAME	DOCKET NUMBER
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
1			<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	
			<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(2)(i)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
10. POWER LEVEL 100			<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
			<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.36(c)(2)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(v)		<input checked="" type="checkbox"/> 50.73(a)(2)(i)(A)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> OTHER	
			<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)		Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT
James Morris, Regulatory Services

TELEPHONE NUMBER (Include Area Code)
805-545-4609

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
X	DC	DG	ALCO	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☒ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☐ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
01	29	2015

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

On August 13, 2014, while performing scheduled maintenance on Unit 2 Emergency Diesel Generator (EDG) 2-2, DCPD identified a failed Inlet-to-Fuel-Header capscrew on engine cylinder 1L. As part of subsequent inspections to determine whether a similar condition existed on any of the other Unit 1 or Unit 2 EDGs, a degraded capscrew was identified on EDG 2-3 cylinder 8L. No capscrew issues were identified on the Unit 1 EDGs or on Unit 2 EDG 2-1. EDG 2-3 was declared inoperable at 1631 on August 14, 2014, resulting in two of three EDGs being inoperable at the same time, which requires ensuring at least two EDGs are operable within 2 hours, or be in Mode 3 within the following 6 hours.

Although the capscrew on EDG 2-3 was successfully replaced within 2 hours, during fuel system fill and vent following corrective maintenance, a fuel oil leak from the belt driven fuel oil booster pump occurred. Because repairs of EDG 2-3 could not be completed within the time permitted by Technical Specification (TS) 3.8.1 for two EDGs inoperable, a Unit 2 plant shutdown commenced. On August 14, 2014 at 2351 hours, Unit 2 entered Mode 3.

PG&E will provide the event cause and corrective actions once the associated cause evaluation is complete.

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

**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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Diablo Canyon Power Plant Unit 2	05000 323	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 4
		2014	- 02	- 00	

NARRATIVE

I. Plant Conditions

Unit 2 was in Mode 1 at 100 percent reactor power, with normal operating reactor coolant temperature and pressure.

II. Problem Description

A. Background

Each Diablo Canyon Power Plant (DCPP) unit has three emergency diesel generators (EDGs) [DG] that provide vital backup power to three electrical buses [BU] to mitigate the consequences of a design basis accident (DBA) whenever normal and backup offsite power sources [EK] are unavailable. DCPP EDGs are designed to function so that a single failure of any EDG will not jeopardize the capability of the remaining EDGs to start and provide power to operate the shutdown systems required to mitigate any DBA condition.

B. Event Description

On August 13, 2014, while performing scheduled maintenance on Unit 2 EDG 2-2, Pacific Gas and Electric Company identified a failed Inlet-to-Fuel-Header capscrew on engine cylinder 1L. As part of the DCPP EDG design, two capscrews connect each injection pump fuel inlet to the fuel header. The fuel inlet supplies low-pressure fuel to the fuel injection pumps, which supplies high-pressure fuel to each cylinder. In the event of a capscrew failure, a potential leak path is created. As part of subsequent inspections to determine whether a similar condition existed on any of the other Unit 1 or Unit 2 EDGs, a degraded capscrew was identified on EDG 2-3 cylinder 8L. No capscrew issues were identified on the Unit 1 EDGs or on Unit 2 EDG 2-1. EDG 2-3 was declared inoperable at 1631 on August 14, 2014, resulting in two of three EDGs being inoperable at the same time, which requires ensuring at least two EDGs are operable within 2 hours, or be in Mode 3 within the following 6 hours.

Although the capscrew on EDG 2-3 was successfully replaced within 2 hours, during fuel system fill and vent following corrective maintenance, a fuel oil leak from the belt driven fuel oil booster pump occurred. Because repairs of EDG 2-3 could not be completed within the time permitted by Technical Specification (TS) 3.8.1 for two EDGs inoperable, a Unit 2 plant shutdown commenced. On August 14, 2014, at 2351 hours, Unit 2 entered Mode 3.

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

No other structure, systems, or components contributed to the event.

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NARRATIVE

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

The EDG 2-2 failed capscrew was identified while performing scheduled maintenance. The EDG 2-3 degraded capscrew was identified during the associated extent of condition investigation performed on all the other EDGs.

F. Operator Actions

With two EDGs inoperable, a Unit 2 plant shutdown commenced in accordance with TS requirements, with Unit 2 entering Mode 3 at 2351 hours on August 14, 2014.

G. Safety System Responses

None.

III. Cause of the Problem

PG&E is conducting a cause evaluation on this event and will submit a supplemental LER documenting the results of this investigation once it is complete.

IV. Assessment of Safety Consequences

In accordance with the TS, Unit 2 was safely shutdown. Following completion of the cause evaluation for this event, the associated safety consequences assessment will be included in the supplement to this LER.

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

V. Corrective Actions

A. Immediate Corrective Actions

1. The degraded capscrew on EDG 2-3 was replaced, the fuel oil booster pump leak was repaired, and the EDG was successfully restored to Operable condition on August 15, 2014 at 1831 hours.
2. The failed capscrew on EDG 2-2 was replaced as part of its scheduled maintenance window.

B. Additional Corrective Actions

Additional corrective actions associated with this event will be discussed in the LER supplement, following completion of the associated cause evaluation.

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NARRATIVE

VI. Additional Information

A. Previous Similar Events

On February 9, 2011, a fuel leak was found on EDG 2-1 during a routine test run. The disassembly investigation determined that the leak had originated from the cylinder 9L special capscrews. Further disassembly determined that one of the special capscrews was fully cracked across the entire cross-section of the threaded portion of the bolt. Metallurgic analysis identified that the failure mechanism was high-cycle fatigue with a slow propagation of the crack due to a low stress in the joint. It was concluded that without proper special capscrew preloading, these special capscrews would be susceptible to high-cycle fatigue failure.

As an extent of condition corrective action, all Original Equipment Manufacturer ALCO special capscrews were removed and replaced with FM-G5E special capscrews in the Unit 1 and Unit 2 EDGs. These removed special capscrews were magnetic particle tested to determine if any crack initiation existed. 208 special capscrews tested satisfactory, satisfying the initial sampling population with no unsatisfactory findings.

In determining the apparent cause of the failure, a system engineer from Salem Nuclear Generating Station was contacted about a similar event. Salem had two failures of the special capscrews and it was concluded to be caused by the special capscrew being inadequately tensioned before reaching the end of the threads in the blind tapped hole. Measurements of the EDG 2-1 cylinder 9L capscrew length, flange thickness, and tapped blind hole thread depth determined that less-than-adequate thread depth was available to ensure proper special capscrew preloading and flange gasket crush. For this reason, special capscrew blind holes were bottom-tapped on all six EDGs in the fuel header to ensure sufficient thread engagement as a corrective action.