Pacific Gas and Electric Company®

Barry S. Allen
Site Vice President

Diablo Canyon Power Plant
Mail Code 104/6
P. O. Box 56
Avila Beach, CA 93424

805.545.4888
Internal: 691.4888
Fax: 805.545.6445

May 14, 2014

PG&E Letter DCL-14-044

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 1-2013-009-01, Unanalyzed Condition Affecting Unit 1 Emergency Diesel Generators

Dear Commissioners and Staff:

Pacific Gas and Electric Company (PG&E) submits the enclosed Licensee Event Report (LER) supplement for an unanalyzed condition that affected the Unit 1 emergency diesel generators. PG&E is submitting this LER supplement in accordance with 10 CFR 50.73(a)(2)(ii)(B) and 50.73(a)(2)(v)(D). PG&E is submitting this supplement to provide updated cause and corrective action information.

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

SSZ1/4040/50599190
Enclosure
Cc\enc.: Peter J. Bamford, NRR Project Manager
Marc L. Dapas, NRC Region IV Administrator
Thomas R. Hipschman, NRC Senior Resident Inspector
INPO
Diablo Distribution

NRC FORM 366 (01-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Diablo Canyon Power Plant Unit 1	05000 275	1 OF 4

4. TITLE

Unanalyzed Condition Affecting Unit 1 Emergency Diesel Generators

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
										05000
12	14	2013	2013	- 009	- 01	05	14	2014	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	☐ 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)
100	☐ 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)*
Steven Zawalick, Senior Engineer, Regulatory Services	(805) 545-4040

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	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☑ NO				

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

On December 14, 2013, at 15:03 PST, with Diablo Canyon Power Plant (DCPP) Unit 1 operating in Mode 1 at approximately 100 percent power, engineers identified a vulnerability to extreme weather. A combination of sustained high winds over 60 miles per hour and ambient air temperatures exceeding 97°F could reduce cooling capacity such that the emergency diesel generators would exceed design limits, contrary to the requirements of General Design Criteria (GDC) 2. On December 14, 2013, at 16:32 PST, DCPP made an 8-hour, non-emergency report to the NRC (reference NRC Event Notification Number 49634) per 10 CFR 50.72(b)(3)(ii)(B).

Upon identification of this condition, shift orders were issued that require, when conditions warrant, the implementation of existing procedural guidance to open plant doors. This will allow additional air flow, shown to provide adequate emergency diesel generator cooling to support continuous operation of the Unit 1 emergency diesel generators.

An apparent cause evaluation concluded that PG&E did not have a design process requirement in place to evaluate GDC-2 design criteria relative to SSC functional requirements other than for structural integrity issues. Plant procedures were revised to include this requirement and PG&E will issue a design change to permanently modify the plant to resolve the wind issue.

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

NARRATIVE

I. Plant Conditions

Unit 1 operated in Mode 1 (Power Operation) at approximately 100 percent reactor power with normal operating reactor coolant temperature and pressure throughout the event.

II. Problem Description

A. Background

Diablo Canyon Power Plant (DCPP) Unit 1 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 or 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.

The DCPP EDGs are cooled using engine-driven fans [FAN] that provide cooling air to the diesel generator radiators [HX]. The radiator fan draws air through the radiator, maintaining jacket water temperature and, in turn, maintaining lubricating oil temperature. Jacket water to the aftercooler also affects combustion air temperature. The radiator fan also draws ambient air through the engine compartment to cool the equipment housed within it.

Inability to maintain adequate radiator air flow will result in a rise in EDG jacket water temperature, higher component temperatures in the engine compartments, derating of the engine due to increased combustion air temperature, higher lubricating oil temperatures, and high cylinder jacket temperatures. This could result in a failure of the EDGs to perform their safety function.

For this analysis, "sustained high winds" is using as the average of Plant Process Computer (PPC) [PPC] data over a fifteen minute period.

B. Event Description

As reported in NRC EN 49634, DCPP identified that if atmospheric conditions were to develop that had both sustained high winds exceeding 60 miles per hour from the northwest (NW) to north northeast (NNE) direction, and ambient air temperature exceeding 97°F, the combination of these conditions could result in inadequate heat removal to support continuous operation of the Unit 1 emergency diesel generators.

On Unit 1, the main EDG radiator fan discharge flow is directed from the radiator, vertically though the turbine building 107 foot elevation floor, horizontally toward the west, out of the building on the west wall, and vertically through the exhaust plenums [DUCT]. A second exhaust flow path, however, is available for Unit 1. This second path is directed north along the EDG exhaust silencers, then out of the north wall either through a small set of louvers at the 107 foot elevation or downward and out the north wall through louvers at the 85 foot elevation.

Sustained high winds blowing from a direction between 304° to 33° (NW to NNE) would oppose the normal air flow and create a backpressure on the EDG 1-1, 1-2 and 1-3 radiator fans through the exhaust flow paths on the north side of the turbine building. This could prevent adequate air flow and cooling through the EDG radiators.

High winds from the west would not adversely impact the exhaust flow out of the west wall plenum. The EDG ventilation system is not impacted by winds from other directions because of the site layout.

At the time of discovery, all offsite and onsite power sources were operable.

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

This issue is not currently impacting any plant equipment as winds are light and temperatures are mild. DCPP has no recorded evidence of sustained winds exceeding 55 miles per hour.

D. Other Systems or Secondary Functions Affected

A review of other systems, including the Unit 2 EDGs, concluded that design configurations preclude impacts from design basis winds and temperatures. Some of the systems reviewed had no safety or accident mitigation functions.

E. Method of Discovery

This was discovered during a review of the DCPP licensing basis by the PG&E Licensing Basis Verification Program team. They were investigating a concern brought to them by an outside agency.

F. Operator Actions

Operators verified that the EDGs were operable and issued shift orders that require, when conditions warrant, the implementation of existing procedural guidance to open plant doors. This will allow additional air flow, shown to provide adequate emergency diesel generator cooling to support continuous operation of the Unit 1 EDGs.

G. Safety System Responses

None.

III. Cause of the Problem

An apparent cause evaluation concluded that PG&E did not have a design process requirement in place to evaluate GDC-2 design criteria relative to SSC functional requirements other than for structural integrity issues.

IV. Assessment of Safety Consequences

DCPP performed a probabilistic risk assessment and documented the results in a formal calculation (PRA Calculation SDP 13-07). The risk contribution of the as-found condition was below the low risk significance guidance, deemed a "green" risk.

V. Corrective Actions

A. Immediate Corrective Actions

Operators verified that the EDGs were operable and issued shift orders that require, when conditions warrant, the implementation of existing procedural guidance to open plant doors. This will allow additional air flow, shown to provide adequate EDG cooling to support continuous operation of the Unit 1 EDGs.

A PPC alarm was established to warn operators of winds exceeding 60 miles per hour. If the plant is experiencing sustained winds exceeding 60 miles per hour from a direction between 304° (NW) and 33°(NNE), operators will implement procedure steps to supplement EDG cooling.

Operators performed a plant walk down to verify that the instructions in the shift order were sufficient to physically implement the corrective actions.

B. Other Corrective Actions

An increased monitoring sheet has been implemented utilizing PPC points for primary met tower ambient air temperature and wind speed. Should the combination of high ambient air temperature and high wind speed approach the thresholds for operability in the parametric study, operators will contact engineering for evaluation.

The PG&E design process procedures were revised to require evaluation of GDC-2 design criteria. PG&E will issue a design change to permanently modify the plant to resolve the wind issue.

VI. Additional Information

None.

A. Failed Components

None.

B. Previous Similar Events

None.

C. Industry Reports

None.