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March 30, 2015

PG&E Letter DCL-15-042

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  
Supplemental Licensee Event Report 1-2014-004-01, Actuation of Six Emergency  
Diesel Generators due to Loss of Offsite Power

Dear Commissioners and Staff;

Pacific Gas and Electric Company (PG&E) submits the enclosed supplemental Licensee Event Report (LER) regarding the valid actuation of all six safety-related emergency diesel generators due to the loss of 230 kV offsite power. Both Units 1 and 2 were impacted by this event. PG&E is submitting this LER in accordance with 10 CFR 50.73(a)(2)(iv)(A). All systems operated as designed with no problems observed.

PG&E makes no new or revised regulatory commitments (as defined by NEI 99-04) in this report. All corrective actions identified in this letter are being 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

aph8/6470/50669932

Enclosure

cc/enc: Marc L. Dapas, NRC Region IV Administrator  
Thomas R. Hipschman, NRC Senior Resident Inspector  
Siva P. Lingham, 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.

<b>1. FACILITY NAME</b> Diablo Canyon Power Plant, Unit 1	<b>2. DOCKET NUMBER</b> 05000 275	<b>3. PAGE</b> 1 OF 4
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**4. TITLE**  
Actuation of Six Emergency Diesel Generators due to Loss of Offsite Power

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
10	31	2014	2014	004	01	03	30	2015	Diablo Canyon Unit 2	05000 323
									FACILITY NAME	DOCKET NUMBER

<b>9. OPERATING MODE</b>		<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>							
<b>1</b>	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input 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)					
<b>100</b>	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" 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 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 type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)					
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input 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 type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A					

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME Andrew Heffner, Regulatory Services Engineer	TELEPHONE NUMBER (Include Area Code) 805-545-6470
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**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
C	EK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR

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

On October 31, 2014, at 17:40 PDT, during a medium to heavy rain, Pacific Gas and Electric Company (PG&E) lost its 230 kV offsite power source at the Diablo Canyon Power Plant when an insulator in the 230 kV switchyard flashed over. This resulted in the valid start of all Unit 1 and 2 emergency diesel generators (EDGs), three per unit. All EDGs successfully started, but did not load since all associated electrical buses remained energized by auxiliary power. All systems operated as designed with no problems observed. The 230 kV offsite power source is the only offsite power system designed to be immediately available following an accident. However, the safety-related onsite EDGs would have provided power to mitigate the consequences of an accident while the 230 kV system was unavailable. On October 31, 2014, at 23:07 PDT, PG&E made an 8-hour nonemergency report to the NRC. The 230 kV offsite power was declared operable on November 1, 2014, at 02:29 PDT.

PG&E completed a root cause evaluation and determined that inadequate organizational oversight and alignment resulted in ineffective and untimely execution of planned corrective actions intended to prevent excessive buildup of environmental contaminants on the 230 kV insulators.

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](mailto: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**

Just prior to, and following, the event, Unit 1 operated in Mode 1 (Power Operation) at approximately 100 percent reactor power with normal operating reactor coolant temperature and pressure. Unit 2 operated in Mode 4 (Hot Shutdown) at 0 percent power with power supplied from the 500 kV auxiliary power source.

**II. Problem Description**

**A. Background**

The Diablo Canyon Power Plant (DCPP) electrical systems are designed to ensure an adequate supply of electrical power to all essential auxiliary equipment during normal operation and under accident conditions. Nonvital 4 kV alternating current (AC) auxiliary buses [BU] are energized by either offsite power or power from the main generator. Vital AC buses [EA] have an additional available source, which includes onsite power delivered by emergency diesel generators (EDGs) [DG]. The electrical systems are designed so that failure of any one electrical device will not prevent operation of the minimum required engineered safety feature (ESF) equipment.

DCPP offsite power is supplied by two systems that are physically and electrically separated and independent of each other: (1) a 230 kV system [EK] and (2) a 500 kV system [EK]. The 230 kV system provides offsite startup and standby power, and provides an immediately available source of offsite power to the 4 kV system. To make power available to the vital 4 kV buses, the 230 kV system provides power to Startup Transformers (SUT)[EA][XFMR] 1-1 and 2-1 (230 kV to 12 kV), which then feeds SUT 1-2 and 2-2 (12 kV to 4 kV). The 500 kV system provides for transmission of the plant's power output, and is also available as a delayed access source of offsite power after the main generator is disconnected.

To produce onsite power, each unit has three EDGs, which supply power to the 4 kV vital AC buses when 230 kV startup power is unavailable or voltage degrades below a point at which required ESF loads would be operable. The EDGs start in standby mode on loss of 230 kV startup power. After the EDGs start, they supply power to their respective vital bus if the buses are deenergized. If the vital buses are not deenergized, the EDGs continue to run in standby mode, ready to provide power if required.

**B. Event Description**

On October 31, 2014, at 17:40 PDT, during a medium to heavy rain, Pacific Gas and Electric Company (PG&E) lost its offsite 230 kV offsite power source at DCPP due to an insulator flashover in the 230 kV switchyard, resulting in the valid anticipatory start of all Unit 1 and 2 EDGs, three per unit. This is reportable, in accordance with 10 CFR 50.73(a)(2)(iv)(A), as an event that resulted in the valid actuation of EDGs. All EDGs successfully started, but did not load since all associated electrical buses remained energized by auxiliary power. All systems operated as designed with no problems observed. However, the safety-related onsite EDGs would have provided power to mitigate the consequences of an accident while the 230 kV system was unavailable. On October 31, 2014, at 23:07 PDT, PG&E made an 8-hour nonemergency report to the NRC (Reference NRC Event Notification Number 50586). The 230 kV offsite power was declared operable on November 1, 2014, at 02:29 PDT.

**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**

Licensed plant operators immediately recognized the event by alarms and indications received in the control room.

**F. Operator Actions**

On November 1, 2014, operators restored the Unit 1 and Unit 2 EDGs, respectively, to standby service. The 230 kV offsite power system was declared operable on November 1, 2014, at 02:29 PDT.

**G. Safety System Responses**

All Unit 1 and Unit 2 EDGs started as designed with no problems observed.

**III. Cause of the Problem**

A. Root Cause:

PG&E completed a root cause evaluation and determined that inadequate organizational oversight and alignment resulted in ineffective and untimely execution of planned corrective actions intended to prevent excessive buildup of environmental contaminants on the 230 kV insulators.

**IV. Assessment of Safety Consequences**

The 230 kV startup power is a standby system. Its loss was due to a degraded condition in the 230kv switchyard. This event did not create a transient at the plant. A Significance Determination Process evaluation allows taking credit for the actual plant configuration at the time of an event. With the successful start of all EDGs upon the loss of startup power, the vital AC power supply to all emergency core cooling system loads would have been maintained. A bounding analysis was performed and resulted in an incremental core damage and incremental large early release probabilities that were well below their respective acceptance criteria.

**V. Corrective Actions**

1. A new Project Manager has been designated to implement activities to effectively prioritize action plans into one comprehensive strategy for recovery between Transmission and DCPD projects.
2. Revised the Transmission & Distribution Interface procedure to ensure a single point of contact with ownership and oversight over switchyards affecting DCPD reliability to strengthen execution of maintenance and corrective actions.

**VI. Additional Information**

**A Failed Components**

None.



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**B. Previous Similar Events**

On May 12, 2007, at 10:25 PDT, during a refueling outage at DCP, with Unit 1 in no Mode (core offloaded to the spent fuel pool) and Unit 2 in Mode 1 at approximately 100 percent power, an EDG system actuation was initiated on loss of 230 kV startup power supply due to an offsite transmission system insulator failure resulting in a phase to ground short and unanticipated protective relay response. Two Unit 1 EDGs started and loaded to provide onsite power. Unit 1 had one EDG and auxiliary offsite power cleared for maintenance. All three Unit 2 EDGs started as required, but did not load since all associated buses remained energized by auxiliary power. On May 12, 2007, at 14:30 PDT, operators restored startup power to the site. On May 12, 2007, at 15:09 PDT, operators made a nonemergency event notification (EN 43360) in accordance with 10 CFR 50.72(b)(3)(iv)(A).

On June 23, 2013, at 21:20 PDT, PG&E lost its 230 kV offsite power source at the DCP, due to an offsite transmission system insulator failure resulting in a phase to ground short and unanticipated protective relay response. This resulted in the valid start of all Unit 1 and 2 EDGs, three per unit. All EDGs successfully started, but did not load since all associated buses remained energized by auxiliary power. All systems operated as designed with no problems observed. The 230 kV offsite power source is the only offsite power system designed to be immediately available following an accident. However, the safety-related onsite EDGs would have provided power to mitigate the consequences of an accident while the 230 kV system was unavailable. On June 24, 2013, at 01:35 PDT, PG&E made an 8-hour nonemergency event notification.

**C. Industry Reports**

None.