Pacific Gas and Electric Company

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November 22, 2000

PG&E Letter DCL-00-148

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

Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
Licensee Event Report 2-2000-004-00
Engineered Safety Features Actuation, Diesel Generators Started When Startup Power Was Lost Due to Personnel Error

Dear Commissioners and Staff:

Pursuant to 10 CFR 50.73(a)(2)(iv), PG&E is submitting the enclosed Licensee Event Report 2-2000-004-00 regarding actuation of engineered safety features (emergency diesel generator starts) when startup power was lost due to inadvertent opening of switch 211-2 for Unit 2 startup transformer.

This event was not considered risk significant and did not adversely affect the health and safety of the public.

Sincerely,

D. Mikkelsen for D. H. Oatley

David H. Oatley

cc: Ellis W. Merschoff
David L. Proulx
Girija S. Shukla
Diablo Distribution
INPO

Enclosure

JMB/2246/A0517849

IE22

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Diablo Canyon Unit 2	0 5 0 0 0 3 2 3	1 OF 6

TITLE (4)

Engineered Safety Features Actuation, Diesel Generators Started When Startup Power Was Lost Due to Personnel Error

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	23	2000	2000	- 0 0 4 -	0 0	11	22	2000		

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)			
1		X	10 CFR	50.73(a)(2)(iv)
POWER LEVEL (10)			OTHER	
1 0 0				(SPECIFY IN ABSTRACT BELOW AND IN TEXT, NRC FORM 366A)

LICENSEE CONTACT FOR THIS LER (12)

	TELEPHONE NUMBER	
	AREA CODE	
Roger Russell - Senior Regulatory Services Engineer	805	545-4327

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED	MON	DAY	YR
[ ] YES (If yes, complete EXPECTED SUBMISSION DATE)	[X] NO	SUBMISSION DATE (15)			

ABSTRACT (Limit to 1400 spaces. i.e., approximately 15 single-spaced typewritten lines.) (16)

On October 23, 2000, at 1637 PDT, with Unit 2 in Mode 1 (Power Operation) at 100 percent power, Emergency Diesel Generators (EDGs) 2-1, 2-2, and 2-3 started as a result of loss of power to the startup power system. A clearance had been issued for the Unit 1 startup transformer, authorizing the opening of the switch to disconnect the startup transformer from the 230kV system during Mode 6 (Refueling) for scheduled maintenance. However, due to personnel error, the Unit 2 disconnect switch was opened. This resulted in actuation of 4kV startup undervoltage relays, which started all three EDGs. Within three minutes, the Unit 2 disconnect switch was reclosed, and startup power to Unit 2 was restored. The EDGs responded as designed and were secured. This event is an engineered safety feature actuation, and a 4 hour nonemergency report was made on October 23, 2000 at 1825 PDT per 10 CFR 50.72(b)(2). The vital buses remained energized from the auxiliary power system throughout the event. Therefore, the EDGs were not required to supply power to the buses and no other systems were affected.

The root cause of the event is personnel error due to lack of attention to detail.

Corrective actions include adding color-coded signs to the switches and coaching the individuals on self-verification.

TEXT

I. Plant Conditions

Unit 2 was in Mode 1 (Power Operation) at 100 percent power.

II. Description of Problem

A. Background

Each unit has three emergency diesel generators (EDGs)[EK][DG], which supply power to the 4160V vital AC buses [EA][BU] whenever power is either unavailable, or voltage degrades below a point at which required loads would be operable. EDGs automatically start on a safety injection (SI) signal, degraded or loss of voltage on the associated vital bus, or undervoltage on the 230kV startup power system.

After an EDG has started, if the vital bus is deenergized, it will automatically supply power to its respective bus. If the vital bus is not deenergized, the EDG will continue to run but not connect to its vital bus.

During normal operation, the vital buses are powered from the auxiliary power system. The 230kV system provides an alternate source of offsite power to the 4160V System. The 230kV system provides power to Startup Transformers (SUT)[EA][XFMR] 1-1 and 2-1 (230kV to 12kV), which feeds SUT 1-2 and 2-2 (12kV to 4160V), respectively. Startup Transformers 1-2 and 2-2 then supply power to each vital bus. Figure 1 provides additional detail of the startup power system.

In the event of a sustained undervoltage condition on the vital buses, the associated EDGs will start and automatically connect to the bus. Selected loads will then sequence onto the bus. If an SI signal is also present, all ESF load will sequence onto their associated bus.

In this event, the licensed operators involved were carrying out Temporary Procedure (TP) TO-0006, "Energize Unit 1 12kV Startup Bus From Auxiliary Transformer 11 and to Clear Unit 1 Startup Transformers 11 and 12." This procedure includes switching instructions to deenergize and clear the SUTs 1-1 and 1-2 while maintaining the 12kV startup bus energized, and without actuating ESF equipment.

Technical Specification (TS) 3.8.1 requires two qualified circuits (500kV and 230kV systems) between the transmission network and the onsite Class 1E AC electrical power distribution system. If one of the offsite circuits is inoperable, operators must restore that circuit to operable status

within 72 hours. The associated Surveillance Requirement 3.8.1.1 requires operators to verify correct breaker alignment and indicated power availability for each required offsite circuit.

Independent verification is required on clearances. Independent verification is done by a person other than the performer to separately verify the correct action is being performed on the correct component and the correct response is achieved. Depending on the risk of the equipment manipulation, the independent verification is performed either concurrently (verification done as performer manipulates equipment) or nonconcurrently (independent verifier does the checks separately from the performer). In this case, the independent verification was done concurrently.

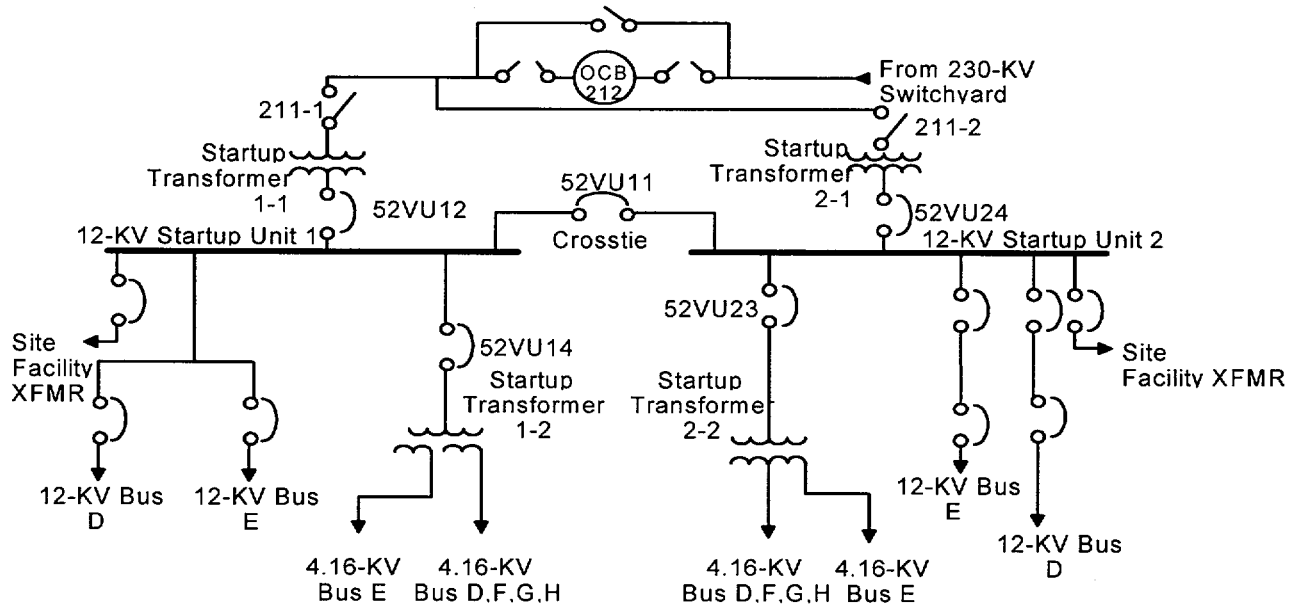

Figure 1: Startup Power Diagram

B. Event Description

On October 23, 2000, at 1637 PDT, while performing switching associated with T0-0006, Step 6.2, licensed plant operators incorrectly opened Disconnect Switch 211-2, causing a loss of startup power to Unit 2, starting all three Unit 2 EDGs. Step 6.2 actually instructed plant operators to open 211-1 to deenergize SUT 1-1.

TEXT

Within 3 minutes, the control room directed the operators to close Disconnect Switch 211-2, which restored startup power to Unit 2. The EDGs responded as designed but did not supply power to the vital buses because they remained energized from the Auxiliary Power System 2-2. This event is considered an engineered safety feature actuation (ESF). On October 23, 2000, at 1825 PDT, a 4-hour nonemergency report was made per 10 CFR 50.72(b)(2). The EDGs did not load on the bus, and no other systems were affected by the ESF actuation.

C. Inoperable Structures, Components, or Systems that Contributed to the Event

There were no inoperable structure, components, or systems. All systems functioned as designed.

D. Other Systems or Secondary Functions Affected

No other systems of secondary functions were affected.

E. Method of Discovery

The event was immediately known to licensed plant operators by alarms and indications received in the control room.

F. Operator Actions

Control room operators received alarms and immediately proceeded to restore startup power and performed required surveillances prior to securing Unit 2 EDGs.

G. Safety System Responses

The EDGs started as designed. There were no other safety system responses.

III. Cause of the Problem

A. Immediate Cause

Disconnect switch 211-2 was inadvertently opened, which caused the EDGs to start.

TEXT

B. Root Cause

The root cause of the event is personnel error due to lack of attention. Both the performer and the verifier failed to verify that the disconnect switch number matched the number in the procedure.

C. Contributory Cause

Labeling of the 211-1 and 211-2 air switch control cabinets was insufficient. The labels did not identify the unit by color.

IV. Analysis of the Event

The 230kV system is designed to provide an immediate source of offsite power in the event that the 500kV auxiliary power system is lost. However, the EDGs are credited as the Class I emergency power source, and would be relied upon for power following a loss of offsite power.

Although the EDGs started as a result of deenergizing the 230kV startup power system, they did not supply power to the vital buses since power was still being supplied to the vital buses from the auxiliary power system. If the auxiliary power system had become inoperable during the event, the EDGs would have automatically powered the vital bus.

The condition was evaluated using the NRC's Significance Determination Process in accordance with NRC Inspection Manual Chapter 0609 and was screened out as green.

Therefore, this event had no adverse affect on the health and safety of the public.

This event is not a safety system functional failure.

V. Corrective Actions

A. Immediate Corrective Actions

TS 3.8.1 was entered when offsite power was lost to Unit 2. The TS was exited when Switch 211-2 was reclosed. The diesel generators were then secured.

TEXT

B. Corrective Actions to Prevent Recurrence

1. Color-coded signs have been installed to designate the switch corresponding to each unit.
2. The operators that made the error were coached and counseled on correct self-verification techniques.

VI. Additional Information

A. Failed Components

All components functioned as designed.

B. Previous Similar Events

There are no previous events related to licensed operators inadvertently opening Disconnect Switch 211 or 211-2 and causing an EDG start.

OUTGOING CORRESPONDENCE SCREEN
(Remove prior to NRC submittal)

Document: PG&E Letter DCL-00-148
Subject: Engineered Safety Features Actuation, Diesel Generators Started When Startup Power Was Lost Due to Personnel Error
File Location C:\TEMP\Unit 2 LER.dot

FSAR Update Review
Utilizing the guidance in XI3.ID2, does the FSAR Update need to be revised? Yes ☐ No ☒ • If "Yes", submit an FSAR Update Change Request in accordance with XI3.ID2 (or if this is an LAR, process in accordance with WG-9)

Commitment #1
Statement of Commitment:

Color-coded signs have been installed to designate the switch corresponding to each unit.

Clarification: [Clarify any statement of commitment (SOC) that cannot be understood when read "out of context" from the DCL, particularly when this statement will be read by a procedure sponsor in the PCD. Otherwise, enter *None*.]

Tracking Document:	*AR or NCR* Q0012212	*AE or ACT* NONE
Assigned To:	*NAME* Rocco Gasparrelli	*ORGANIZATION CODE* PGOM
Commitment Type:	*FIRM OR TARGET* FIRM	*DUE DATE:* 11/3/00
Outage Commitment?	*YES OR NO* NO	*IF YES. WHICH? (E.G.. 2R9. 1R10. ETC.)*
PCD Commitment?	*YES OR NO* NO	*IF YES. LIST THE IMPLEMENTING DOCUMENTS (IF KNOWN)*
Duplicate of New NCR Commitment in PCD?	*YES OR NO* NO	*IF YES. LIST PCD NUMBER (e.a.. T35905. etc.)*
Old PCD Commitment being changed?	*YES OR NO* NO	*1. IF YES, LIST PCD NUMBER, AND* *2. CLARIFY TO CLERICAL HOW COMMITMENT TO BE REVISED*

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Commitment #2
Statement of Commitment:

The operators that made the error were coached and counseled on correct self-verification techniques.

Clarification: [Clarify any statement of commitment (SOC) that cannot be understood when read "out of context" from the DCL, particularly when this statement will be read by a procedure sponsor in the PCD. Otherwise, enter *None*.]

Tracking Document:	*AR or NCR* Q0012212	*AE or ACT* NONE
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Old PCD Commitment being changed?	*YES OR NO* NO	*1. IF YES, LIST PCD NUMBER, AND* *2. CLARIFY TO CLERICAL HOW COMMITMENT TO BE REVISED*