

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9109170215      DOC. DATE: 91/09/06      NOTARIZED: NO      DOCKET #  
 FACIL: 50-275 Diablo Canyon Nuclear Power Plant, Unit 1, Pacific Ga      05000275  
 AUTH. NAME      AUTHOR AFFILIATION  
 HUG, M.T.      Pacific Gas & Electric Co.  
 SHIFFER, J.D.      Pacific Gas & Electric Co.  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 91-013-00: on 910810, containment ventilation isolation occurred during maintenance. Caused by personnel error. Issuing an I&C maintenance bulletin discussing event & policy emphasizing importance of stop work. W/910906 ltr.

DISTRIBUTION CODE: IE22T      COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6  
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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INTERNAL:	ACNW		2	2		ACRS		2	2
	AEOD/DOA		1	1		AEOD/DSP/TPAB		1	1
	AEOD/ROAB/DSP		2	2		NRR/DET/ECMB 9H		1	1
	NRR/DET/EMEB 7E		1	1		NRR/DLPQ/LHFB10		1	1
	NRR/DLPQ/LPEB10		1	1		NRR/DOEA/OEAB		1	1
	NRR/DREP/PRPB11		2	2		NRR/DST/SELB 8D		1	1
	NRR/DST/SICB8H3		1	1		NRR/DST/SPLB8D1		1	1
	NRR/DST/SRXB 8E		1	1		REG FILE 02		1	1
	RES/DSIR/EIB		1	1		RGN5 FILE 01		1	1
EXTERNAL:	EG&G BRYCE, J.H		3	3		L ST LOBBY WARD		1	1
	NSIC PDR		1	1		NSIC MURPHY, G.A		1	1
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Pacific Gas and Electric Company

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James D. Shiffer  
Senior Vice President and  
General Manager  
Nuclear Power Generation



September 6, 1991

PG&E Letter No. DCL-91-218

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80  
Diablo Canyon Unit 1  
Licensee Event Report 1-91-013-00  
Containment Ventilation Isolation During Maintenance Due to  
Personnel Error

Gentlemen:

Pursuant to 10 CFR 50.73(a)(2)(iv), PG&E is submitting the enclosed Licensee Event Report (LER) concerning a containment ventilation isolation system actuation. This actuation constitutes an Engineered Safety Feature (ESF) actuation.

This event has in no way affected the health and safety of the public.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. D. Shiffer'. The signature is fluid and cursive, written over the typed name.

J. D. Shiffer

cc: Ann P. Hodgdon  
John B. Martin  
Phillip J. Morrill  
Paul P. Narbut  
Harry Rood  
CPUC  
Diablo Distribution  
INPO

DC1-91-TI-N068

Enclosure

5464S/0085K/ALN/2246

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S PDR

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# LICENSEE EVENT REPORT (LER)

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TITLE (4) **CONTAINMENT VENTILATION ISOLATION DURING MAINTENANCE DUE TO PERSONNEL ERROR**

EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)			
MON	DAY	YR	YR	SEQUENTIAL NUMBER	REVISION NUMBER	MON	DAY	YR	FACILITY NAMES		DOCKET NUMBER (S)		
08	10	91	91	- 0   1   3	- 0   0	09	06	91			0   5   0   0   0		
													0   5   0   0   0

OPERATING MODE (9) <b>1</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)
POWER LEVEL (10) <b>1   0   0</b>	<input checked="" type="checkbox"/> 10 CFR <u>50.73(a)(2)(iv)</u> <input type="checkbox"/> OTHER - _____ (Specify in Abstract below and in text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
<b>MARTIN T. HUG, SENIOR REGULATORY COMPLIANCE ENGINEER</b>		AREA CODE <b>805</b>	<b>545-4005</b>

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
<input type="checkbox"/> YES (if yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO					

**ABSTRACT (16)**  
 On August 10, 1991, at 0129 PDT, with Unit 1 in Mode 1 (Power Operation) at approximately 100 percent power, a spurious Containment Ventilation Isolation (CVI) actuation occurred. This constitutes an Engineered Safety Feature (ESF) actuation. A four-hour, non-emergency report was made to the NRC in accordance with 10 CFR 50.72(b)(2)(ii) on August 10, 1991, at 0211 PDT.

An Instrumentation and Controls (I&C) technician installed a jumper that shorted a coil for a slave relay and caused a momentary voltage transient in the PY-12 power panel. The momentary PY-12 power panel voltage transient actuated the output relays of radiation monitors RM-14A and RM-28A, which caused a CVI actuation.

The root cause of the event was determined to be personnel error, failure to follow procedures, in that an I&C technician incorrectly installed a jumper without complete knowledge of the results of the action.

The corrective actions to prevent recurrence include: (1) disciplining the technician involved regarding the written I&C policy on proceeding with work when unsure of the results of actions taken; (2) issuing an I&C maintenance bulletin that discusses this event and the policy which emphasizes the importance of stopping work when unsure of the results; (3) issuing an Operations Department maintenance bulletin emphasizing the importance of completion and approval of all parts of Administrative Procedure (AP) C-154, "Control of Main Annunciator System Problems," prior to performance of any annunciator system work controlled by AP C-154; (4) training all I&C technicians on the requirements of AP C-154; and (5) including AP C-154 in I&C recurring administrative procedure training.



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I. Plant Conditions

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

II. Description of Event

A. Event:

On August 10, 1991, at approximately 0040 PDT, the Unit 1 shift foreman requested that two Instrumentation and Controls (I&C) technicians defeat a control room alarm that was spuriously annunciating (IB)(ANN).

After discussions with control room personnel, the technicians decided to install a jumper between the K18 alarm relay (IB)(RLY) output terminals. The shift foreman approved the installation of the jumper, but gave the technicians several possible locations for jumper installation instead of specifying one location for the jumper installation as required by Administrative Procedure (AP) C-154, "Control of Main Annunciator System Problems." The technicians interpreted the main annunciator schematic drawing to indicate that the K18 alarm relay output contact terminals were located in annunciator panel (IB)(PL) PK007. The technicians, however, were unable to identify a suitable jumper location in PK007 (the main annunciator schematic in fact correctly shows the K18 alarm relay to be in PK005). Further investigation identified protection relay rack 21 (IB)(PK) as a possible location to install a jumper for the K18 alarm relay output terminals.

The technicians further reviewed schematic drawings to determine which terminals in rack 21 were the K18 alarm relay output terminals. While one technician continued to review the schematic drawing, the other technician contacted the control room. Once in contact with the control room, the technician told the operator that he was going to install a jumper between the terminals and asked the operator to tell him if the annunciator light cleared or remained lit. I&C guidance prohibits proceeding with an action when unsure of the result of the action, such as installing a jumper when unsure if an annunciator will clear. On August 10, 1991, at 0129 PDT, the technician installed a jumper between the K18 alarm relay coil power terminals instead of the K18 alarm relay output terminals and caused a containment ventilation isolation (CVI) system actuation (JM) without the knowledge of the other technician.

The installation of the jumper between the K18 relay coil power terminals caused a momentary voltage transient in power panel PY-12 (PL). PY-12 provides power to plant ventilation Train A radiation monitors (RM) 14A (IL)(MON) and RM-28A (IL)(MON). The momentary





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voltage transient on RM-14A and RM-28A resulted in a high radiation signal input to the solid state protection system (JG) (SSPS) and caused the CVI system actuation.

A four-hour, non-emergency report was made to the NRC in accordance with 10 CFR 50.72(b)(2)(ii) on August 10, 1991, at 0211 PDT.

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

None.

C. Dates and Approximate Times for Major Occurrences:

1. August 10, 1991, at 0129 PST: Event/Discovery date - The CVI system was actuated during troubleshooting on the annunciator.
2. August 10, 1991, at 0211 PST: The four-hour, non-emergency report required by 10 CFR 50.72(b)(2)(ii) was made.

D. Other Systems or Secondary Functions Affected:

The voltage transient on power panel PY-12 caused a low flow condition to RM-14A and RM-28A, pressurizer heater deenergization, a vibrations and loose parts monitor alarm, and an inverter distribution panel alarm. These conditions and alarms are supplied with power from PY-12, and are expected considering the voltage transient on PY-12.

E. Method of Discovery:

The event was immediately apparent to plant operators due to alarms and indications received in the control room.

F. Operators Actions:

After operators determined that no radiation monitors were in the alarm condition and that a high radiation condition therefore did not exist, the operators reset the CVI system isolation logic (JM) and returned the plant to its normal configuration.

G. Safety System Responses:

The CVI system isolation valves (VA)(ISV) closed as designed.



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### III. Cause of the Event

#### A. Immediate Cause:

The immediate cause of the problem was an inadvertent voltage transient caused when a jumper was installed between the K18 alarm relay coil power terminals.

#### B. Root Cause:

The root cause of the event was determined to be personnel error, failure to follow procedures, in that an I&C technician incorrectly installed a jumper without complete knowledge of the results of the action.

#### C. Contributory Causes:

1. A contributory cause of the event was failure of the I&C and Operations personnel involved to follow AP C-154.
2. A contributory cause of the event was failure of the I&C technician to follow the I&C policy stating that work should be stopped when an individual is unsure of the results of actions.

### IV. Analysis of the Event

A CVI is a conservative actuation, regardless of plant conditions. All plant equipment functioned as designed, and would have actuated the CVI system had an actual high radiation condition existed. Since all equipment functioned as designed and in a conservative manner, this event did not adversely affect the health and safety of the public.

### V. Corrective Actions

#### A. Immediate Corrective Actions:

After it was verified that a high radiation condition did not exist, the CVI system was reset.

#### B. Corrective Actions to Prevent Recurrence:

1. Disciplinary action will be taken against the technician responsible for installing the jumper as enforcement of the I&C written policy regarding proceeding with work when unsure of the results of actions taken.
2. An I&C Maintenance Bulletin will be issued discussing this event and the policy which emphasizes the importance of stopping work



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when unsure of the results. This maintenance bulletin will be covered in the next quarterly training seminar.

3. An Operations Department maintenance bulletin will be issued emphasizing the importance of completion and approval of all parts of AP C-154 prior to performance of any annunciator work controlled by AP C-154.
4. All I&C technicians will be trained on the requirements of AP C-154.
5. AP C-154 has been included in I&C recurring administrative procedure training.

**VI. Additional Information**

**A. Failed Components:**

None.

**B. Previous LERs on Similar Events:**

1. LER 1-87-021-00, LER 2-88-004-00, LER 1-89-001-00, LER 1-89-011-00, LER 2-90-004-00, LER 1-90-019-00, LER 1-91-001-00: The root causes of these CVI actuations were determined to be personnel error on the part of I&C personnel. The corrective actions were: (1) additional training of I&C personnel; (2) issuing a new I&C policy requiring deenergization of power circuits during work if feasible; (3) issuing a maintenance bulletin to all technicians stating the need for caution when working on energized circuits; (4) evaluating the vendor's terminal strips design; and (5) revising vendor supplied drawings to accurately reflect system wiring. These corrective actions did not prevent the recent event because of the following reasons: (1) the recent event was caused by personnel working on equipment that could not feasibly be deenergized; (2) the previous design evaluation of terminal strips was not applicable to this equipment; (3) the technician did not follow the I&C policy and AP C-154; and (4) the technician intentionally installed a jumper on the terminal board and did not commit any of the unintentional errors that resulted in previous CVIs.
2. LER 1-88-007-00: The root cause of this CVI actuation was that quality checks were not performed as required by procedures. Corrective actions focused on assuring completion of quality checks prior to reenergizing electrical circuits. Since the recent event occurred during work on energized circuits, the previous corrective actions would not have prevented the recent event.

