3-OLA-2 I-MFP-54

MFP Exhibit 54
8/18/93 Dollie Feigel
Reporter

Pacific Gas and Electric Company

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Gregory M. Rueger
Senior Vice President and
General Manager
Nuclear Power Generation

'93 OCT 28 P6:30

April 5, 1993

PG&E Letter No. DCL-93-076

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

Re: Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
Licensee Event Report 2-93-003-00
Technical Specification 3.9.4 Requirement for Containment Equipment Hatch Closure During Refueling Core Offload Not Met Due to Personnel Error

Gentlemen:

PG&E is submitting the enclosed Licensee Event Report pursuant to 10 CFR 50.73(a)(2)(i)(B) and 50.73(a)(2)(v)(C) concerning fuel movement during refueling core offload with the containment equipment hatch not fully closed due to personnel error.

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

Sincerely,

Gregory M. Rueger

cc. Ann P. Hodgdon
John B. Martin
Mary H. Miller
Sheri R. Peterson
CPUC
Diablo Distribution
INPO

DC2-93-MM-N013

Enclosure

1085S/85K/JCN/2246

NUCLEAR REGULATORY COMMISSION
Docket No. 50-275-OLA Official Exh. No. MFP 54
In the matter of PACIFIC GAS AND ELECTRIC CO
Staff ____ IDENTIFIED ____
Applicant ____ RECEIVED ✓
Intervenor ✓ ____ REJECTED ____
Contractor Ann P. Hodgdon, Esq. DATE 8-18-93
Other ____
Reporter Dollie Feigel

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Q PDR

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) TECHNICAL SPECIFICATION 3.9.4 REQUIREMENT FOR CONTAINMENT EQUIPMENT HATCH CLOSURE DURING REFUELING CORE OFFLOAD NOT MET 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 (8)
03	11	93	93	- 0 0 3 -	0 0	04	05	93		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	6
POWER LEVEL (10)	0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)

X 10 CFR 50.73(a)(2)(i)(B) and 50.73(a)(2)(v)(C)

___ OTHER - _____
(Specify in Abstract below and in text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER: AREA CODE	TELEPHONE NUMBER
DAVID P. SISK, SENIOR REGULATORY COMPLIANCE ENGINEER	805	545-4420

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)	MONTH	DAY	YEAR
| | YES (if yes, complete EXPECTED SUBMISSION DATE)	| X | NO				

ABSTRACT (16)

On March 12, 1993, at 1416 PST, with Unit 2 in Mode 6 (Refueling), the Limiting Conditions for Operation of Technical Specification 3.9.4 were not met when a visible gap in the seal of the containment equipment hatch was identified. Core offload had been in progress and was immediately suspended.

On March 12, 1993, at 1615 PST, PG&E made a four-hour, non-emergency notification to the NRC in accordance with 10 CFR 50.72(b)(2)(iii)(C).

Immediate corrective actions taken included suspension of core offload and the installation of additional bolting on the containment equipment hatch followed by verification of hatch sealing.

The root cause of the event was personnel error (cognitive), failure to follow procedure. The corrective actions are to counsel personnel involved with the containment equipment hatch closure, to enhance the procedure to reduce the possibility of misinterpretation, and to brief Mechanical Maintenance personnel on the necessity for procedural adherence.

I. Plant Conditions

Unit 2 was in Mode 6 (Refueling) at 0 percent power.

II. Description of Event

A. Summary:

Technical Specification (TS) 3.9.4, which requires containment equipment hatch closure, was not complied with on March 12, 1993, at 1416 PST, when the Refueling Senior Reactor Operator (SRO) observed that the Unit 2 containment equipment hatch (NH)(DR) had a visible, approximately 1/2-inch gap in 25 percent of the upper portion of its sealing area. Core (AC) offload had been in progress and was immediately suspended.

On March 12, 1993, at 1615 PST, PG&E a completed a four-hour, non-emergency notification to the NRC in accordance with 10 CFR 50.72(b)(2)(iii)(C).

B. Background:

TS 3.9.4 requires: "The equipment door closed and held in place by a minimum of four bolts,...," during core alteration.

Maintenance Procedure (MP) M-45.1, "Containment Equipment Hatch Door Opening and Closing," requires installation of four equally-spaced bolts and a visual inspection from outside of containment (NH) to ensure there is no gap between the equipment hatch and containment. In MP M-45.1, each of these requirements must have a signature certifying its completion.

C. Event Description:

On March 10, 1993, a Mechanical Maintenance tailboard was conducted prior to the Unit 2 containment equipment hatch closure; however, only the number of bolts to use to close the equipment hatch was emphasized during the discussion.

On March 10, 1993, two Mechanical Maintenance journeymen closed the Unit 2 equipment hatch with four bolts installed. The four bolts were at approximately the two, four, eight, and ten o'clock positions about the equipment hatch (there are 48 total bolts). The lead journeyman erroneously believed the positions of the bolts met the requirements of MP M-45.1 for the bolts to be "...equally spaced."

After installing the bolts, the lead journeyman performed a visual inspection of the equipment hatch to ensure there was no air gap in the hatch seal. This inspection was performed from the inside of

containment instead of from the outside of containment as required by MP M-45.1. From inside of containment, the lead journeyman was unable to see the air gap in the top portion of the equipment hatch seal. Since the portion of the equipment hatch seal the lead journeyman could see had no air gap, he believed that the equipment hatch was adequately closed. Had the lead journeyman performed the equipment hatch seal inspection from the outside of containment as required by the procedure, the air gap that existed in the top portion of the hatch seal would have been observed and additional hatch bolting could have been installed as required to seal the hatch.

The lead journeyman signed the MP M-45.1 data sheet certifying that four equally-spaced bolts had been installed and that no air gap was visible in the equipment hatch seal as viewed from outside of containment. The lead journeyman informed the foreman that the hatch closure was complete and the foreman also signed the M-45.1 procedure certifying closure of the containment equipment hatch based on the verbal assurance of the lead journeyman. No additional verification of the containment equipment hatch closure was required.

On March 11, 1993, at 1408 PST, Unit 2 core offload commenced. A discharge permit was in effect at this time and containment ventilation fans E-3 and S-3 (VA)(FAN) were running continuously with the plant vent radiation monitor (VL)(MON) in operation. The containment ventilation fans maintain the pressure inside containment below ambient atmospheric pressure to prevent uncontrolled airborne out-flow from containment in the event of an accident. The plant vent radiation monitor provides a containment ventilation isolation function if monitored containment ventilation exhaust activity exceeds acceptable limits.

On March 12, 1993, at 1416 PST, the Refueling SRO reported that the Unit 2 equipment hatch had a visible, approximately 1/2 inch gap in 25 percent of the upper portion of its sealing area as observed from outside of the containment. Core offload had been in progress and was immediately suspended (122 of the 193 fuel assemblies had been removed from the core).

On March 12, 1993, at 1430 PST, Mechanical Maintenance was advised of the equipment hatch condition; an additional eight hatch bolts were installed and torqued. Mechanical Maintenance verified that there was no visible gap at the hatch sealing area as viewed from outside the containment.

On March 12, 1993, at 1547 PST, core offload resumed.

On March 12, 1993, at 1615 PST, PG&E completed a four-hour, non-emergency notification to the NRC in accordance with 10 CFR 50.72(b)(2)(iii)(C).

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

None.

E. Dates and Approximate Times for Major Occurrences:

1. March 10, 1993: The Unit 2 containment equipment hatch was closed with four bolts in place.

2. March 11, 1993, at 1408 PST: Event date. Unit 2 core offload commenced.

3. March 12, 1993, at 1416 PST: Discovery date. The Refueling SRO reported that the Unit 2 equipment hatch had a visible, approximately 1/2-inch gap in upper portion of its seal. Core offload was immediately suspended.

4. March 12, 1993, at 1430 PST: Mechanical Maintenance installed and torqued an additional eight hatch bolts when informed of the equipment hatch condition and then verified that there was no visible gap at the hatch sealing area as viewed from outside the containment.

4. March 12, 1993, at 1615 PST: PG&E completed a four-hour, non-emergency notification to the NRC in accordance with 10 CFR 50.72(b)(2)(iii)(C).

F. Other Systems or Secondary Functions Affected:

None.

G. Method of Discovery:

The Refueling SRO identified the equipment hatch sealing area gap during the performance of a normal shift equipment observation tour.

H. Operator Actions:

Core offload was immediately suspended.

I. Safety System Responses:

None required.

III. Cause of the Event

A. Immediate Cause:

The immediate cause of this event was inadequate closure of the containment equipment hatch.

B. Root Cause:

The root cause of the event was determined to be personnel error (cognitive), in that plant non-licensed personnel failed to follow the procedure to verify the absence of a containment equipment hatch seal gap from the outside of containment.

C. Contributory Causes:

1. Independent verifications were not required or performed for the containment equipment hatch closure prior to core offload, although they had been performed as an optional activity for this evolution in the past.

2. The Mechanical Maintenance tailboard prior to the containment equipment hatch closure activity was not adequate. The equal spacing of the hatch bolts and visual verification that there was no gap at the hatch sealing area from outside of containment was not discussed during the tailboard.

IV. Analysis of the Event

An analysis of the consequences of an accident during core offload was performed, based on the estimated flow rate out of the equipment hatch under post-accident conditions with the gap that was observed in the equipment hatch. The estimate of the flow rated included an assumed difference between the inside containment atmosphere and ambient temperatures throughout the postulated event and resulted in a calculated leak rate of 34 cubic feet per minute (CFM). This result was combined with the design basis fuel handling accident source term and meteorological assumptions to calculate postulated site boundary doses estimates.

The resulting dose estimates are less than 10 percent of the 10 CFR 100 limits. Consequently, the analysis of the postulated fuel handling accident with the containment equipment hatch seal breached as occurred in this event has shown that the resulting site boundary dose would be bounded by the results of accidents analyzed in the FSAR Update.

Thus, the health and safety of the public were not adversely affected by this event.

V. Corrective Actions

A. Immediate Corrective Actions:

1. Core offload was immediately suspended.

2. The installation torque for the four bolts positioning the containment equipment hatch was verified and eight additional, equally-spaced bolts were installed and torqued. The sealing area of the equipment hatch was inspected and the absence of a gap was verified from outside of containment.

3. Quality Control (QC) has implemented hold-points on the remaining Unit 2 fifth refueling outage containment equipment hatch closure activities.

B. Corrective Actions to Prevent Recurrence:

1. Personnel involved in the closure of the Unit 2 containment equipment hatch, including the pre-activity tailboard, have been counseled in accordance with the PG&E positive discipline program on the need to review and follow procedures involving equipment whose function could affect personnel and plant safety.

2. MP M-45.1 will be revised to include visual, independent verification from the outside of the containment by QC hold-point inspection that the containment equipment hatch seal has no visible gaps.

3. This event was discussed at a departmental level meeting for Mechanical Maintenance personnel with emphasis on the necessity for procedural adherence.

VI. Additional Information

A. Failed Components:

None.

B. Previous Similar Events:

None.