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FACIL:50-323 Diablo Canyon Nuclear Power Plant, Unit 2, Pacific Ga 05000323
AUTH.NAME AUTHOR AFFILIATION
THIERRY,R.L. Pacific Gas & Electric Co.
RUEGER,G.M. Pacific Gas & Electric Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-003-00:on 920322,unusual event declared & manual shutdown commenced when high pressure turbine stop valve determined to be inoperable.Caused by nut disengaging from disc stem.Valves repaired & stroke tested.W/920420 ltr.

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Pacific Gas and Electric Company

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

April 20, 1992

PG&E Letter No. DCL-92-094

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

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Licensee Event Report 2-92-003-00
Unit Shutdown Required Due to Inoperable High Pressure Turbine Stop Valve

Gentlemen:

Pursuant to 10 CFR 50.73(a)(2)(i)(A), PG&E is submitting the enclosed Licensee Event Report (LER) concerning a unit shutdown due to an inoperable high pressure turbine stop valve. A supplemental LER will be issued to report the finalized root cause and corrective actions.

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
Philip J. Morrill
Harry Rood
CPUC
Diablo Distribution
INPO

DC2-92-MM-N013

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270107

IE22
1/1

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 5

TITLE (4) UNIT SHUTDOWN REQUIRED DUE TO INOPERABLE HIGH PRESSURE TURBINE STOP VALVE

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	22	92	92	- 0 0 3 -	0 0	04	20	92		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1
POWER LEVEL (10)	0 9 2

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

X 10 CFR 50.73(a)(2)(i)(A)

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

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER AREA CODE	TELEPHONE NUMBER
RAYMOND L. THIERRY, SENIOR REGULATORY COMPLIANCE ENGINEER	805	545-4004

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
X	S B	R T V	W 1 2 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
| X | YES (if yes, complete EXPECTED SUBMISSION DATE)	| | NO		07	15	92

ABSTRACT (16)

On March 22, 1992, at 2143 PST with Unit 2 in Mode 1 (power operation) at approximately 92 percent power, an Unusual Event was declared and a manual shutdown was commenced in accordance with Technical Specification (TS) 3.3.4.1, "Turbine Overspeed Protection," when it was determined that one high pressure (HP) turbine stop valve (FCV-144) was inoperable.

An emergency report was made to the NRC in accordance with 10 CFR 50.72(a)(1)(i).

FCV-144 was disassembled and it was determined that the nut that retains the valve disc to the valve swing arm had disengaged, allowing the valve disc to become separated from the valve swing arm. When the disc separated from the swing arm, it caused a partial blockage of main steam lead 2.

The root cause and corrective actions of this event have not yet been determined. A supplemental LER will be issued to report the finalized root cause and corrective actions.

I. Plant Conditions

Unit 2 was in Mode 1 (Power Operation) at 92% power.

II. Description of Event

A. Summary:

On March 22, 1992 at 2143 PST, an Unusual Event (UE) was declared and a manual shutdown was commenced in accordance with Technical Specification (TS) 3.3.4.1, "Turbine Overspeed Protection," when it was determined that one high pressure (HP) turbine stop valve (SB)(RTV)(FCV-144) was inoperable due to a flow restriction.

B. Background:

FCV-144 is an electro-hydraulic butterfly valve provided as part of the turbine overspeed protection system. It protects the HP turbine from overspeed should the turbine governor valves (SB)(FCV) fail to close when the overspeed trip or the normal trip mechanism operates. Overspeed protection is necessary to preclude turbine rotor (TRB) failure and associated turbine generated missiles.

TS 3.3.4.1 requires one turbine overspeed protection system to be operable. With one of the high pressure turbine stop valves inoperable, the valve is required to be returned to operable status within 72 hours or the plant is required to be shutdown within 6 hours.

C. Event Description:

On March 22, 1992 at 1240 PST, control room operators observed a rapid load reduction in power of approximately 10%. Investigations were initiated and it was determined that main steam lead 2 had an unidentified flow restriction. An above normal pressure differential was measured across FCV-144, indicating that there was a restriction within the valve.

On March 22, 1992 at 2130 PST, as a result of the investigations, FCV-144 was declared inoperable. A UE was declared at 2143 PST and a manual shutdown to Mode 3 (Hot Shutdown) was commenced.

On March 22, 1992 at 2210 PST, an emergency report was made to the NRC in accordance with 10 CFR 50.72(a)(1)(i).

On March 23, 1992 at 0127 PST, the main steam isolation valves (MSIVs) were closed in compliance with TS 3.3.4.1 and the UE was subsequently terminated.

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

None

E. Dates and Approximate Times for Major Occurrences:

1. March 22, 1992, 2143 PST: Event/Discovery Date: A UE was declared and a manual shutdown was commenced in accordance with TS 3.3.4.1.

2. March 22, 1992, 2210 PST: An emergency report was made to the NRC in accordance with 10 CFR 50.72(a)(1)(i).

3. March 23, 1992, 0136 PST: Unit entered Mode 3. TS 3.3.4.1 exited.

F. Other Systems or Secondary Functions Affected:

None.

G. Method of Discovery:

Control room operators observed a rapid load reduction in power of approximately 10%. Investigations were initiated and it was determined that FCV-144 had an unidentified flow restriction.

H. Operators Actions:

Once FCV-144 was determined inoperable, a manual shutdown to Mode 3 was commenced. During the shutdown, the turbine was tripped and the main steam isolation valves were closed prior to separating the generator from the grid. This was done to prevent the possibility of overspeeding the turbine if the turbine governor downstream of FCV-144 failed to close.

I. Safety System Responses:

None.

III. Cause of the Event

A. Immediate Cause:

Unidentified flow restriction in main steam lead number 2. FCV-144 was disassembled and it was determined that the nut that retains the valve disc to the valve swing arm had disengaged from the

disc stem, allowing the valve disc to become separated from the valve swing arm. When the disc separated from the swing arm, it caused a partial blockage of steam flow through steam lead 2.

B. Root Cause:

The root cause of this event is being investigated. PG&E and Westinghouse are presently reviewing industry experience in regard to this type of failure. Additionally, PG&E is performing a failure analysis of the failed valve components. Preliminary results identified the following possible root causes:

1. Inadequate peening or staking of the retaining nut.

2. Improper adjustment of the valve travel stop associated with the valve and actuator.

3. Inadequate thread engagement between the nut and the stud.

4. Improper internal bonnet stop height.

A supplemental LER will be issued to report the finalized root cause.

IV. Analysis of the Event

All four HP turbine governor valves were operable during the period that FCV-144 was inoperable. If a turbine overspeed condition had developed, the governor valves would have closed to stop the steam flow to the turbine to mitigate the overspeed condition.

Thus, the inoperable HP turbine stop valve did not adversely affect the health and safety of the public.

V. Corrective Actions

A. Immediate Corrective Actions:

1. FCV-144 was disassembled and repaired. The other three HP stop valves on Unit 2 were disassembled and inspected. The nuts on the other three stop valves were either re-peened or verified to meet Westinghouse guidelines.

2. The Unit 1 and Unit 2 stop valves were acoustically monitored and stroke tested to demonstrate their operability.

B. Corrective Actions to Prevent Recurrence:

Corrective actions to prevent recurrence will be determined once the root cause is finalized. They will be submitted in a supplemental LER.

VI. Additional Information

A. Failed Components:

FCV-144, High Pressure Turbine Stop Valve, Manufactured by Westinghouse Electric Corp. Model No. 723-J-119

B. Previous LERs on Similar Problems:

None