ACCESSION #: 9705270287
NON-PUBLIC?: N

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Diablo Canyon Unit 1 PAGE: 1 OF 5

DOCKET NUMBER: 05000275

TITLE: Technical Specification 3.7.1.2, Not Met Due to Paint
Applied to Auxiliary Feedwater Pump Turbine Governor
Linkage Due to Personnel Error

EVENT DATE: 02/27/97 LER #: 97-004-01 REPORT DATE: 05/20/97

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(i)(B)

LICENSEE CONTACT FOR THIS LER:
NAME: Vickie Backman, Senior Regulatory TELEPHONE: (805) 545-4289
Services Engineer

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On February 27, 1997, at approximately 1000 PST, with Unit 1 in Mode 1 (Power Operation) at 100 percent power, the limiting condition for operation for Technical Specification 3.7.1.2, "Plant Systems - Auxiliary Feedwater System," was exceeded when turbine-driven Auxiliary Feedwater (AFW) Pump 1-1 was inoperable, due to application of paint to the turbine governor linkage, for greater than 72 hours. On February 28, 1997, at 1136 PST, AFW Pump 1-1 was conservatively declared inoperable when the condition was discovered. The paint was removed from the governor interfaces, the parts were lubricated, and a test run of the pump was completed satisfactorily. At 1659 PST, AFW Pump 1-1 was declared operable.

The cause of this event was personnel error (non-cognitive), in that inadequate work

instructions were provided to the PG&E painter.

Corrective actions include. (1) reviewing work controls necessary for working on safety-related equipment with Paint Department personnel, and (2) procedure changes to require providing appropriate levels of guidance to personnel assigned to plan or perform coating activities on safety-related equipment.

This revision is submitted to correct the year listed in Section II.E. from 1996 to 1997.

TEXT PAGE 2 OF 5

I. Plant Conditions

Unit 1 was in Mode 1 (Power Operation) at approximately 1 00 percent power.

II. Description of Problem

A. Summary:

On February 27, 1997, at approximately 1000 PST, with Unit 1 in Mode 1 at 100 percent power, the limiting condition for operation (LCO) for Technical Specification (TS) 3.7.1.2, "Plant Systems - Auxiliary Feedwater System," was exceeded when turbine-driven Auxiliary Feedwater (AFW)(BA) Pump (P) 1-1 was inoperable, due to application of paint to the turbine (TRB) governor (65) linkage, for greater than 72 hours.

B. Background:

TS 3.7.1.2 requires three AFW pumps (one turbine-driven, two motor-driven) to be operable in Modes 1, 2 (Startup), and 3 (Hot Standby). The LCO for this TS allows one AFW pump to be inoperable for up to 72 hours, otherwise the unit must be in at least Mode 3 within the next six hours and in Mode 4 (Hot Shutdown) within the following six hours.

Diablo Canyon Procedure DCP-213, Revision 2, "Balance of Plant Coatings," includes requirements for nuclear grade coatings outside the containment structure. Section 5.4.13 states "To avoid over application of paint on operating machinery, observe the following ...d. Do not apply paint to moving parts such as control linkage and piston rods."

C. Event Description:

During the Unit 1 sixth refueling outage (1R6) in 1994, a turbine-driven AFW pump technical expert made note of excess paint on the governor linkage assembly, and removed it while the governor assembly was apart. Some time after 1R6, painters performing routine touch-up work reapplied paint to several areas of the governor assembly. There was no effect on operability of the AFW pump from either of these painting events, as evidenced by successful surveillance tests of the pump.

During the Unit 1 seventh refueling outage (1R7) in 1995, it was noted that the linkage had been repainted. Removal of the paint would have required

disassembly of the governor linkage which was not scheduled work for 1R7. The paint was left in place because it did not interfere with moving parts.

In December 1996, an effort was begun to improve the general appearance of the plant. Several generic work orders (WO) were issued to apply coatings to various plant structures. These generic WOs were intended to apply only to passive plant structures such as floors, walls, structural steel, etc. Specific WOs were to be issued for any equipment that required painting.

On February 24, 1997, from approximately 1000 to 1400 PST, painters were assigned to perform minor touch-up painting in the Unit 1 Auxiliary Building. The generic WO stated it covered coating support for both structures and equipment. This was contrary to the guidance for generic WOs for this type of work. During this time, a PG&E paint foreman instructed a PG&E painter to touch-up the paint on AFW Pump 1-1. The painter did so, including applying paint to the previously painted governor linkage.

On February 28, 1997, during a routine walkdown, the AFW system engineer discovered the new paint on the governor linkage. Because the paint had entered the interface area between the cam bushing and cam slot, he concluded the governor servo might not have been able to break loose the paint and close the

governor valve. At 1136 PST, AFW Pump 1-1 was conservatively declared inoperable.

The paint was removed from the governor interfaces and the parts were lubricated. The AFW pump was tested satisfactorily and declared operable on February 28, 1997, at 1659 PST.

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

None.

E. Dates and Approximate Times for Major Occurrences:

1. February 27, 1997, 1000 PST: Event date. TS 3.7.1.2 LCO time limit for an inoperable AFW pump was exceeded.

2. February 28, 1997, 1136 PST: Discovery date. PG&E engineer discovered paint applied to turbine governor.

3. February 28, 1997, 1659 PST: AFW Pump 1-1 was returned to operable status.

F. Other Systems or Secondary Functions Affected:

None.

G. Method of Discovery:

The misapplication of paint to the AFW Pump 1-1 turbine governor linkage was discovered by the PG&E AFW system engineer during a routine system walkdown.

H. Operator Actions:

None required.

I. Safety System Responses:

None required.

III. Cause of the Problem

A. Immediate Cause:

AFW Pump 1-1 was conservatively declared inoperable because it was judged that the paint on the governor interfaces may have prevented the governor from operating properly.

B. Root Causes:

1. The primary cause is personnel error (non-cognitive), in that inadequate work instructions were provided to the painter.

2. A second primary cause is personnel error (non-cognitive), in that the painter lacked the specific knowledge to determine what areas of the pump should not be painted.

IV. Analysis of the Event

Following discovery of the paint that was applied on February 24, 1997, the system engineer conservatively judged that the governor might not have been able to break loose the paint to allow it to close the turbine steam supply valve. A malfunctioning

governor could have led to an overspeed trip of the pump turbine, leaving the pump unavailable for operation when required. Calculations performed after the event, and information obtained from the vendor, indicate the governor servo can apply over 600 pounds of force to the linkage. During 1R7, when the linkage was last disconnected from the servo, it was found that the steam supply valve stem could be moved smoothly by hand. Thus, it is likely the force provided by the servo would have been sufficient to break loose the painted surfaces and move the valve stem. However, PG&E chose to conservatively declare the pump inoperable.

Except for approximately two hours during the period from February 24, 1997, through February 28, 1997, the redundant motor driven AFW Pumps 1-2 and 1-3 were both operable and available to start automatically as necessary to carry out the safety functions of the AFW system. For approximately two hours on February 24, 1997, Solid

State Protection System Train B was out-of-service for testing. During this time, AFW Pump 1-2, which is a Train B component, would not have started automatically on a start signal, but was capable of being started manually from the control room if required. During these two hours, AFW Pump 1-3 was available to start automatically and provide 1 00 percent AFW flow capacity.

Consequently, this event did not adversely affect the health and safety of the public.

V. Corrective Actions

A. Immediate Corrective Actions:

The paint was cleaned from the contact surfaces of the linkage, the interfacing parts were lubricated, and a test run of AFW Pump 1-1 was completed satisfactorily.

B. Corrective Actions to Prevent Recurrence:

1. Management has reviewed the work controls that are necessary for working on safety-related equipment with Paint Department personnel.

2. Procedure changes will be implemented to require appropriate levels of guidance to be provided to personnel assigned to plan or perform coating activities on safety-related equipment.

VI. Additional Information

A. Failed Components: None.

B. Previous LERs on Similar Problems: None.

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Pacific Gas and Electric Company

Diablo Canyon Power Plant Robert P. Powers
PO. Box 56 Vice President-Diablo Canyon
Avila Beach, CA 93424 Operations and Plant Manager
805/545-6000

May 20, 1997

PG&E Letter DCL-97-065

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

Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Licensee Event Report 1-97-004-01
Technical Specification 3.7.1.2, Not Met Due to Paint Applied to Auxiliary Feedwater Pump Turbine Governor Linkage Due to Personnel Error

Dear Commissioners and Staff:

PG&E is submitting the enclosed revision to Licensee Event Report (LER) 1-97-004 regarding Technical Specification 3.7.1.2, "Plant Systems - Auxiliary Feedwater System," not being met due to paint applied to Auxiliary Feedwater Pump 1-1 turbine governor linkage due to personnel error. This revision is submitted to correct the year listed for three dates in Section II.E. of the LER from 1996 to 1997.

This event did not adversely affect the health and safety of the public.

Robert P. Powers

cc: Steven D. Bloom
Ellis W. Merschoff
Kenneth E. Perkins
Michael D. Tschiltz
Diablo Distribution
INPO

Enclosure

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