

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-275/87-37, 50-323/87-37

Docket Nos. 50-275, 50-323

License Nos. DPR-80, DPR-82

Licensee: Pacific Gas and Electric Company  
77 Beale Street  
Room 1451  
San Francisco, California 94106

Facility Name: Diablo Canyon Units 1 and 2

Inspection at: Diablo Canyon Site, San Luis Obispo County, California


Inspection Conducted: October 5-9, 1987

Inspector:

  
J. F. Burdoin, Reactor Inspector

11/5/87  
Date Signed

Approved by:

  
M. M. Mendonca, Chief  
Reactor Project Section 1

11/5/87  
Date Signed

Summary:

Inspection During Period of October 5-9, 1987 (Report Nos. 50-275/87-37 and 50-323/87-37)

Areas Inspected: An announced inspection by one regional inspector of various vital areas and equipment in the plant, and followup of enforcement and open items. Inspection Procedures Nos. 30703, 36100, 71707 and 92700 were used as guidance for the inspection.

Results: No violations or deviations were identified.

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## DETAILS

### 1. Individuals Contacted

#### Pacific Gas and Electric Company (PG&E)

- \*J. M. Gisclon, Assistant Plant Manager, Support Services
- \*D. B. Mislush, Maintenance Manager
- \*M. J. Angus, Work Planning Manager
- T. L. Grebel, Regulatory Compliance Supervisor
- \*W. J. Kelly, Regulatory Compliance Engineer
- \*M. N. Stephens, General Foreman, Instrumentation
- S. R. Fridley, Senior Operating Supervisor
- R. M. Nanninga, Senior Power Production Engineer
- M. L. Smith, Power Production Engineer
- J. E. Strahl, Mechanical Maintenance Foreman
- J. J. Griffin, Maintenance Senior Instructor

Various other engineering and QC Personnel.

\*Denotes attendees at exit meeting on October 9, 1987.

In addition, NRC Resident Inspectors attended the exit meeting.

### 2. Area Inspection

An independent inspection was conducted in Units 1 and 2 Turbine and Auxiliary Buildings. The inspection examined areas and equipment for debris, potential hazards, oil and water leakage, and equipment condition, e.g., oil level, valve position, and electrical connection configuration and cleanliness. The equipment and areas inspected included:

- A. Five Emergency Diesel Generator Rooms.
- B. Six 4160 Volt Switchgear Rooms.
- C. Combined Two-unit Control Room.
- D. Four Containment Spray Pumps.
- E. Four Charging Pumps, Unit 1 (three) and Unit 2 (one, 2-3).
- F. Four Safety Injection Pumps.
- G. Four RHR Pumps.
- H. Six Component Cooling Water Pumps.
- I. Six Auxiliary Feedwater Pumps.
- J. Six Emergency Battery Rooms.
- K. Six 480 Volt Vital Bus Rooms.
- L. Two Cable Spreading Rooms.
- M. Two Hot Shutdown Panel Areas.
- N. Two 480 Volt Load Center Areas.
- O. Turbine Building at Elevations 85' and 140'.

Housekeeping and equipment status appeared to be acceptable.

No violations or deviations were identified.



### 3. Followup of Enforcement Items

#### A. (Closed) 50-275/323/87-25-01, Radiation Monitor, Environmental Qualification (E/Q) for Amphenol HN Connectors

The inspector reviewed the licensee's letter (DCL-87-239 of September 24, 1987) in response to the Notice of Violation related to Inspection Report 50-275/323/87-28. This letter described the measures taken and/or planned to be taken to correct the findings of this violation. The violation was that the amphenol connector's qualification was not acceptably documented in the E/Q files.

The licensee has obtained a qualification report for the amphenol connector. The report was reviewed and has been incorporated into the GE penetration E/Q file. The file and test report demonstrate the qualification of the amphenol connector for accident conditions. The licensee will review E/Q files to verify that other design electrical connector configurations are qualified by the applicable test report by December 15, 1987.

The inspector reviewed the documentation, Westinghouse Test Report, PEN-TR-83-01 dated January 11, 1983 which was added to complete the E/Q file for the amphenol HN connector. The above test report along with Conax Test Report, IPS-1054 dated June 15, 1983 (included in the E/Q file) were examined. The test conditions were compared to the profiles of containment pressure and steam/air temperature for the maximum safeguards case (LOCA). The test results demonstrated the connector was environmentally qualified and the E/Q file for the connector was complete.

This item is closed.

#### B. (Closed) 50-275/87-08-02 Oil Slinger Ring, Material Change from Brass to Bronze

The inspector reviewed the licensee's letter (DCL-87-110 of May 14, 1987) in response to the Notice of Violation related to Inspection Report 50-275/87-08. DCL-87-110 described the measures taken to correct the findings of this violation. The violation was that the change in material from brass to bronze had not been processed as a design change as required by procedure, but rather, had been accomplished pursuant to maintenance shop follower, MM-1-85-670.

At the time of the violation, no specific DCPD administrative controls existed for the review of replacement material suitability for fabricated parts. Diablo Canyon Administrative Procedure (AP) C-40S3, "Use of PIMS Corrective Maintenance Work Order Module" has been revised with specific guidelines for evaluating replacement material suitability for fabricated quality related parts. Licensee maintenance engineers are now required to review work orders (replaced shopwork followers) to ensure that parts manufactured in the machine shop are in accordance with the applicable design specifications. Also, a Design Change is required when parts are to be manufactured different than the specified design.



The AFW pump manufacturer, Byron Jackson, was contacted by the licensee on February 25, 1987, and verified that the material substitution of bearing bronze ASTM B144 (discontinued and replaced by ASTM B-584) for cartridge brass ASTM B135 was acceptable and would not affect AFW pump operability.

Shopwork Followers (SWF) documenting work performed prior to the issuance of AP C-40S3 have been reviewed by the licensee's Quality Control Department. This review verified proper materials have been used on work where parts were manufactured in the Plant Machine Shop.

To verify the licensee's corrective actions and audit the original work in December 1985, the inspector reviewed and examined the following documents:

- AP C-40S3, "Use of PIMS Corrective Maintenance Work Order Module"
- Borg Warner Industrial Products Letter of May 1, 1987 Authorizing Bronze ASTM B-505 or B-584 AL 932 as Substitute for Brass ASTM B-135 Alloy 2.
- DCO-OM-37589, (date June 9, 1987) Design Change, allowed the substitution of Bronze ASTM B-505 or B-584 for Brass B-135 Alloy 2.
- Action Request A0029756, Discolored Oil in Outboard Bearing AFW PP 2-2.
- Quality Evaluation Q0003309, Contaminated Oil in AFW PP 2-2.
- SWF, MM-1-85-669, AFW Pump 1-3, Repair and Reassemble Outboard Bearing.
- SWF, MM-1-85-670, AFW Pump 1-2, Repair and Reassemble Outboard Bearing
- SWF, MM-2-85-803, AFW Pump 2-2, Repair and Reassemble
- Material Request/ Requisition Form 0019258, for 660 Bronze (Stock Code 15-9318) Stock for AFW Bearings
- Inventory Parts Catalog, Stock Codes 15-9318 and 72-9658

The above documentation verified the pump manufacturer's endorsement of substituting bronze for brass in the material for AFW pump bearing oil slinger rings. The bronze material used in shopwork follower MM-1-85-670 was traced back to the warehouse material request (19258) and identified as the substitute material (bronze ASTM B505 or B584) for brass ASTM 135 alloy 2. The above documentation also verified the procedure changes the licensee identified in his corrective steps for the subject violation. It is





concluded the licensee's corrective actions taken in response to the violation are acceptable.

This item is closed.

C. (Closed) 50-275/323/87-01-01, Use of Unlabeled Lubricant Containers and Lack of Log Books

The inspector reviewed the licensee's letter of response (DCL-87-083 of April 27, 1987) to the Notice of Violation related to Inspection Report Numbers 50-275/323/87-01. The licensee in DCL-87-083 described the measures taken to correct the findings of this violation. The violation was that contrary to prescribed procedures (APD-753 Revision 10) unlabeled containers containing oil and three unlabeled grease guns were found. In addition log books were not being maintained in bulk storage or dispensing areas as required by procedure.

The inspector performed the following reviews in order to verify the licensee's corrective actions:

- Inspected lubricant bulk storage areas in the turbine building, the electric shop and at the intake structure. Determined that all lubricant containers were properly identified and labeled in accordance with procedures.
- The log books at each of the above storage areas were examined for lubricant and quantity used, equipment/person/department receiving lubricant, date taken, and that a periodic audit of the log was performed by the shop foreman.
- Examined Revision 11 to administrative procedure D-753 "Control of Plant Lubricants" for completeness.
- Examined the quarterly seminar training plans for electrical and mechanical maintenance personnel for inclusion of training on changes to lubricant control procedure. Also, examined attendance records for these seminars.

The above inspections and examinations verified that the licensee instituted the corrective actions described in response (DCL-87-083) to the notice of violation. It is concluded that the licensee's corrective actions in response to the violation are acceptable.

This item is closed.

No violations or deviations were identified.



#### 4. Followup of Open Items

##### A. (Open) 50-275/323/87-01-04, Slope of Air Supply Line at Air Operated Valves (AOVs)

During a walkdown of a portion of the compressed air system at the 85-foot elevation of Unit 1 turbine building, an inspector observed that the control air supply lines on several air operated valves tended to slope toward the air operators. The concern was that if moisture accumulated in the air lines it would flow to the air operator and could prevent normal operation of the valves.

The licensee does not require that air lines attached to valve actuators be installed with the air lines sloped away from the actuators because at DCP, the plant air system incorporates an air drying system that maintains plant air at a dew point of approximately minus 40 degrees Fahrenheit which precludes the presence of any significant moisture. Licensee engineering groups have also re-reviewed PGandE's standard practice and design specifications, and concluded that there is no design specification nor standard field installation practice that requires negative sloping of air lines attached to valve actuators away from the actuators. DCP has not experienced any significant buildup of moisture in the air lines to valve actuators.

##### Compressed Air System

The inspector reviewed the compressed air system in section nine of the FSAR and examined the schematic diagram of the system.

The compressed air system was designed for process control systems and for station service throughout Units 1 and 2 under startup and normal operating conditions. The compressed air system was not designed for safe shutdown, reactor protection, containment isolation, or engineered safety features (ESFs).

Four air compressors, rated 320 scfm each, located in the turbine area of Unit 1, were designed to supply compressed air to Units 1 and 2. Normally, one compressor is in operation with the remaining compressors on a selective automatic standby-start scheme. A master compressor controller loads the operating compressor at 98 psig and unloads at 105 psig, measured at the supply header. The standby compressors automatically start and load if the header pressure drops to 93 psig.

The compressors have nonlubricated cylinders to provide an oil-free air system. (Local oiling units are provided on the service air system where equipment requires lubricated air). Each compressor has a water-cooled aftercooler separator at the discharge flange. Filter-separators and an air dryer in the discharge line reduce the air dewpoint to approximately minus 40°F at system pressure. The air dryer has redundant dryer towers. The desiccant in the dryer tower, which is not on line, is regenerated with air, and preheated by an electric heater. Dry air leaving the air receivers is again



filtered through a 3 micron filter before passing to the instrument and service air distribution systems.

If electrical power is lost to all the compressors, or if system pressure drops to 90 psig, the service air distribution system is isolated to reserve the air in the air receivers for use in the instrument air system. There are 7 to 10 minutes of reserve in these receivers at the expected rate of usage for plant process control. This time is available to restore the air system.

Alarms in the control room indicate:

- Plant air system pressure less than 87 psig
- High cooling water temperature through each air compressor
- Status of the standby air compressors and air dryer
- High moisture content downstream of air dryers

In order to ensure that oil, water, or other impurities will not result in the failure of instrumentation or other equipment, the compressed air system is provided with oil-free compressor cylinders, filter separators, an air dryer, and 3 micron filters.

The inspector determined that the air receiver high moisture alarm is tested under loop test 25-9E. It is in the recurring task scheduler and was last calibrated May 9, 1987 under work order C13161.

The inspector concluded that the direction of slope of the air supply lines at the AOVs does not pose a problem with respect to moisture in a dried air system as long as the system is operated and maintained as designed. There should be essentially no moisture in a dried system and increasing moisture content in the system is alarmed in the control room. Intrusion of moisture into a positive pressure system is highly unlikely.

However, this item remains open pending an inspection by the resident inspectors in the areas of operation and maintenance. The resident inspectors findings will be reported in a subsequent inspection report.

B. (Open) 50-275/323/87-01-06 Resolution of Backlog of Action Requests (ARs).

The review of the licensee's corrective actions to remedy this deficiency were commenced during this inspection by examining the readiness for restart program (Unit 2); task force meeting on improving PIM's system dated April 4, 1987; AR type codes and other documents related to the AR backlog problem. However, inspection in this area is incomplete at this time and shall be continued during a future inspection.



No violations or deviations were identified.

5. Exit Meeting

The inspector conducted an exit meeting on October 9, 1987, with the members of the plant staff as indicated in paragraph 1. During this meeting, the inspector summarized the scope of the inspection activities and reviewed the inspection findings as described in this report. The licensee acknowledged the concerns identified in the report.

