

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-275/84-24 and 50-323/84-14

Docket Nos. 50-275 and 50-323

License No. DPR-76

Licensee: Pacific Gas and Electric Company
77 Beale Street, Room 1435
San Francisco, California 94106

Facility Name: Diablo Canyon Units 1 and 2

Inspection at: Engineering Office, 45 Fremont, San Francisco, California
Diablo Canyon Site, San Luis Obispo County, California

Inspection Conducted: July 18-19, 23-27 and August 13-17, 1984

Inspectors: Reiko Kanow 10/10/84
Reiko Kanow, Reactor Inspector Date Signed
Philip J. Morrill 10/10/84
Philip J. Morrill, Reactor Inspector Date Signed
Approved by: Robert Dodds 10/10/84
Robert Dodds, Chief, Reactor Projects Section 3 Date Signed

Summary:

Inspection July 18-19, 23-27 and August 13-17, 1984 (Report No. 50-275/84-24 and 50-323/84-24)

Areas Inspected: Routine inspection by two regional based inspectors and one NRC contract inspector of the licensee follow-up of Bulletins and Circulars, Interactions between Units 1 and 2, and verification of "as-builts" for the HVAC system in Unit 2.

The inspection involved 92 inspection hours by the two NRC inspectors.

Results: Of the areas inspected, no items of noncompliance were identified, however one item pertaining to HVAC welding was identified for future followup (paragraph 4).

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DETAILS

1. Persons Contacted

Pacific Gas and Electric Company (PG&E)

- *R. Thornberry, Plant Manager
 - *J. Sexton, Operations Supervisor
 - *T. Rapp, OSRG Supervisor
 - M. Norem, Lead Start-up Engineer
 - *R. Patterson,
 - +/# R. Hobgood, PTGC, QC Supervisor
 - +/# C. Daugherty, PTGC, HVAC Systems
 - + B. Morowski, On-Site Assistant Project Engineer
 - W. Kelly, Regulatory Compliance Engineer
 - R. Naniga, Senior Power Production Engineer, Maintenance
 - N. Shaw, Civil Group Supervisor, Project Engineering
 - R. Baciarelli, Senior Engineer, Licensing
 - S. Foat, Power Production Engineer
 - + F. Morsy, Bechtel, Senior Engineer
- + Denotes those attending the discussion held on July 26, 1984.
/# Denotes those attending the discussion held on August 16, 1984.
*Denotes those attending the exit interview on August 17, 1984.

In addition to those personnel listed above the inspectors interviewed licensee and licensee contractor personnel including, engineers, operators, QA/QC personnel, and craftsmen.

2. Follow-up of Bulletins and Circulars

The inspector examined the licensee's files and interviewed key personnel both at the corporate offices in San Francisco and at the Diablo Canyon Site to ascertain whether the information submitted by the licensee in response to a bulletin was technically adequate, satisfies the requirements of the subject Bulletin, and represents the actions actually taken by the licensee. In the case of circulars the inspector ascertained whether the appropriate personnel had been given the circular and the adequacy of technical actions taken by licensee personnel in response to circulars. These examinations are described below.

IEB 79-01B: Environmental Qualification of Class IE Equipment:

An examination of the Bulletin and related NRC correspondence indicated that the Bulletin was sent to PG&E for information only on Diablo Canyon (NRC letters, "Engelken to Crane," dated September 29, 1980; February 8, 1979 and October 24, 1980). NRC internal correspondence (Memo, Moseley to Regional Directors, received RV October 23, 1980) also makes it clear that NTOL plants (such as Diablo Canyon) were to be included for information only. This issue is currently being completed by the licensee and NRR in accordance with NUREG-0588. (Closed)

IEB-79-04: Incorrect Weights for Swing Check Valves Manufactured by Velan Engineering Corporation:

The inspector examined the licensee's responses to this Bulletin (PG&E letters, Crane to Engelken, dated October 16, 1979 and April 29, 1981). In these responses the licensee stated that in response to IE Bulletin 79-14 ("Seismic Analysis for As-built Safety-Related Piping Systems," PG&E letters; Crane to Engelken, dated October 17, 1979, and April 17, 1980) PG&E had included the review and information required by IE Bulletin 79-04. The inspector examined these additional responses to IEB 79-14 and found that Enclosure E, page E2, to the licensee's letter of October 17, 1979 included valve dimensions and weights as one of the items to be considered in IEB-79-14 evaluations. The inspector also verified that the licensee's "procedure for implementation of IE Bulletin 79-14" requires a 100% inspection of Unit 1 and 2 swing check valves. The licensee's files demonstrated that errors had been identified and the analyses corrected consistent with the licensee's responses to the NRC. (Closed)

IEB 81-01: Surveillance of Mechanical Snubbers:

The inspector examined the licensee's responses to this bulletin for Unit 1 (PG&E letters, Crane to Engelken, dated April 3, 1981, September 8, 1981, and October 20, 1981) and for Unit 2 (PG&E letter, Crane to Engelken, dated May 5, 1981). The licensee's October 20, 1981 letter completes the Bulletin's requirements for Unit 1, however, the licensee's letter of May 5, 1981 indicates that the similar activities for Unit 2 will be completed April 15, 1982 based on a fuel load date (for Unit 2) of May 1, 1982. The inspector pointed out that this Bulletin will remain open for Unit 2 pending completion of the required testing and submission of the report. (Closed for Unit 1, open for Unit 2).

IEB 82-02: Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of PWR Plants:

The inspector examined the licensee's responses (PG&E letters, Crane to Engelken, dated April 6, 1983 and August 2, 1982) to this Bulletin. These responses appeared satisfactory, however they indicated a number of actions were required to be completed by the licensee, consequently the inspector followed-up at the plant site. The inspector verified that Westinghouse had provided adequate guidance to the licensee (Westinghouse Nuclear Services Division (NSD) letter DL 82-01, from R. Sawyers and F. Wellhofer to Distribution, "Reactor Vessel Stud Lubricants") and had followed this up with additional information for Steam Generator Bolts - lubricants and torque values (Westinghouse memo, NPE-82-270, dated September 2, 1982, from E. Fitzpatrick and J. Martinez). The inspector examined the licensee's maintenance procedures (MP M-7.25 Rev. 5, "Removal and Reinstallation of Steam Generator Manway Covers") to verify that the Westinghouse guidance had been incorporated. The inspector also examined the licensee's regulatory compliance files to verify that appropriate training of maintenance personnel had occurred. (Closed)

IEB 82-04: Deficiencies in Primary Containment Electrical Penetration Assemblies:

The inspector examined the licensee's response (PG&E letter, Crane to Engelken, dated February 2, 1983) as well as the licensee's independent review completed on January 28, 1983 and the "Independent Review Checklist" dated January 13, 1983. The licensee's response appeared adequate and consistent with these documents. The licensee does not use epoxy electrical penetrations by Bunko Ramo at Diablo Canyon, consequently no further action is required. (Closed)

IEB-83-01: Failure of Reactor Trip Breakers (Westinghouse DB-50) to Open on Automatic Trip Signal:

The inspector examined the licensee's response (PG&E letter, Maneatis to Engelken, dated March 9, 1983) to this Bulletin, as well as Maintenance Procedure MP-E-51.7, Rev. 4 "Maintenance of Westinghouse DB type 480V old Circuit Breakers", and an internal memo (Thornberry to Shiffer, dated March 7, 1983) "Plant Response to IE Bulletin 83-01". The inspector also verified maintenance of the subject breakers was being properly conducted by personnel knowledgeable of the problems encountered with these circuit breakers. The inspector concluded that the licensee's response was satisfactory and that the licensee's actions and maintenance relative to the breakers appeared adequate. (Closed)

IEB-83-03: Check Valve Failures in Raw Water Cooling Systems of Diesel Generators:

The inspector reviewed the licensee's response (PG&E letter, Schuyler to Martin, dated June 6, 1983) and examined the diesel generators. Since the Diablo Canyon diesel generators do not use check valves in their cooling water systems, no additional action is required. (Closed)

IEB 83-04: Failure of the Undervoltage Trip Function of Reactor Trip Breakers:

No response or action was required since the licensee has Westinghouse type DB breakers. (Closed)

IEB 83-05: ASME Nuclear Code Pumps and Spare Parts Manufactured by the Hayward Tyler Pump Company:

The inspector examined the licensee's files related to this issue and observed that the licensee had documented their review (PG&E memo to file, Kendle of Project Licensing, dated September 12, 1983) and determined that none of the subject pumps were used at Diablo Canyon. Consistent with other NRC guidance (NRC letter, DeYoung to Crane, dated May 19, 1983), no response is required to the Bulletin in this circumstance. (Closed)

IEB 83-06: Non-conforming Materials Supplied by Tube-Line Corporation of Long Island City, Houston:

The inspector examined the licensee's response (PG&E letter, Schuyler to Martin, dated November 16, 1983) and files related to the evaluation of this Bulletin. The inspector verified that the files supported the

licensee's letter which concluded that none of the subject materials were used at Diablo Canyon. (Closed)

IEB 83-07: Apparently Fraudulent Products Sold by Ray Miller, Inc.:

The inspector observed that IE Information Notice 83-01 dealt with the same topic and had been the subject of letters between NRC and PG&E management (NRC letter, De Young to Mielke, dated January 26, 1983 and PG&E letter Mielke to De Young, dated February 10, 1983). The licensee's response to the bulletin (PG&E letter, Schuyler to Martin, dated March 22, 1984) appeared responsive and concluded that none of the apparently fraudulent products were incorporated into any safety-related items at Diablo Canyon. The inspector examined the licensee's files and interviewed licensee personnel to verify this conclusion. The inspector observed that the licensee had identified two firms which were customers of Ray Miller, Inc. and supplied safety related items to Diablo Canyon. However, the licensee's research also determined that none of the purchased items were suspect as they were electronic equipment and structural steel, whereas the fraudulent products were all tubing, piping, fittings and flanges. (Closed)

IEC 80-10: Failure to Maintain Environmental Qualification of Equipment:

The inspectors examined licensee files and procedures including (1) Memo to file D. Bauer, dated June 17, 1981, (2) Nuclear Plant Problem Report NPPR DCO-81-EM-P0016, (3) Administrative procedure C-451 "Program for Environmental Qualification of Transmitters, solenoids, and position switches in containment," and (4) Administrative Procedure C-450 "Scheduled Servicing". The licensee has satisfactorily disseminated the information in the circular and has implemented appropriate procedures, controls and training. (Closed)

IEC-81-01: Design Problems Involving Indicating Pushbutton Manufactured by Honeywell Incorporated:

The inspectors verified that the subject pushbutton switches were not used at Diablo Canyon. The licensee documented their review in a memo to file by J. Rappa, dated February 2, 1982. (Closed)

IEC 81-02: Performance of NRC-Licensed Individuals While On Duty:

The inspector examined the licensee's evaluation of the subject Circular (Memo to file R. Fisher, dated June 17, 1983) as well as the appropriate administrative procedures listed below:

NPAP A-100, Rev. 7 "General Authorities and Responsibilities of Nuclear Plant Operators"

NPAP A-101, Rev. 5 "Relieving the Watch (Shift Turnover)"

NPAP A-102, Rev. 3 "General Authorities and Responsibilities of the Shift Foreman"

NPAP A-103, Rev. 3 "Control Room Access"

The inspector also observed that the licensee had circulated the circular to all operator licensing candidates (the NRC mailed copies to each SRO and RO). The inspector concluded that the licensee's procedures adequately addressed the duties, responsibilities, attentiveness and seriousness of operation of operations personnel and that this information was satisfactorily disseminated to operators personnel. (Closed)

IEC 81-03: Inoperable Seismic Monitoring Instrumentation:

The inspector examined the licensee's files related to this circular and examined licensee actions taken at the plant site. In a memo to file, K. Doss June 1, 1981, the licensee's review of the circular was documented. Licensee personnel concluded that surveillance test procedure STP I-37C should be changed to include a check for + battery voltage as well as the absence of corrosion and that a temporary procedure to conduct quarterly check of the peak acceleration recorder (PAR) plates should be implemented. The inspector found that Revision 4 to the subject procedure was satisfactorily revised to incorporate these items into the recording triaxial accelerometer channel checks and that appropriate action had been taken with the PAR plates. (Closed)

IEC 81-04: The Role of Shift Technical Advisors and Importance of Reporting Operational Events:

The inspector verified that the licensee had adequately evaluated this circular (Memo to File, R. Fisher, dated October 20, 1981). A special NRC inspection (50-275/84-07) also included an evaluation of the effectiveness and training of STAs and other licensee personnel on shift. The conclusion reached in both cases was that the STA's role and responsibilities at Diablo Canyon have been adequately defined and implemented. (Closed)

IEC 81-06: Potential Deficiency Affecting Certain Foxboro 10 to 50 Milliampere Transmitters:

The licensee had completed an evaluation of the circular (Memo to File, W. Scott, dated May 1, 1981) with the conclusion that none of the subject transmitters were used at Diablo Canyon. The inspector verified this conclusion at the site by examination of equipment and discussions with operations personnel. (Closed)

IEC 81-10: Steam Voiding in the Reactor Coolant System During Decay Heat Removal Cooldown:

The inspector examined the licensee's review of this Circular (Memo to File, R. Fisher, dated January 22, 1982) which concluded that changes were required to operating procedures L-5 "Plant Cooldown from Minimum Load to Cold Shutdown" and EOP-23 "Natural Circulation of Reactor Coolant". The licensee tracked these changes with NPPR DC1-82-OP-P0168. The inspector verified that the subject changes appeared adequate, were being implemented in a timely manner, and were incorporated into the cold license operator and requalification training programs. (Closed)

IEC 81 12: Inadequate Periodic Test Procedure of PWR Protection System:

The inspector examined the licensee's review of this circular (Memo to File, R. Kosmala, dated September 18, 1981 and Memo, Kaefer to Shiffer, dated February 3, 1982) which concluded that the licensee's Functional Test Procedures STP-I16A and I16C "Actuation Logic Test of Protection System Logic" were acceptable. The inspector verified this by examination of the same procedures and discussions with licensee operations personnel. (Closed)

IEC-81-13: Torque Switch Electrical Bypass Circuit for Safeguard Service Valve Motors:

The inspector examined the licensee's evaluation of this circular (Memo to file, R. Streich, dated July 29, 1982) which concluded that no torque switches were bypassed at the Diablo Canyon plant. The licensee's personnel did inform the inspector that the number eight limit switches may be bypassed by NPO to achieve tight seating to meet the leakage requirements of Technical Specification 4.4.6.2.2.C. In this case NPO submits "as-built" information to Project Engineering which then updates the relevant drawings. (Closed)

IEC 81-14: Main Steam Isolation Valve Failures to Close:

The inspector examined the licensee's evaluation of this Circular (Memo to file, R. Lockett, dated December 18, 1981). The inspector also discussed the issue with maintenance personnel, to insure that they were aware of the problem and that applicable precautions had been taken by plant maintenance. The MSIVs were checked and observed to be closed at the time of the inspection. (Closed)

No items of noncompliance or deviations were identified.

3. Examination of Interactions Between Unit 1 and Unit 2

The inspector examined licensee event reports and discussed the issue of interactions between Unit 1 and Unit 2 with licensee operations personnel and management. Four areas of system interaction between units were examined (1) Plant Compressed Air Systems (2) Control Room Ventilation Systems (3) Safety Related Electrical Distribution Systems, and (4) Radwaste and Floor Drains.

The licensee personnel were aware of these type of interactions and had implemented the actions described below.

Plant Air Systems - Approximately 2½ years ago the component cooling water system (chromated fresh water) was introduced into the plant air system when plant air was used to force water into the system surge tank. The licensee has changed their procedure to drain excess water to the plant hazardous waste tanks without the use of plant air.

Safety Related Electrical Systems - The licensee had experienced a diesel generator spurious start due to vibration of undervoltage relays in Unit 2. The licensee has lifted leads on the auto-start relays in Unit 2

(start up feeder busses) until construction activities have been completed. Licensee personnel had also examined potential interactions with the automatic safety injection (SI) systems and lifted appropriate leads that might cause an inadvertent SI in Unit 1 (due to sensed loss of off-site power). Licensee personnel stated that other devices (i.e. circuit breakers) are controlled from the control room under the cognizance of the shift foreman.

Control Room Ventilation - Two relevant events have occurred in this system, (1) an inadvertent transfer to the accident mode of operation due to error, and (2) a Unit 2 wiring diagram error. The licensee has directed the shift foreman to look at all jumpers in the control of the Reactor Protection System, the Solid State Protection System, and the P250 Computer. The unit two operating foreman reviews all jumpers or clearances prior to completion and involves the Unit 1 shift foreman if appropriate. Regarding the erroneous drawing, the licensee personnel found that the schematic drawing (for Unit 2) was correct but that the diagram of connections was in error. As a consequence the Nuclear Plant Operations group has required Project Engineering to provide certification that all drawings for Unit 2 equipment which can affect Unit 1 equipment are correct.

Radwaste and Floor Drain Systems - The licensee's staff explained that valving dividing the two units had been identified and shut. These valves are on the sealed valve list and the Unit 1 Shift Foreman's Permission is required prior to opening any of these valves. In addition, a physical security barrier is in place between the two units. Licensee personnel also stated that the auxiliary building construction activity would be curtailed during power ascension testing of Unit 1 to avoid potential interactions.

The inspector examined the licensee's files related to these issues, examined the plant barriers and valving, and discussed these points with other licensee personnel. The inspector concluded that the licensee was adequately aware of the issue and had taken appropriate measures to prevent adverse interactions between Unit 1 and Unit 2.

No items of noncompliance or deviations were identified.

4. Verification of "As-Builts" HVAC Systems (TI 2512/11) Unit 2

The inspectors examined additional HVAC components and engineering components to verify adequacy of (1) installation, (2) engineering, and (3) the "As-Building" activities. Previous examinations had been conducted for the construction and "as-building" of approximately two dozen HVAC supports/and or components by the Region 5 contract inspectors from Lawrence Livermore National Laboratory. During the current effort the following documents and supports were examined, both at the PG&E Project Engineering offices in San Francisco and at the Diablo Canyon plant.

Drawings SKC-HV2-306, -499, -384, -517, -229, -230, -670, 59440 Rev. 10, 501372, Rev. 10

Calculations HV-2-478, -154, -2-623, -125, -2-357, -2-318, -2-58, -2-495, -2-454

Design Change Notices DCN DC2-EC-18821, DC2-EC-14489

Field Walkdown Procedure "Field Walkdown Procedure for Class I HVAC Duct Supports for DCP" Letter Moore to Etzler, dated August 10, 1982

Out of twelve HVAC supports examined, the inspectors observed that supports HV2-384, 499 and 670 exhibited poor welding workmanship compared to newer adjacent welding in the HVAC systems completed during the last two years. The old welds exhibited overlap and undercut which would make visual inspection unsatisfactory. The inspectors requested the licensee's evaluation of the adequacy of these welds and the adequacy of the procedures for inspection of these welds at the time they were made. The licensee completed a technical evaluation of seven supports to determine the stress levels in these welds which showed that the suspect welds would be stressed to less than 5%, 20%, and 12% respectively of the code allowable strength. The inspectors also examined anchor bolt loadings and interactions to verify that proximity of anchor bolts to each other had been adequately engineered. The inspectors did find that a welding symbol for intermittent stitch welding on DCE DC2-EC-18821 appeared ambiguous. The licensee personnel agreed to revise the symbol to remove the ambiguity. The inspectors questioned the strength calculations for the duct work (HV-2-670) stiffener fasteners. The licensee personnel reviewed their engineering files and informed the inspector that these connections were originally designed to be riveted and designed at the strength limit of the rivets. Subsequently, 1" welds were used which were many times stronger. The licensee conducted an evaluation of the QA/QC in effect at the time these welds were made (Memo, Hobgood to Tinkle, dated August 10, 1984) with the conclusion that the installer (Scott, Co.) was not required by specification or QA to visually inspect the welds per AWS or AISC Code Requirements. The licensee also concluded a technical evaluation of the identified condition (Memo, Tinkle to Leppke/Morsy dated August 7, 1984) with the conclusion that the identified welds were outside the visual acceptance standards of the present applicable code, AWS D1.1-82 but that in any case the welds appeared adequate to fulfill the design intent. The evaluation was conducted by welding, metalurgy, and construction engineering personnel with the recommendation that the Project Engineering Group make a final disposition. This item will remain open pending further NRC evaluation and review by the Project Engineering Group (50-275/84-14-01).

5. Exit Interview

At the conclusion of each segment of the inspection the inspectors met with personnel listed in paragraph 1 to discuss the inspection findings. The purpose of the inspection and the scope of the major findings were acknowledged by licensee personnel.

Paragraph 4 discusses commitments given at the exit meeting to the NRC inspectors on the HVAC systems.

There were no violations or deviations identified during this inspection.