



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
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November 12, 2004

EA 04-0169

Gregory M. Rueger, Senior Vice  
President, Generation and Chief Nuclear Officer  
Pacific Gas and Electric Company  
Diablo Canyon Power Plant  
P.O. Box 3  
Avila Beach, California 93424

SUBJECT: DIABLO CANYON POWER PLANT - NRC INTEGRATED INSPECTION  
REPORT 05000275/2004004 AND 05000323/2004004

Dear Mr. Rueger:

On September 30, 2004, the U.S. Nuclear Regulatory Commission completed an inspection at your Diablo Canyon Power Plant, Units 1 and 2, facility. The enclosed integrated report documents the inspection findings that were discussed on October 6, 2004, with Mr. David H. Oatley and members of your staff.

This inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. In addition, there was one NRC identified issue, two self-revealing issues, and two NRC-identified findings that were evaluated under the risk Significance Determination Process as having very low safety significance (Green). The NRC has also determined that violations are associated with the issues. These violations are being treated as noncited violations (NCVs), consistent with Section VI.A of the Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Diablo Canyon Power Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document

Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

William B. Jones, Chief  
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Dockets: 50-275

50-323

Licenses: DPR-80

DPR-82

Enclosure:

Inspection Report 05000275/2004004

and 05000323/2004004

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Dockets: 50-275, 50-323  
Licenses: DPR-80, DPR-82  
Report: 05000275/2004004  
05000323/2004004  
Licensee: Pacific Gas and Electric Company (PG&E)  
Facility: Diablo Canyon Power Plant, Units 1 and 2  
Location: 7 ½ miles NW of Avila Beach  
Avila Beach, California  
Dates: July 1 through September 30, 2004  
Inspectors: D. L. Proulx, Senior Resident Inspector  
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## SUMMARY OF FINDINGS

IR 05000275/2004004, 05000323/2004004; 07/01/04 - 09/30/04; Diablo Canyon Power Plant Units 1 and 2; Maintenance Risk Assessment and Emergent Work Control, Postmaintenance Testing, Emergency Planning, ALARA Planning and Controls, Identification and Resolution of Problems.

This report covered a 13-week period of inspection by resident inspectors and announced inspections in maintenance, emergency preparedness, and radiation protection. Two Green findings, and two self-revealing and one NRC-identified Green noncited violations were identified. A Severity Level IV noncited violation was also identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. NRC-Identified and Self-Revealing Findings

#### Cornerstone: Mitigating Systems

- Green. A self-revealing, noncited 10 CFR Part 50, Appendix B, Criterion XVI, was identified for the failure to promptly identify multiple grounds in the breaker control circuitry for Containment Spray Pump 2-2. Specifically, Pacific Gas and Electric Company missed several opportunities, in part because of a failure to utilize the troubleshooting procedure, to pursue the cause of the ground and to address anomalous indications, the proximity of a known ground to other conductors, and operating experience. The grounds degraded control wires affecting the pump's manual/automatic breaker closure circuits, indication circuits, and overcurrent circuits for up to 70 days following the initial ground indication. A problem identification and resolution crosscutting aspect was identified for the troubleshooting and corrective actions associated with the grounds. The grounded cable was subsequently replaced.

Similar to Example 4.f in Appendix E of Inspection Manual Chapter 0612, the finding is greater than minor because the multiple grounds affected the operability of containment spray Pump 2-2. Using the Inspection Manual Chapter 0609 Phase I Screening Worksheet, the finding was of very low safety significance since there was not an actual reduction of the atmospheric pressure control function for containment (Section 1R04.3).

- Green. A finding was identified by the inspectors for Pacific Gas and Electric Company's failure to assess the extent of condition regarding a broken wire at a pressurizer heater electrical connection during Refueling Outage 1R11. As a result, the corrosive agent left on the connections corroded all the Unit 1 pressurizer heater electrical connections as discovered in Refueling Outage 1R12. The finding was greater than minor because it affected the reliability attribute and objective of the Mitigating Systems Cornerstone. Using the SDP Phase I worksheet in Inspection Manual Chapter 0609, Appendix A, the

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finding is of very low safety significance since the degraded connections were confirmed not to result in a loss of function per Generic Letter 91-18, Revision 1 (Section 4OA2).

- Green. A noncited violation of 10 CFR 55.46 was identified by the inspectors for the failure to maintain the plant referenced simulator to respond to normal, transient, and accident conditions. Pacific Gas and Electric Company removed from service and abandoned the Backup Seismic System (Terra Tech Instrument) in place in June 2000, However, as of August 31, 2004, the plant referenced simulator still provided an annunciator fed from the backup seismic system when an earthquake of sufficient magnitude was felt. This provided operators with negative training in that operators were trained that the backup seismic system would provide annunciation and indication.

This finding affects the mitigating systems cornerstone and is greater than minor because it results in negative training of the operators to expect an annunciator from a backup seismic system in the event of an earthquake, if the earthquake force monitor was unavailable. Using the flow chart of Appendix I of Inspection Manual Chapter 0609 of the Significance Determination Process, this issue affects operator actions in that operators may attempt to obtain ground motion from backup seismic monitors that did not exist. Per Inspection Manual Chapter 0609, Appendix I, Item 12, the inspectors determined that the finding was Green because the differences between the plant control room and the plant reference simulator negatively impacted operator actions and resulted in negative training (Section 1E6.1).

#### Cornerstone: Barrier Integrity

- Green. The inspectors identified a finding for the failure to properly isolate containment isolation Valve VAC-2-FCV-681 (an air-operated containment isolation valve) after it failed to fully stroke open and was declared inoperable. Operators hung administrative tags on the control room switch for the valve but failed to remove the motive force from the valve by isolating air to the actuator. The associated operating instruction required that the valve be closed and deactivated. A human performance crosscutting aspect was identified for the failure to properly implement the operating instruction for an inoperable containment isolation valve.

This issue affects the barrier integrity cornerstone objective to ensure that systems penetrating the containment and are connected directly to the containment atmosphere have adequate isolation to protect the containment barrier. This issue is greater than minor because failure to properly close and deactivate containment isolation valves could have an actual impact on the ability to isolate a fault outside of containment. Using the Phase 1 significance determination process, the inspectors determined that the issue was of very low safety significance because the finding did not represent an actual open significant pathway to the environment and the penetration was isolated by an active valve having secured flow (Section 1R19).

#### Cornerstone: Emergency Preparedness

- Severity Level IV. A violation of 10 CFR 50.54(q) was identified by the inspectors for failure to update and submit changes to the emergency plan within 30 days. Specifically, Section 7.5.1 of the Diablo Canyon Emergency Plan stated that a supplemental seismic system, supplied by Terra Tech Corporation, provided backup local indication and control room annunciation on strong ground motion. The Terra Tech system was removed from service, along with its annunciation in the control room, and abandoned in place in July of 2000, but as of September 30, 2004, Pacific Gas and Electric Company had not revised its emergency plan to reflect this change.

The finding was evaluated using NUREG-1600, "General Statement of Policy and Procedure for NRC Enforcement Actions," Section IV, because licensee reductions in the effectiveness of its emergency plan impact the regulatory process. The finding had greater than minor significance because deletion of conditions indicative of a site area emergency has the potential to impact safety. The finding was determined to be a noncited Severity Level IV violation because the finding involved a violation of a regulatory requirement and did not constitute a failure to meet an emergency planning standard as defined by 10 CFR 50.47(b). This finding has been entered into the licensee's corrective action program as Action Request A0618799 (Section 1EP6.2).

#### Cornerstone: Occupational Radiation Safety

- Green. The inspector reviewed two examples of a self-revealing noncited violation of Technical Specifications because Pacific Gas and Electric Company personnel failed to follow radiation work permit requirements. Specifically, all station radiation work permits required individuals to exit the area and return to access control when their personnel electronic dosimeter alarmed due to an accumulated dose. On April 8, 2004, a radiation worker failed to follow this requirement by not exiting containment and returning to access control when the radiation worker's personnel electronic dosimeter alarmed due to accumulated dose. A second example occurred on April 20, 2004, when a radiation protection technician responsible for controlling radiation exposure to a steam generator worker failed to instruct the worker to exit the area and return to access control when the worker's personnel electronic dosimeter alarmed on accumulated dose. In each case, Pacific Gas and Electric Company returned to compliance when the workers exited the area and returned to access control. These two examples were entered into Pacific Gas and Electric Company's corrective action program as Action Requests A0605254 and A0608007, respectively.

The failure to correctly respond to a personnel electronic dosimeter dose alarm as required by the radiation work permit is a violation of a Technical Specification 5.4.1. a. and is a performance deficiency. This finding is greater than minor because it affected the Occupational Radiation Safety cornerstone objective to ensure adequate protection of a worker's health and safety from exposure to radiation and is associated with the cornerstone attribute of Program and Process. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because the finding was not associated

with as low as is reasonably achievable planning or work controls, there was no overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. This finding also had crosscutting aspects associated with human performance (Section 2OS2).

B. Licensee-Identified Violations

Violations of very low significance were identified by Pacific Gas and Electric Company and have been reviewed by the inspectors. Corrective actions taken or planned appear reasonable. The violations are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Diablo Canyon Unit 1 began this inspection period at 100 percent power. On July 21, 2004, operators initiated an unplanned Technical Specification required shutdown to repair a component cooling water (CCW) leak inside the Unit 1 containment. Unit 1 entered Mode 3 (Hot Standby) on July 22, 2004. On July 23, 2004, following completion of repairs, operators entered Mode 2 (Startup). Operators continued increasing reactor power and Unit 1 entered Mode 1 (Power Operations) on July 24, 2004, and reached 100 percent power on July 25, 2004. Unit 1 remained at 100 percent power for the duration of the inspection period.

Diablo Canyon Unit 2 began this inspection period at 100 percent power. On July 24, 2004, operators reduced Unit 2 reactor power to approximately 50 percent power for main condenser cleaning. On July 25, 2004, after completing main condenser cleaning, operators increased reactor power to 100 percent power.

On August 20, 2004, operators reduced reactor power to approximately 50 percent power for main condenser and intake forebay cleaning. Following the cleaning activities, Unit 2 reactor power was returned to 100 percent on August 22, 2004.

On September 17, 2004, operators reduced reactor power to approximately 50 percent power for main condenser cleaning. Following cleaning activities, Unit 2 reactor power was returned to 100 percent power on September 19, 2004. Unit 2 remained at 100 percent power for the duration of the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R01 Adverse Weather (71111.01)

##### a. Inspection Scope

The inspectors performed reviews of the design features, equipment, and plant preparation for protecting mitigating systems from the adverse effects of Pacific Ocean storms. These storms, in conjunction with kelp and other aquatic plants, can obstruct the intake traveling screens, causing a trip of the circulating water pumps and loss of the main condenser. In the past, these storms, also known as "kelp attacks," have caused the shutdown of both units within a short period of time due to a loss of normal heat sink. The following aspects of Pacific Ocean storm mitigating systems were reviewed this inspection quarter:

- Traveling screens,
- Screen Wash System
- Kelp Grinders Material Condition

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b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

The inspectors performed four partial system walkdowns and one complete system walkdown during this inspection period.

Partial System Walkdowns

.1 Unit 1 Auxiliary Feedwater (AFW) Pump 1-1

a. Inspection Scope

On July 1, 2004, while AFW Pump 1-2 was in a maintenance outage window, the inspectors performed a partial system walkdown of Unit 1 AFW Pump 1-1. The inspectors observed valve alignment, the availability of electrical power and cooling water, labeling, lubrication, ventilation, structural support, and material condition. The inspectors used Drawing 106703, "Feedwater," Sheet 3, Revision 61, and Procedure OP D-1:I, "Auxiliary Feedwater System - Make Available," Revision 25, during the inspection.

b. Findings

No findings of significance were identified.

.2 Unit 2 Auxiliary Saltwater (ASW) Pump 2-1

a. Inspection Scope

On July 6, 2004, while ASW Pump 2-1 was in a maintenance outage window, the inspectors performed a partial system walkdown of the Unit 2 ASW Pump 2-1. The inspectors observed valve alignment, the availability of electrical power and cooling, labeling, lubrication, ventilation, structural support, and material condition. The inspectors used Drawing 106717, "Saltwater," Sheet 7A, Revision 131.

b. Findings

No findings of significance.

.3 Unit 2 Containment Spray Pump (CSP) 2-2

a. Inspection Scope

On July 7, 2004, while CSP 2-2 was in a maintenance outage window, the inspectors performed a partial system walkdown of Unit 2 CSP 2-2. The inspectors observed valve

alignment, the availability of electrical power, labeling, lubrication, ventilation, structural support, and material condition. The inspectors used Drawing 107712, "Containment Spray," Sheet 2, Revision 20, and Procedure OP I-2:II, "Containment Spray System Alignment Verification Checklist for Plant Startup," Revision 15.

b. Findings

Introduction. A self-revealing, noncited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI was identified for the failure to promptly identify multiple grounds in the breaker control circuitry for CSP 2-2. The grounds degraded control wires affecting the pump's manual/automatic breaker closure circuits, indication circuits, and overcurrent circuits for 70 days following the initial ground indication.

Description. On May 19, 2004, operators received a 5.6 milliamperes ground on 125 Vdc Bus 23 and began tracking the ground through Action Request (AR) A0609937. Maintenance personnel searched for the cause of the ground using Procedure MP E-67.1, "Isolating DC Grounds," Revision 1A, but were unsuccessful at locating the ground due to the accuracy of the instruments they were using. By May 26, 2004, the ground had increased to 13.5 milliamperes.

On June 4, 2004, during a routine surveillance test of CSP 2-2, the ground alarm cleared when the DC knife switch in the breaker cubicle was opened. Maintenance personnel were then able to locate the ground to the 2-1 conductor, which ran from the breaker to the control room. On the same day, Pacific Gas and Electric Company (PG&E) staff stated in AR A0609937 that operability of the pump was not affected by the ground because Calculation 361-DC, "125 VDC Ground Detection System Sensitivity," Revision 0, showed that a single ground would not produce enough current to trip a protective device or blow a fuse. Additionally, the ground was determined to be on an alarm circuit and not on a circuit that could affect the breaker controls. On June 25, 2004, maintenance meggered the 2-1 conductor and determined that the conductor had failed. On July 22, 2004, a post-maintenance test was performed on CSP 2-2 following routine maintenance. During the test, the blue overcurrent light for CSP 2-2 came on and the ground alarm cleared. When the pump was shut down, the blue overcurrent light cleared and the ground alarm became active again. On July 28, PG&E staff attempted to jumper around the 2-1 conductor. In the postmaintenance testing of the temporary modification, the ground alarm remained active. Subsequent investigation revealed seven additional grounds in the CSP 2-2 control circuitry, which affected the pump's manual/automatic breaker closure circuits, indication circuits, and overcurrent circuits. The grounded conductors were all part of the same 9 conductor cable. The grounds were located in an underground conduit between the turbine and auxiliary buildings. At the location of the grounds, the conduit was full of water due to a designed dip in the conduit elevation. The exact cause of the water in the conduit is under investigation by PG&E.

The inspectors determined that PG&E staff failed to promptly identify multiple grounds in CSP 2-2. The failure to promptly identify the grounds was outlined by several missed opportunities to recognize the scope of the problem. On June 4, 2004, the ground was

narrowed down to the 2-1 conductor for CSP 2-2 pump. Engineering personnel noted that the ground was not significant enough to trip breakers or blow fuses. They also stated that Calculation 361-DC showed that a single ground would not affect the operability of the pump. However, more than one ground could impact the operability of the pump. The inspectors reviewed the calculation and verified that it was correct. The inspectors determined that PG&E did not adequately investigate for the presence of multiple grounds, to understand the cause of the ground, and assess how it may affect associated conductors. Additionally, multiple grounds would be difficult to detect by the 125 Vdc bus ground detection system. Therefore, the inspectors concluded that the followup actions after the operability determination made on June 4, 2004, was a missed opportunity to understand the scope of the problem.

On June 25, 2004, maintenance personnel meggered conductor 2-1 and determined it had failed. Maintenance personnel also recognized that conductor 2-1 was in a 9 conductor cable, as stated in AR A0609937. However, PG&E staff did not adequately question the extent of condition by investigating whether the cause of the ground in conductor 2-1 could be affecting the other conductors. This was another missed opportunity to identify the multiple grounds.

On July 22, 2004, during the post-maintenance test run of CSP 2-2, the blue overcurrent light came on without an overcurrent relay trip. The blue overcurrent light is activated from the overcurrent auxiliary relay. Normally, the overcurrent auxiliary relay is only activated when the overcurrent relay trips. Since conductor 2-1 is in the path between the overcurrent relay and the overcurrent auxiliary relay, the ground in conductor 2-1 was supplying current to the overcurrent auxiliary relay to actuate it. The current supplying the conductor 2-1 ground came from one of the other conductor grounds. However, PG&E staff failed to identify the presence of multiple grounds from the anomalous blue overcurrent light, which was another missed opportunity to identify the multiple grounds.

The inspectors reviewed operating experience at Diablo Canyon Power Plant and the nuclear industry to determine if any previous events were applicable. The inspectors noted that AR A0516220 was written on October 11, 2000, to discuss cable degradation for reactor coolant Pump 1-1. The AR discussed water inside the underground conduits that had degraded the cable jacket. PG&E discussed the possibility of removing the conduit seals for conduits exiting the 74 ft. level of the turbine building. However, no clear direction was provided for removing the seals and AR A0516220 was closed. The inspectors also noted the following NRC Information Notices that are applicable to the condition of CSP 2-2:

- NRC Information Notice 2002-12: Submerged Safety-Related Electrical Cables
- NRC Information Notice 89-63: Possible Submergence of Electrical Circuits Located Above the Flood Level Because of Water Intrusion and Lack of Drainage
- NRC Information Notice 92-01: Cable Damage Caused By Inadequate Cable Installation Procedures and Controls

The inspectors considered the available plant and industry operating experience to be a missed opportunity to promptly identify the multiple grounds on CSP 2-2.

In addition to the above missed opportunities, PG&E also missed an opportunity in their troubleshooting activities to identify the multiple grounds. Some of the grounded conductors would not be part of the circuit unless the pump was running. PG&E had not adequately considered this aspect in their troubleshooting, which was noted by Quality Verification Assessment 042330003, "Assessment of Troubleshooting Activities for Containment Spray Pump 2-2." The same assessment also noted that PG&E failed to enter Procedure MA1.DC10, "Troubleshooting," Revision 7, as required by that procedure. The inspector identified a problem identification and resolution (PI&R) crosscutting aspect associated with the troubleshooting and corrective actions associated with the grounded cable.

Analysis. The performance deficiency associated with this finding is a failure to promptly identify the multiple grounds in the CSP 2-2 control circuitry, as required by 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions." Similar to Example 4.f in Appendix E of IMC 0612, the finding is greater than minor because the multiple grounds affected the operability of CSP 2-2. Using the Inspection Manual Chapter (IMC) 0609 Phase I Screening Worksheet, the finding was of very low safety significance since there was not an actual reduction of the atmospheric pressure control function for containment.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Contrary to the above, PG&E failed to promptly identify the multiple grounds on CSP 2-2 when opportunities arose. The grounds affected the CSP 2-2 breaker control and indication circuitry for up to 70 days. Because the failure to promptly identify the multiple grounds on CSP 2-2 is of very low safety significance and has been entered into the corrective action program as Nonconformance Report N0002188, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-323/04-04-01, Failure to Promptly Identify Multiple Grounds in Containment Spray Pump 2-2 Control Circuitry.

.4 Unit 1 Centrifugal Charging Pump (CCP) 1-1

a. Inspection Scope

On August 3, 2004, while CCP 1-2 was in a maintenance outage window, the inspectors performed a partial system walkdown of Unit 1 CCP 1-1. The inspectors observed valve alignment, the availability of electrical power, labeling, lubrication, ventilation, structural



support, and material condition. The inspectors used Drawing 106708, "Chemical Volume and Control," Sheet 5, Revision 116, and Procedure OP B-1A:IX, "CVCS – Alignment Verification for Plant Startup," Revision 37.

b. Findings

No findings of significance were identified.

Complete System Walkdowns

Unit 1 Vital Batteries and Battery Chargers

a. Inspection Scope

On July 12 and 13, 2004, while Battery Charger 1-1 was being replaced during a maintenance window, the inspectors performed a system walkdown of Unit 1 batteries and vital battery Chargers 12, 121, 131 and 132. The inspectors observed the Diablo Canyon power systems breaker alignments, the availability of electrical power, labeling, ventilation, structural support, and material condition. The inspectors also reviewed past and present deficiencies. The documents used by the inspectors are noted in the documents reviewed section of this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

The inspectors performed eight fire protection walkdowns during this inspection period.

.1 Routine Observations

a. Inspection Scope

The inspectors performed eight fire protection walkdowns to assess the material condition of plant fire detection and suppression, fire seal operability, and proper control of transient combustibles. The inspectors used Section 9.5 of the Final Safety Analysis Report (FSAR) Update as guidance. The inspectors considered whether the suppression equipment and fire doors complied with regulatory requirements and conditions specified in Procedures STP M-69A, "Monthly Fire Extinguisher Inspection," Revision 34, STP M-69B, "Monthly CO2 Hose Reel and Deluge Valve Inspection," Revision 14, STP M-70C, "Inspection/Maintenance of Doors," Revision 9, and OM8.ID4, "Control of Flammable and Combustible Materials," Revision 12. Specific risk-significant areas inspected included:

- Units 1 and 2, Battery Charger and Inverter Rooms
- Units 1 and 2, Diesel Generator Rooms

- Units 1 and 2, Radiologically Controlled Areas of the Auxiliary Building
- Units 1 and 2, Auxiliary Saltwater Pump Vaults

b. Findings

No findings of significance were identified.

1R07 Biennial Heat Sink Performance (71111.07B)

Four inspection samples were performed.

.1 Performance of Testing, Maintenance and Inspection Activities

a. Inspection Scope

The inspectors selected four heat exchangers that were either directly or indirectly connected to the safety-related service water system. The inspectors reviewed PG&E's test and cleaning methodology for the CCW heat exchanger, and the safety injection, charging pump, and residual heat removal pump lube oil coolers. In addition, the inspectors reviewed test data for the CCW heat exchangers and design and vendor-supplied information to ensure that the heat exchangers were performing within their design bases. The inspectors also reviewed the heat exchanger inspection and test results. Specifically, the inspectors verified proper extrapolation of test conditions to design conditions, appropriate use of test instrumentation, and appropriate accounting for instrument inaccuracies. Additionally, the inspectors verified that PG&E appropriately trended these inspection and test results, assessed the causes of the trends, and took necessary actions for any step changes in these trends. The inspectors reviewed the methods and results of heat exchanger inspection and cleaning and verified that the methods used to inspect and clean were consistent with industry standards and found results were appropriately dispositioned such that the final condition were acceptable.

b. Findings

No findings of significance were identified.

.2 Verification of Conditions and Operations Consistent with Design Bases

a. Inspection Scope

For the selected heat exchangers, the inspectors verified that PG&E established heat sink and heat exchanger condition, operation and test criteria were consistent with the design assumptions. Specifically, the inspectors reviewed the applicable calculations to ensure that the thermal performance test acceptance criteria for the heat exchangers were being applied consistently throughout the calculations. The inspectors also verified that the appropriate acceptance values for fouling and tube plugging for the CCW heat exchangers remained consistent with the values used in the design-basis calculations. Finally, the inspectors verified that the parameters measured during the thermal

performance tests for the CCW heat exchangers were consistent with those assumed in the design bases.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors verified that PG&E had entered significant heat exchanger/heat sink performance problems into the corrective action program. The inspectors reviewed 27 ARs.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On August 17, 2004, the inspectors witnessed one operator requalification exam in the simulator. The scenario involved the loss of a centrifugal and safety injection pump, an earthquake, and a loss of coolant accident. The inspectors verified the crew's ability to meet the objectives of the training scenario and attended the post-scenario critique to verify that crew weaknesses were identified and corrected by PG&E staff.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

The inspectors performed one inspection sample of maintenance effectiveness.

.1 Maintenance Effectiveness

a. Inspection Scope

The inspectors performed one inspection sample of PG&E's Maintenance Rule implementation for equipment performance problems. The inspectors assessed whether the equipment was properly placed into the scope of the rule, whether the failures were properly characterized, and whether goal setting was recommended, if required.

Procedure MA1.ID17, "Maintenance Rule Monitoring Program," Revision 13, was used as guidance. The inspectors reviewed the following structures, systems, and components.

- Unit 1 Containment Coatings

b. Findings

No findings of significance were identified.

.2 Maintenance Implementation

Periodic Evaluation Reviews

a. Inspection Scope

The inspectors reviewed the Diablo Canyon Power Plant report documenting the performance of the last maintenance rule periodic effectiveness evaluation to confirm that it was performed in accordance with 10 CFR 50.65(a)(3). PG&E's periodic evaluation covered the period from September 1, 2001, through August 31, 2003.

The inspectors reviewed the handling of risk significant structures, systems and components with degraded performance or degraded condition to assess the effectiveness of PG&E's evaluation and the resulting corrective actions. Inspection Procedure 71111.12, "Maintenance Effectiveness," requires 4-6 risk significant examples. The inspectors reviewed four examples: auxiliary saltwater system, CCW system, emergency diesel generators, and emergency diesel generator fuel oil system.

The inspectors evaluated the use of performance history and industry experience to adjust the preventive maintenance requirements, to adjust (a)(1) goals and to adjust the (a)(2) performance criteria. The inspectors assessed PG&E's adjustment of the scope of the maintenance rule, PG&E's adjustment of the definition of maintenance rule functional failures, PG&E's adjustment of definitions of available/unavailable hours and required hours and PG&E's review and adjustment of condition-monitoring parameters and action levels.

The inspectors also reviewed the conclusions reached by PG&E personnel with regard to the balance of reliability and unavailability for specific maintenance rule functions. This review was conducted by examining PG&E's evaluation of all risk significant functions that had exceeded performance criteria during the evaluation period.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors evaluated the use of the corrective action system within the maintenance rule program for issues associated with risk significant systems. The review was accomplished by the examination of a sample of corrective action documents, maintenance work items, and other documents listed in the attachment. The purpose of the review was to establish that the corrective action program was entered at the appropriate threshold for the purpose of:

- Implementation of the corrective action process when a performance criterion was exceeded
- Correction of performance-related issues or conditions identified during the periodic evaluation
- Correction of generic issues or conditions identified during programmatic assessments, audits, or surveillance.

The purpose of the review was to determine that the identification of problems and implementation of corrective actions were acceptable.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

The inspectors performed nine inspection samples of maintenance risk assessments and emergent work control.

.1 Risk Assessments

a. Inspection Scope

The inspectors reviewed daily work schedules and compensatory measures to confirm that PG&E had performed proper risk management for routine work. The inspectors considered whether risk assessments were performed according to their procedures and whether PG&E had properly used their risk categories, preservation of key safety functions, and implementation of work controls. The inspectors used Procedure AD7.DC6, "On-line Maintenance Risk Management," Revision 7, as guidance. The inspectors specifically observed the following work activities during the inspection period.

- Unit 1, main turbine electrohydraulic control system postmaintenance test on July 2, 2004

- Unit 1, preventive maintenance for atmospheric dump Valve MS-1-PCV-22 and positive displacement Pump 1-3, and unavailability of Valve SW-1-FCV-601 due to preventive maintenance on auxiliary saltwater Pump 2-2 on July 7
- Unit 1, replacement of solenoid valves for atmospheric dump Valve MS-1-PCV-21, replacement of battery Charger 1-2, and testing of containment spray Pump 1-1 on July 20, 2004
- Unit 1, preventive maintenance for auxiliary feedwater Pumps 1-1 and control room ventilation Fan S-38 and hot wash of 500 kV transmission line insulators on August 20, 2004
- Unit 1, freeze seal on the CCW surge tank level instrumentation on August 4, 2004

b. Findings

No findings of significance were identified.

.2 Emergent Work

a. Inspection Scope

The inspectors observed emergent work activities to verify that actions were taken to minimize the probability of initiating events, maintain the functional capability of mitigating systems, and maintain barrier integrity. The scope of work activities reviewed includes troubleshooting, work planning, plant conditions and equipment alignment, tagging and clearances, and temporary modifications. The following activities were observed during this inspection period:

- Unit 1 Reactor Coolant Pump 1-2 undervoltage alarm on July 9, 2004 (AR A0614248)
- Unit 2 Diesel Engine Generator 2-1 lube oil leak on July 9, 2004 (AR A0614252)
- Unit 2 Eagle 21 Set 3, Rack 13, Loop Calculation Processor lock-up on August 16, 2004 (AR A0616519)
- Unit 2 Main Turbine Governor Valves inadvertently close by 14 percent on September 21, 2004 (AR A0618975)

b. Findings

No findings of significance were identified.

1R14 Personnel Performance Related to Nonroutine Plant Evolutions and Events (71111.14)

a. Inspection Scope

The inspectors observed two nonroutine plant evolutions/events during this inspection period.

b. Findings

.1 Earthquake Force Monitor (EFM) Replacement

Introduction. An Unresolved Item was identified pending the NRC's determination of the regulatory aspects and evaluation of the safety significance of any performance issues associated with the Diablo Canyon Emergency Plan and the use of the existing earthquake force monitors following a seismic event. The inspectors noted that PG&E removed the EFM from service on August 9-10, 2004, to upgrade the system with a new design. The inspectors are reviewing the capabilities of the replacement system at the time the EFM were removed from service and the plant staff knowledge and requirements for obtaining information from the new system to make the appropriate emergency classification following a seismic event. In addition, the inspectors are reviewing other instance when PG&E removed the seismic monitors from service on several other occasions (up to 4 days) for test and calibration, to assess what capabilities existed for implementing the emergency plan.

Background. Diablo Canyon was designed with seismic instrumentation to aid in classifying an emergency and determining the level of in-plant inspection to perform following a seismic event. The instrumentation consisted of a basic seismic system (EFM), which had a digital readout in the control room of maximum ground motion at the Unit 1 containment base (acceleration in g's), and the supplemental seismic system (Terra Tech), which provided digital readout in the auxiliary building of facility ground motion throughout the site. The Terra Tech system failed and was abandoned in place in June 2000 due to lack of parts and vendor support. In addition, Diablo Canyon had instrumentation mounted locally, at various locations in the plant that could be removed and then read. Diablo Canyon was also designed with a reactor trip that shut down the reactor if a separate set of seismic monitors sensed ground motion greater than 0.3g's.

On December 22, 2003, a Magnitude 6.5 earthquake struck the Central Coast of California that was felt at Diablo Canyon Power Plant. PG&E declared a Notification of Unusual Event, because of ground motion on the seismic monitors greater than 0.01g (actual ground motion was 0.043g's at the site). During analysis of the event, PG&E determined that data retrieval and analysis was cumbersome, and that the installed equipment was not state of the art, and should be replaced. PG&E initiated Design Change Package (DCP) -49600, "Consolidated Seismic Monitoring System," to replace the EFM and the Terra Tech System. The new system would provide for easier read-out and real-time data at each of the locations where the instrumentation was located. The control room would be provided with a keyboard and monitor to read the ground motion

immediately at any location. In addition, each of the seismic monitors would have immediate local indication, should the monitor in the control room become unavailable.

Engineers preparing the DCP performed a review for the affect on the emergency plan in accordance with 50.54(q). This evaluation addressed differences between the previous and upgraded system descriptions and identified that minor administrative changes to the emergency plan were required to define the new features. The evaluation in DCP-49600 did not address how the emergency plan would be implemented in the interim (30 day) period between when the EFM was removed and the new system installed and declared operable. Also, the evaluation did not address whether the new system should be installed and operational, procedures revised, and personnel trained, prior to removing the existing system from service.

Description. On August 9, 2004, PG&E implemented an upgraded system for the EFM, and implemented the modification in a "break before make" manner for the expected 30-day period of installation.

When the EFM was removed from service for replacement, operators were not provided with directions or training on how to specifically implement the seismic aspects of the emergency plan with the EFM unavailable. Operators questioned the removal of the EFM but were not given additional guidance until approximately 36 hours later when operations management provided "Shift Orders" to use seismic Monitor ESTA-05, part of the backup system that was installed, to determine the magnitude of an earthquake at the plant for emergency action level classification purposes.

The inspectors noted that Monitor ESTA-05 had not been tested following installation on May 26, 2004. This seismic monitor was available but had not been turned over to operations and verified to be operating properly at the time it was identified for use in the shift order instructions. On August 17, 2004, operations revised the shift order to include the location of each of the new seismic monitors (seven total) and provided operators with instruction to read two of the monitors. On August 24, 2004, PG&E formalized the instructions in the shift order and revised Procedure CP-4 "Earthquake," Revision 20, to read and record the data from at least two of the seven local seismic monitors following a seismic event.

Subsequently, on August 25, 2004, technicians while working on the system placed three of the seven monitors into the "software only" mode which affected how the monitors would react to a seismic event. This condition existed through August 27, 2004. The NRC is reviewing the effect placing the monitors into the software mode had as part of the unresolved item followup.

The inspectors performed a review of the maintenance history of the EFM. The inspector noted that the EFM was inoperable for test and/or calibration numerous times since 1999. Most of these instances were of short duration (i.e., up to 2 hours). However, five of these outages were of appreciably longer hours in duration. There were outages on the EFM of 96, 72, 60, 56, and 55 hours since 1999 (from June 16-19, 1999; December 1-4, 2000; April 25-27, 2002; May 25-29, 2002; December 30-31, 2003;



and August 9-10, 2004) In each of these instances the EFM was unavailable. The NRC is evaluating other seismic instruments and what other measures were put in place to implement the emergency plan as part of this unresolved item.

An Unresolved Item (URI) 50-275;323/04-04-02, Evaluation of Earthquake Force Monitors for EAL Implementation, was opened for the NRC review of any performance issues associated with the modification to the earthquake force monitors and the impact on implementing the Diablo Canyon Emergency Plan. This includes the adequacy of the earthquake force monitor modification, the associated reviews, impact of work activities prior to and subsequent to August 9, 2004, on the operators ability to appropriately assess a seismic event per the EALs, and the timeliness and adequacy of the initial corrective actions.

Analysis. A determination of the safety significance associated with any performance deficiencies will be addressed in the resolution to the unresolved item.

Enforcement. A determination of the enforcement aspects associated with any performance deficiencies will be addressed in the resolution to the unresolved item.

## .2 Earthquake In the Vicinity of the Diablo Canyon Power Plant

### a. Inspection Scope

The inspectors provided onsite followup to an earthquake in the vicinity of the facility.

#### Background

Diablo Canyon Power Plant is located in a seismically active area along the interface of the Pacific and North American Plates. Several faults are located within 50 miles of the plant. PG&E is required by the operating license to maintain a Long-Term Seismic Program to reevaluate the seismic design bases against insights and knowledge gained with each seismic event. FSAR Update Section 3.7 describes the seismic design basis of the facility. The plant was designed for ground motion from a Design Earthquake, equivalent to an "Operating Basis Earthquake," in which the plant can be expected to continue to operate. This value is ground motion acceleration at the containment base of 0.2g. The Double Design Earthquake, equivalent to a "Safe Shutdown Earthquake," is the design basis for most safety-related structures, and has ground motion acceleration of 0.4. The plant is also evaluated for the maximum ground acceleration which can result from an earthquake originating in the Hosgri fault. This evaluation ensures the plant can be safely shut down if the expected maximum ground motion were to occur.

Technical Specification 3.3.1, "Reactor Trip System," requires instrumentation to initiate a reactor trip for a nominal ground acceleration of 0.35 g. An earthquake force monitor, which has three sensors, provides an alarm in the control room at a minimum of 0.01g of ground acceleration. Procedure CP-4, "Earthquake," Revision 18, addresses the actions required to be taken in the event of an earthquake of 0.01 g or greater.

Enclosure

Parkfield Earthquake 49 Miles Northeast of the Site

Description

At 10:15 a.m. PST, on September 28, 2004, a magnitude 6.0 earthquake struck 49 miles northeast of Diablo Canyon, on the San Andreas Fault near the city of Parkfield. Both resident inspectors were at the site. The shaking lasted 17 seconds. The senior resident inspector (SRI) immediately notified the Region IV and the resident inspector (RI) responded to the control room at 10:18 a.m. PDT to observe the operators.

The RI walked down the panels, reviewed the status of safety systems, and verified that PG&E was implementing the emergency plan. The RI noted that the seismic monitor recorded a seismic event of 0.012g. The RI established the NRC's reactor safety counterpart link and advised the NRC headquarters operations officer that PG&E would soon be declaring a NOUE in accordance with their emergency plan for a seismic event that was felt in the control room and exceeded 0.01g as detected on the upgraded seismic monitors.

The SRI reported to the control room to observe PG&E actions. The inspectors verified that the requirements of Procedure CP-4 were followed. The procedure required verification of all of the major safety-related tanks levels to ensure that no catastrophic failures had occurred. The inspectors also verified the applicable tank levels. The procedure required a complete walkdown of plant areas, using engineering instructions. PG&E received a temporary annunciator for high vibration on the Unit 1 turbine. Operators cleared the alarm following the shaking.

PG&E declared a NOUE at 10:30 a.m. PDT. The inspectors verified that PG&E made the required calls to the state and local officials. PG&E had personnel stationed at the Emergency Operating Facility (EOF), which is co-located with the San Luis Obispo County Office of Emergency Services to assist in monitoring the community and the emergency services response. The inspectors communicated the status of local roadways to Region IV and NRC headquarters. Highway 46-east had minor debris on the road, but the highway was passable. In addition, PG&E personnel in the EOF kept apprised of the status of two emergency sirens that were inoperable in San Luis Obispo county.

Two of the 131 emergency sirens were inoperable during the Parkfield earthquake. Alternate means of implementing the public notification aspects of the emergency plan, if necessary, for the areas affected were available. One of these sirens was inoperable prior to the earthquake for maintenance and the other lost power during the shaking. These sirens were restored to operability within approximately 5 hours.

The inspectors monitored reports of PG&E walkdowns of the plant. At approximately 12 p.m. PDT, the inspectors began independent inspections of plant equipment following the earthquake. One inspector remained in the control room to monitor operator actions and maintain communications within the agency, while the other inspector walked down plant areas. At approximately 10 p.m. PDT on September 28, 2004, a Region IV

civil/structural inspector arrived at Diablo Canyon to assist the inspectors in monitoring plant operations, performance of plant inspections, and evaluation of the ground motion.

At approximately 12:30 p.m. PDT on September 28, 2004, the inspectors entered the Unit 1 containment and performed a visual inspection of systems, structures and components. The inspectors subsequently entered the Unit 2 containment and performed the same inspections. The inspectors verified that the fire protection systems were intact, and that there was no evidence of pipe movement or other structural damage.

The inspectors also walked down the turbine building, emergency diesel generators, CCW heat exchangers, and high voltage switchgear. The inspectors verified that no leaks existed in the safety-related systems and that no cracks were evident in structural members. The inspectors then walked down the switchgear areas of the auxiliary building. The inspectors verified that no damage occurred in the ac and dc switchgear rooms, the cable spreading room, and the battery rooms.

The inspectors entered the radiologically controlled area of the auxiliary building and performed complete inspections of the emergency core cooling pumps and systems, CCW pumps, auxiliary feedwater pumps, and residual heat removal system heat exchangers.

The inspectors entered the fuel building and verified the level in the spent fuel pools. All structural elements in the spent fuel pool were unaffected based on visual observation. Spent fuel pool water clarity was good. No cracks were evident in the fuel building ventilation system or structural members.

The inspectors walked down the outside areas of the plant. The inspectors verified that the applicable security barriers were still intact. The inspectors verified that the major outside tanks (condensate storage tanks, refueling water storage tanks, primary water storage tanks, and fire water storage tank) had no cracks or obvious damage. The inspectors toured the intake structure and verified that no damage occurred to the traveling screens and auxiliary saltwater pumps, pipes, and valves.

Because the Parkfield area continued to experience aftershocks, PG&E elected to remain in a NOUE for approximately 24 hours. The inspectors continued to inspect the facility and monitor control room actions for the duration of the NOUE. During the evening, the inspectors walked down the offsite power sources (startup transformers) and continued to monitor communications with the emergency facilities. The inspectors examined the auxiliary and startup transformers for damage. The inspectors maintained a round the clock presence and continued to inspect and monitor PG&E actions until PG&E exited the NOUE at approximately 12:15 p.m., PDT on September 29, 2003.

In the days following the event, the inspectors continued to review PG&E's response to aftershocks and the adequacy of the PG&E procedures and the Emergency Plan.

b. Findings

During the inspections, no system or structural damage or evidence of differential deflections were detected, and no site ground effects were noted during exterior visual inspections. In addition, no damage was noted to the administration building, which is designed to the Uniform Building Code. PG&E's immediate response to the earthquake was effective in ensuring continued safe operation, and their implementation of the NRC's prompt notification requirements was timely and correct.

All seismic instrumentation functioned correctly. The inspectors noted that PG&E is in the process of upgrading the current Earthquake Force Monitor to a digital distributed system that will provide better information (e.g. wider frequency response and more monitoring locations).

Procedure CP-4, "Earthquake," Revision 21, was used in responding to the earthquake. PG&E response to the earthquake was appropriate. PG&E's revision to improve CP-4, following the San Simeon earthquake in December 2003, facilitated plant response to the Parkfield earthquake.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed the cumulative affect of operator workarounds to identify any potential effects on the functionality of mitigating systems or the operator's ability to implement abnormal and emergency operating procedures. As part of the inspection effort, the inspectors considered PG&E's evaluation of the workarounds, operational practices, the amount of training or knowledge needed for the workaround, corrective actions, compensatory measures, and adverse operational environments.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17A)

a. Inspection Scope

The inspectors performed a review of an on-line permanent plant modification. The inspectors reviewed Design Change Package DCP-49600 "Consolidated Seismic Monitoring System" that replaced the previously existing Basic Seismic and Supplemental Seismic Systems. The inspectors reviewed the technical adequacy of the upgrades and the design reviews in accordance with 10 CFR 50.59 and 10 CFR 50.54(q).

b. Findings

Introduction Unresolved Item (URI) 50-275;323/04-04-02, Evaluation of Earthquake

Force Monitors for EAL Implementation, was opened in Section 1R14.1. The NRC will review the regulatory aspects and evaluation of the safety significance of any performance issues associated with any reduction in the effectiveness of the emergency plan as part of the URI review. PG&E initiated a design change package to replace the Earthquake Force Monitor, but did not identify that removal of the system from service may have reduce PG&E's ability to implement the emergency plan. Specifically Emergency Action Levels (EAL) 18, 17, and 9 of the Diablo Canyon Emergency Plan credited the earthquake force monitor to classify a seismic event.

Discussion On August 9, 2004, PG&E removed the Earthquake Force Monitor (EFM) from service to implement Design Change Package DCP-49600. Design Change Package DCP-49600 contained a review in accordance with 10 CFR 50.54(q). This review noted that minor changes to the name and vendor credited in the emergency plan were required to implement Design Change Package DCP-49600. PG&E concluded that a reduction in effectiveness in the emergency plan had not occurred, and that the DCP could be implemented without prior NRC approval. The inspectors noted that the documentation did not address how the DCP was to be implemented during the interim period between removal of the EFMs and acceptance of the consolidated seismic monitoring system.

PG&E personnel noted that Equipment Control Guideline (ECG) 51.1 stated that with the EFM inoperable, restore the EFM to operable status within 30 days, or submit a special report within the next 10 days. PG&E indicated that ECG 51.1 was related to the emergency plan, and that the EFM could be removed from service for an indefinite period of time without compensatory measures, as long as a special report was submitted. The inspectors noted that the basis for this ECG (formerly a Technical Specification) was to provide information, after-the-fact, on ground motion and the response of plant structures, systems, and components (SSCs) to determine if the SSCs remained operable, and if the plant was ready to restart. No ties between ECG 51.1 and the emergency plan EALs were identified.

The inspectors noted that removal of the EFM from service without sufficient guidance or compensatory measures to implement EALs 9, 17, and 18, would reduce the effectiveness of the emergency plan. In order to implement Design Change Package DCP-49600, in the manner prescribed (i.e. removing the EFM from service, then taking 30 days to install the new system) PG&E would either be required to implement compensatory measures to ensure that EALs 9, 17 and 18 could be followed, or obtain prior NRC approval before reducing the effectiveness of the emergency plan. Unresolved Item (URI) 50-275;323/04-04-02, Evaluation of Earthquake Force Monitors for EAL Implementation, was opened in Section 1R14.1. The implementation of the design change package with regard to any reduction in the effectiveness of the emergency plan and will be reviewed as part of URI 50-275;323/04-04-02.

Analysis. A determination of the safety significance associated with any performance deficiencies will be addressed in the resolution to the unresolved item.

Enforcement . A determination of the enforcement aspects associated with any

performance deficiencies will be addressed in the resolution to the unresolved item.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed five postmaintenance tests for selected risk-significant systems to verify their operability and functional capability. As part of the inspection process, the inspectors witnessed and/or reviewed the post-maintenance test acceptance criteria and results. The test acceptance criteria were compared to the Technical Specifications and the Final Safety Analysis Report – Update. Additionally, the inspectors verified the tests were adequate for the scope of work and were performed as prescribed, jumpers and test equipment were properly removed after testing, and test equipment range, accuracy, and calibration were consistent for the application. The following selected maintenance activities were reviewed by the inspectors:

- Unit 1, Turbine-driven Auxiliary Feedwater Pump 1-1 steam admission Valve MS-1-FCV-95 repair on June 2, 2004
- Unit 2, Diesel Engine Generator 2-2 overhaul performed June 27 - July 2, 2004
- Unit 2, Containment Spray Pump 2-1 preventive maintenance on July 7, 2004
- Unit 2, Work Order C0188384 "Replace Pump RY-11 and Test"
- Unit 1, Main Turbine Electro-Hydraulic Control System Post-Maintenance Test

b. Findings

Introduction. A Green finding was identified for failure to properly isolate a containment isolation valve by closing and deactivating the valve when it was declared inoperable. Specifically, Valve VAC-2-FCV-681 failed to fully stroke and was declared inoperable, but operators did not shut and deactivate the valve as required by the operating instructions.

Description. Valve VAC-2-FCV-681 is a 1-inch air-operated containment isolation valve serving Penetration 69. This penetration is directly connected to the containment atmosphere and is used for the containment gaseous and particulate radiation monitors. Penetration 69 consists of an active component, Check Valve VAC-2-21, inside containment and Valve VAC-2-FCV-681 outside of the containment. Technical Specification 3.6.3 "Containment Isolation Valves" applies to this penetration and states, in part, that with one containment isolation valve in a penetration flow path inoperable, within 4 hours isolate the penetration by at least one closed and deactivated valve, manual valve, blind flange or check valve with flow secured through the penetration. Otherwise, be in Mode 3 (Hot Shutdown) within the next 6 hours.

On September 2, 2004, operators prepared to perform the postmaintenance test for

Work Order C0188384, which replaced sample Pump RY-11, the sample pump for containment radiation Monitors RE-11 and RE-12. Operators reported off the clearance for testing. In order to test Pump RY-11, operators attempted to open Valves VAC-2-FCV-681 and -679. However, at 12:30 a.m. PDT on September 2, 2004, Valve VAC-2-FCV-681 failed in its mid-position. To address the inoperability of the valve and containment Penetration 69, operators placed administrative tags on the control switches for the valve on the vertical board in the control room. The inspectors noted that the operators did not isolate the penetration by at least one closed and deactivated valve (air removed from the actuator); however, it was later determined that the Technical Specification 3.6.3 to isolate the penetration was met through the inboard check valve and having secured flow through the penetration. PG&E initiated AR A0617707 to place this issue into the corrective action system.

PG&E's Operations Policy C-5, "Application of Technical Specification Action Statements Associated with 3.6.3, Containment Isolation Valves and 3.4.11, RCS [Reactor Coolant System] PORVs [Power-Operated Relief Valves], and Associated Block Valves," required operators to isolate the penetration by isolating the air supply, such as to Valve VAC-2-FCV-681, but the operators were not sufficiently familiar with this operations policy and placed administrative tags on the valve's control switch. Item 2 of Operations Policy C-5 provided that the valve shall be closed and deactivated. A human performance crosscutting aspect was identified for the failure to properly implement the operating instruction. This issue was entered into PG&E's corrective action program as AR A0617707, Finding 50-275/04-05-03, failure to properly implement an operating instruction for an inoperable containment isolation valve.

Analysis. This issue affects the barrier integrity cornerstone objective to ensure that systems penetrating the containment and are connected directly to the containment atmosphere have adequate isolation to protect the containment barrier. This issue is more than minor because it could have an actual impact on the ability to isolate a fault outside of containment given a single failure. Using the Phase 1 significance determination process the inspectors determined that the issue was of very low safety-significance (Green) because the finding did not represent an actual open significant pathway to the environment.

Enforcement. The failure to shut and deactivate Valve FCV-681 did not result in a violation of Technical Specification 3.6.3 or other regulatory requirement.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors evaluated five routine surveillance tests to determine if PG&E complied with the applicable Technical Specification requirements to demonstrate that equipment

was capable of performing its intended safety functions and operational readiness. The inspectors performed a technical review of the procedure, witnessed portions of the surveillance test, and reviewed the completed test data. The inspectors also considered whether proper test equipment was utilized, preconditioning occurred, test acceptance criteria agreed with the equipment design basis, and equipment was returned to normal alignment following the test. The following tests were evaluated during the inspection period:

- Unit 1, Procedure STP I-38-A.2, "SSPS Train A SI Reset Timer and Slave Relay K602 Test in Modes 1, 2, 3, or 4," Revision 4, on July 12, 2004
- Unit 1, Procedure STP P-CSP-11, "Routine Surveillance Test of Containment Spray Pump 1-1," Revision 7, on July 20
- Unit 2, Procedure STP V-3R3, "Exercising Steam Generator Blowdown Inside Containment Isolation Valves FCV-760, FCV-761, FCV-762, FCV-763," Revision 9, on July 22
- Unit 2, Procedure STP V-3R4, "Exercising Main Steam Isolation Bypass Valves FCV-22, FCV-23, FCV-24, and FCV-25," Revision 8A, on July 22
- Unit 1, Procedure STP —75, "4kV Vital Bus Undervoltage Relay Calibration," Revision 28, on August 23

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed four temporary plant modifications during this inspection period to verify that they did not affect safety functions of safety systems. Temporary plant modifications may include jumpers, lifted leads, temporary systems, repairs, design modifications, and procedure changes which can introduce changes to plant design or operations. As part of the inspection effort, the inspectors verified aspects of the temporary plant modification that include energy requirements, material compatibility, structural integrity, environmental qualification, code and safety classification, system timing constraints, reliability, cooling requirements, control signals, equipment protection boundaries, water flow paths, pressure boundary integrity, procedures, drawings, and tests. During this inspection period, the following temporary plant modifications were reviewed:

- Unit 1, Repair of Auxiliary Saltwater Pump 1-1 Discharge Flange Leak (AR A0608367 and Work Order C0188989)



- Unit 1, Modification of ventilation exhaust register in inverter room 1-1 to support installment of battery chargers (AR A0608969 and Work Order C0189289)
- Unit 1, Installment of a temporary ultrasonic level indicator on Line 4296 (AR A0612988 and Work Order C0190153)
- Unit 2, Installment of a digital oscilloscope to troubleshoot Train B digital rod position indication alarms (AR A0605176 and Work Order C0188287)

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Emergency Preparedness Evaluation (71114.06)

.1 Evaluation of Emergency Action Levels without the Earthquake Force Monitor

a. Inspection Scope

The inspectors evaluated PG&E special session conducted in the simulator on August 31, 2004, to assess if the emergency plan could be adequately implemented with the Earthquake Force Monitor inoperable. The inspectors witnessed the performance of two operating crews for this inspection. PG&E initiated a scenario for the operators in which a seismic event of .4g ground motion occurred, with the seismic monitors inoperable. This scenario was used to determine if Emergency Action Level (EAL) 18 of the Diablo Canyon Emergency Plan could be implemented. This EAL defined an Alert as ground motion greater than .2g's and a Site Area Emergency greater than .4 's. The seismic trip actuated at greater than .3g's would be available.

b. Findings

.1 Simulator Fidelity

Introduction. An NCV of 10 CFR 55.46 was identified for failure to maintain the plant referenced simulator to respond to normal, transient and accident conditions. PG&E removed from service, and abandoned in place the backup seismic system (Terra Tech Instrument) in June 2000. As of August 31, 2004, the plant referenced simulator still provided an annunciator fed from the backup seismic system, when an earthquake of sufficient magnitude was felt. This provided operators with negative training in that operators would expect the backup seismic system to provide annunciation and indication, when such a system had been removed.

Description. During the inspectors observation of the special session conducted in the simulator on August 31, 2004, to assess if the emergency plan could be adequately implemented with the Earthquake Force Monitor inoperable. During the simulation one

operating crew declared an Alert based on an earthquake known to cause ground motion of at least .3 g's (greater than the Alert level of .2 g's). A second crew declared a Site Area Emergency, despite no knowledge of the actual ground motion. The inspectors also noted that the simulator's control room annunciator for the Terra Tech System actuated during the simulations.

PG&E's emergency plan for Diablo Canyon states in Section 7.5.1 that a supplemental seismic system is installed that provides an alarm in the control room and local indication. The Terra Tech system provided this function until July of 2000. However, on July 22, 2000, PG&E attempted to calibrate the Terra Tech system but was unsuccessful. PG&E initiated AR A0511732 to enter this item into the corrective action program. In contacting the vendor, PG&E determined that the vendor would no longer provide technical support or parts for the supplemental seismic system. PG&E decided to abandon the system in place in favor of an upgraded system. As an interim measure, in August 2001 PG&E installed temporary recorders (without control room annunciation), that provided local indication until a new backup seismic system could be installed (August 2004).

The inspectors found that the simulator had not been maintained in accordance with the facility and as a result the operators had received negative training with regard to the Terra Tech system. Specifically, the simulator provided indication that the Terra Tech System was available, when in fact it had been abandoned in place since July 2000.

Analysis. This finding affects the mitigating systems cornerstone and is greater than minor because it results in negative training of the operators to expect an annunciator from a backup seismic system in the event of an earthquake, if the earthquake force monitor was unavailable. Using the flow chart of Appendix I, of Inspection Manual Chapter 0609 of the Significance Determination Process, this issue affects operator actions in that operators would attempt to obtain ground motion from backup seismic monitors that did not exist. Per Inspection Manual Chapter 0609, Appendix I, Item 12, the inspectors determined that the finding was Green because the differences between the plant control room and the plant reference simulator negatively impacted operator actions and resulted in negative training.

Enforcement. 10 CFR 55.46, states in part that a licensee shall maintain a plant referenced simulator to respond to normal, transient, and accident conditions. Contrary to the above, PG&E failed to maintain the plant referenced simulator from July 2000 through August 2004. Specifically, PG&E removed from service and abandoned in place the Supplemental Seismic System (which provided indication and control room annunciation of ground motion) in July 2000, but did not remove this function in the simulator as of August 2004. Because this violation was of very low safety significance and has been entered into the corrective action program as AR A618799, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-275;323/04-05-04. Failure to maintain simulator with respect to backup seismic alarm.

.2 Maintenance of the Emergency Plan

Introduction. A Severity Level IV NCV of 10 CFR 50.54(q) was identified for failure to update and submit changes to the emergency plan within 30 days.

Description Section 7.5.1 of the Diablo Canyon Emergency Plan stated that a supplemental seismic system, supplied by Terra Tech Corporation, provided backup local indication and control room annunciation on strong ground motion. However, the Terra Tech system was removed from service, along with its annunciation in the control room, and abandoned in place in July 2000. As of September 30, 2004, PG&E had not revised its emergency plan to reflect this change.

Analysis. Abandonment of equipment relied upon in the emergency plan which decreased its effectiveness was a performance deficiency. The finding was associated with a violation of NRC requirements and determined not to be minor because it impacted the regulatory process. The finding was evaluated using NUREG-1600, "General Statement of Policy and Procedure for NRC Enforcement Actions," Section IV, because licensee reductions in the effectiveness of its emergency plan impact the regulatory process. The finding was determined to be a noncited Severity Level IV violation because the failure to submit a change for the Terra Tech System that was abandoned in place constituted a failure to implement a regulatory requirement of the 10CFR 50.54(q) for failure to update and submit changes to the emergency plan within 30 days, but did not constitute a failure to meet an emergency planning standard as defined by 10 CFR 50.47(b).

Enforcement. 10 CFR 50.54(q) states in part that a licensee shall follow and maintain in effect emergency plans and shall submit changes to the approved emergency plan within 30 days of making the change. Contrary to the above, PG&E failed to submit a change to the emergency plan within 30 days of making the change. Specifically, PG&E removed from service and abandoned in place the Supplemental Seismic System (which provided indication and control room annunciation of ground motion) in July 2000, but did not submit a revision to the emergency plan reflecting this change as of August 2004. Because this violation was of very low safety significance and has been entered into the corrective action program as AR A618799, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-275/04-05-05. Failure to submit change to the emergency plan with respect to backup seismic system.

## 2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety [OS]

### 2OS2 ALARA Planning and Controls (71121.02)

#### a. Inspection Scope

The inspector completed eight samples of ALARA planning and controls.

The inspector assessed PG&E's performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). The

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inspector used the requirements in 10 CFR Part 20 and the PG&E's procedures required by Technical Specifications as criteria for determining compliance. The inspector interviewed PG&E personnel and reviewed the following:

- Current 3-year rolling average collective exposure
- Site specific ALARA procedures
- Four work activities of highest exposure significance completed during the last outage
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding
- Two declared pregnant workers' records during the current assessment period, monitoring controls, and the exposure results
- Self-assessments related to the ALARA program since the last inspection. No audits or special reports were written since the last inspection related to the ALARA program

b. Findings

Introduction. The inspector reviewed the details associated with two examples of a self-revealing NCV of Technical Specification 5.4.1.a because PG&E failed to follow Radiation Work Permit (RWP) requirements. Specifically, all station RWPs required radiation workers to exit the area and return to access control upon receiving a Personnel Electronic Dosimeter (PED) alarm. Both examples occurred during the 2004 Unit 1 refueling outage.

Description. The first example of a failure to follow RWP requirements occurred on April 8, 2004. A radiation worker signed onto RWP 04-0001-0 and entered Unit 1 containment to perform a walk down of system piping to verify field conditions. During the course of the walk down, the radiation worker's PED went into alarm when it reached the accumulated dose set point of 2 millirem. The RWP required that the radiation worker exit the area and return to access control. However, the radiation worker did not exit the area and return to access control until approximately 15 minutes later when the radiation worker was escorted out by radiation protection (RP) personnel.

A second example of a failure to comply with RWP requirements occurred on April 20, 2004. A radiation worker was signed onto RWP 04-1044-0 to perform bowl

closeout on Steam Generator 1-2. The work was continuously monitored by a job coverage RP technician using audio, video, and telemetry remote coverage. The job coverage RP technician was responsible for controlling the worker's dose for the task and for instructing the worker to exit the area when required. The worker was wearing dosimetry which included, in part, PEDs on the chest and upper arms. However, only the PED on the chest was on telemetry and the RP technician providing job coverage was not aware of the additional PEDs on the upper arms. The radiation worker heard an apparent alarm and contacted the RP technician providing job coverage to ask if their PED had gone into alarm. The RP technician responded that the chest teledosimetry indicated only 115 millirem accumulated dose, which was less than the allowable dose of 200 millirem, and therefore dismissed the alarm as not being from the worker's PED. The alarm continued for about five minutes until the radiation worker exited the platform to retrieve equipment. Upon exiting the platform, an RP technician in the area heard the alarm and informed the job coverage RP technician that the worker's left upper arm PED was in accumulated dose alarm. Subsequently, the worker was instructed to exit the area and return to access control.

Analysis. The failure to correctly respond to a PED alarm is a performance deficiency. This finding is greater than minor because it affected the Occupational Radiation Safety cornerstone objective to ensure adequate protection of a worker's health and safety from exposure to radiation, and is associated with the cornerstone attribute of Program and Process. When the finding was processed through the Occupational Radiation Safety Significance Determination Process, it was determined to be a finding of very low safety significance because it was not associated with ALARA planning or work controls, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised.

This finding had crosscutting aspects associated with human performance. When PG&E personnel did not exit the area and return to access control when their PED alarmed due to accumulated dose, their actions directly contributed to the finding.

Enforcement. Technical Specification 5.4.1.a requires that written procedures be established, implemented, and maintained covering the applicable procedures referenced in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A, Section 7, references procedures for control of radioactivity and limiting personnel exposure. Procedure RP1.ID9, Radiation Work Permits, Revision 7, Step 7.4.1, required in part, that each individual fully comply with the requirements of the RWP. Reference 1 of RWP 04-0001-0 and RWP 04-1044-0 required that individuals exit the area and return to access control upon receiving a PED dose alarm. On April 8, and April 20, 2004, PG&E personnel failed to follow the requirements of their respective RWP because they did not exit the area and return to access control when they received a PED dose alarm. Because this failure was of very low safety significance and the two examples have been entered into the PG&E's corrective action program as AR A0605254 and Action Request A0608007, respectively, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 50-275/04-04-06, Two Examples of a Failure to Follow Radiation Work Permit Requirements.

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4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

.1 Unit 1 Pressurizer Heater Electrical Connection Corrosion

a. Inspection Scope

On April 7, 2004, while performing a visual inspection of the Unit 1 pressurizer heater electrical connections, PG&E maintenance staff discovered that approximately 70 percent of the wire terminations were corroded and brittle. PG&E staff initiated AR A0605096 to document the problem, and they also initiated Quality Evaluation (QE) Q0012388 in order to perform a cause analysis.

The inspectors reviewed PG&E's actions regarding the identification and resolution of the corrosion found on the pressurizer heater electrical connections. Specifically, the inspectors

- verified complete and accurate identification of the problem in a timely manner,
- evaluated operability and reportability issues,
- reviewed extent of condition, generic implications, common cause, and previous occurrences,
- identified significant negative trends associated with human and equipment performance,
- verified the proper classification and prioritization of the problem,
- reviewed the root and contributing causes,
- verified the adequacy of corrective actions, and
- verified the timely completion of corrective actions.

b. Findings

Introduction. The NRC inspectors identified a Green finding for the failure to assess the extent of condition regarding a failed pressurizer heater connection in Refueling Outage 1R11. The failure was a missed opportunity to identify a corrosive agent that degraded all heater electrical connections for the Unit 1 pressurizer, causing at least one connection to fail.

Background. The Unit 1 pressurizer contains 78 immersion heaters in the lower pressurizer head. Each heater is rated at 480 V and 23 kW. The heaters are divided into 4 groups with Groups 2 and 3 capable of being supplied from emergency power sources.

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While the only safety-related function of the heaters is to maintain the reactor coolant system (RCS) pressure boundary, the heating capability of the pressurizer heaters is addressed in Technical Specification 3.4.9. Technical Specification 3.4.9 requires pressurizer heater Groups 2 and 3 to have a heating capacity of at least 150 kW per group. By maintaining this heating capacity, operators would be able to maintain RCS subcooling under natural circulation conditions for certain accident scenarios. If RCS subcooling were lost, a loss of single-phase natural circulation and decreased capability to remove core decay heat could occur for some design basis accidents.

Description. On April 7, 2004, PG&E maintenance personnel identified widespread corrosion of the Unit 1 pressurizer heater electrical connections during routine visual inspections. PG&E staff initiated AR A0605096 to document the condition and QE Q0012388 to determine the root cause. In QE Q0012388, PG&E determined that the corrosion was caused by residual brazing flux that was left on the pressurizer heater electrical connections after a 1988 design modification to the connections. At the time of the modification, PG&E had decided to leave the flux on the connections to avoid additional radiation dose to workers. At an unknown time during Unit 1 operating Cycle 12, the pressurizer skirt ring insulation had fallen and blocked the ventilation holes to the pressurizer by approximately 70 percent. Due to the reduced ventilation, the temperature at the heater electrical connections increased and the flux became active and corroded the electrical connections.

The inspectors reviewed the root causes and corrective actions associated with the pressurizer electrical heater connections. The inspectors noticed that during the previous Unit 1 refueling outage, 1R11, PG&E staff identified that one wire at connection 34 had disassociated near the termination. AR A0556220 documented that the wire had been removed for failure analysis, but it did not state the cause of the failure. PG&E staff reported that electrical engineers visually determined the cause of the disassociated wire to be a loose crimp. The cause of the wire failure was not documented, and AR A0556220 was closed. Additionally, QE Q0012388 and AR A0605096 noted connection 34 was found failed in Refueling Outage 1R11. However, neither document addressed the missing failure analysis.

The inspectors determined that PG&E staff failed to consider the extent of condition of pressurizer heater electrical connection damage during Refueling Outage 1R11. Specifically, the inspectors considered the visual inspection of the connection 34 wire to be narrow-focused since it did not adequately consider other failure mechanisms. As a result, PG&E staff missed an opportunity to identify the corrosion mechanism at the connections and prevent the extent of damage as identified in Refueling Outage 1R12.

Analysis. The inspectors determined that the finding is a performance deficiency because Procedure OM7.ID1, "Problem Identification and Resolution – Action Requests," Revision 14B, required the identification of potential operational impacts. Specifically, PG&E failed to assess the extent of condition of the disassociated pressurizer heater wire, which was a missed opportunity to identify the corrosion at the heater electrical connections. The finding was greater than minor because it affected the reliability attribute and objective of the Mitigating Systems Cornerstone. Using the SDP Phase I

worksheet in Inspection Manual Chapter (IMC) 0609, Appendix A, the finding is of very low safety significance since the degraded connections were confirmed not to result in a loss of function per Generic Letter 91-18, Revision 1.

Enforcement. No violation of regulatory requirements occurred. The inspectors determined that the finding did not represent a noncompliance issue since the heating capability of the pressurizer heaters was not a safety-related function. This finding is in the corrective action program as AR A0605096: FIN 50-275/04-04-07, Failure to Address Extent of Condition on Broken Pressurizer Heater Cable.

.2 Biennial Heat Sink Performance

Section 1RO4 verified that PG&E had entered significant heat exchanger/heat sink performance problems into the corrective action program.

.3 Maintenance Effectiveness

Section 2OS2 evaluated the effectiveness of the PG&E's PI&R processes regarding exposure tracking, higher than planned exposure levels, and radiation worker practices. No findings of significance were identified.

.4 Radiation Safety

Section 1R12 evaluated the use of the corrective action system within the maintenance rule program for issues associated with risk significant systems. No findings of significance were identified.

.5 Other PI&R Crosscutting Aspects to Findings

Section 1RO4.3 describes a PI&R crosscutting aspect for troubleshooting and corrective actions associated with a grounded containment spray cable which included five missed opportunities to identify multiple grounds in the breaker control circuitry for a containment spray pump.

40A4 Crosscutting Aspects of Findings

Section 1R19 describes a finding with a human performance crosscutting aspect for operations failure to properly implement an operations instruction for an inoperable containment isolation valve.

Section 2OS2 describes two examples of a violation with human performance crosscutting aspects, which involved PG&E personnel who failed to correctly respond to PED dose alarms.

40A6 Management Meetings

Exit Meeting Summary



The resident inspection results were presented on October 6, 2004, to Mr. David Oatley, Vice President and General Manager, Diablo Canyon and other members of PG&E management. PG&E acknowledged the findings presented.

The inspectors asked PG&E whether any materials examined during the inspection should be considered proprietary. Proprietary information was reviewed by the inspectors and left with PG&E at the end of the inspection.

#### 4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by PG&E and is a violation of NRC requirements, which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

Technical Specification 5.4.1.a requires procedures to be established covering the activities described in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 7.e.1 of Appendix A of Regulatory Guide 1.33, requires procedures for Access Control to Radiation Areas including Radiation Work Permit System. Station Procedure RP1.ID9, Radiation Work Permits, Revision 7, required that each individual fully comply with the requirements of the radiation work permit (RWP). RWP 04-1044-0, states, in part, that multiple dosimetry is required for installing and removing robots. On April 13, 2004, a radiation worker climbed onto Steam Generator 1-4 platform to change a tool head mounted on the robotic arm located inside the steam generator cold leg bowl. The worker received permission to proceed, but instead of using the remote handling tool to complete the task, the worker used his arm to reach into the bowl. The worker was not wearing the dosimetry on his arm as required by the RWP. This finding is of very low safety significance because it was not associated with as low as is reasonably achievable planning or work controls, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. This finding is entered into PG&E's corrective action program as AR A0605993.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### PG&E personnel

J. Becker, Vice President - Diablo Canyon Operations and Station Director  
C. Belmont, Director, Nuclear Quality, Analysis, and Licensing  
S. Chesnut, Director, Engineering Services  
S. Ketelsen, Manager, Regulatory Services  
M. Lemke, Manager, Emergency Preparedness  
D. Oatley, Vice President and General Manager, Diablo Canyon  
P. Roller, Director, Operations Services  
J. Tompkins, Director, Site Services  
L. Womack, Vice President Nuclear Services

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

50-275;323/04-04-02    URI    Evaluation of Earthquake Force Monitors for EAL Implementation (Sections 1R14.1 and 1R17)

#### Opened and Closed

50-323/04-04-01    NCV    Failure to Promptly Identify Multiple Grounds in Containment Spray Pump 2-2 Control Circuitry (Section 1R04.3)

50-323/04-04-03    FIN    Failure to properly implement an operating instruction for an inoperable containment isolation valve (Section 1R19)

50-275;323/04-04-04    NCV    Failure to maintain simulator with respect to backup seismic alarm (Section 1EP6.1)

50-275;323/04-04-05    NCV    Failure to submit change to the emergency plan with respect to backup seismic system (Section 1EP6.2)

50-275/04-04-06    NCV    Two Examples of a Failure to Follow Radiation Work Permit Requirements (Section 2OS2)

50-275/04-04-07    FIN    Failure to Address Extent of Condition on Broken Pressurizer Heater Cable (Section 4OA2.1)

#### Closed

None

## LIST OF DOCUMENTS REVIEWED

### **Section 1R04: Equipment Alignment**

#### Procedures

OP J-9, "125/250V DC System," revision 5  
OP J-9:I, "Placing the 125/250V DC System in Service," revision 9  
OP J-9:II, "Operating the Battery Chargers," revision 5

#### Drawings

Drawing 437518, "Electrical Single Line Diagram for Station Auxiliaries," Sheet 1, Revision 38  
Drawing 458684, "Modification of LCU-27 Battery Racks - Battery Room Area H, El. 115' - 0" - Auxiliary Building," Revision 13

#### Work Orders

C0188038, DCP E-49644, "Remove BTC11 for Replacement"  
C0185077, "Bat13 Cell 13 Bat PT 488 Detail Exposed Copper"

#### Action Requests

A0564305  
A0582314  
A0591423  
A0602024  
A0606671  
A0607993  
A0612277  
A0612379

#### Miscellaneous

Design Criteria Memorandum S-67, "125V and 250V DC System," Revision 13A  
Clearance 00078711  
Health Card Query Report, Open ARs Report, on batteries and battery chargers, from 6/23/04  
Graphs of DCP Unit 1 Vital Battery Capacity Trends  
Graphs of DCP Unit 2 Vital Battery Capacity Trends

### **Section 1R07: Biennial Heat Sink Performance**

#### Calculations

—370, "Thrusts from the ASW Lines on the CCW Hxs," Revision 3  
—1027, "Maximum Allowable ASW Temperature When Two CCW Hxs are Aligned," Revision 2  
—1018, "CCW Split Train Operation / Vital Bus Failure," Revision 0  
—885, "Change in ASW Flow When Switching Configuration and Tidal Conditions," Revision 3

—953, “Determine if Adequate NPSH is Available for 1 Pump to Supply 2 Heat Exchangers,”  
Revision 2

—962, “Establish Criteria for Differential Pressure Limits Across the CCW Heat Exchanger  
Tubes Based on Performance Degradation Caused by Tube Flow Blockage,” Revision 3

#### Action Requests

A0573328  
A0573632  
A0577711  
A0583472  
A0583666  
A0607398  
A0575972  
A0600918  
A0553702  
A0564757  
A0574621  
A0567779  
A0581723  
A0585757  
A0595197  
A0575922  
A0575924  
A0576091  
A0588016  
A0598806  
A0607339  
A0603482  
A0601074  
A0599517  
A0599366  
A0588366  
A0563173

#### Procedures

MP —56.21, “Salt Water Heat Exchanger Tube and Tubesheet Plugging,” Revision 9

PEP —234, “CCW Heat Exchanger Performance Test,” Revision 8

#### Maintenance Orders

C0187456  
A0574621  
A0481723  
V0044728  
R0239583  
R0251524  
R0233011

A0146209  
R0055606  
R0088473

Design Changes

DCO-EM-47899, "Criteria for Plugging CCW Heat Exchanger Tubes and Tubesheet Holes,"  
Revision 1

Miscellaneous

TES Report Number 420DC-98.49, "DCPP Unit 2 CCW Heat Exchanger 2-1 Test," dated  
February 1998

TES Report Number 420DC, "Final Unit 1 CCW Heat Exchanger 1-1 Test Results," Dated  
April 22, 1996

Letter Number PGE-94-691, "Component Cooling Water Temperature and Flow Limits for  
Auxiliary Pumps," December 7, 1994 from Westinghouse to PG&E

Letter Number PGE-96-605, "Evaluation of Auxiliary Pumps for Elevated Component Cooling  
Water Temperatures," September 3, 1996, from Westinghouse to PG&E

TES Report Number 420DC-97.141, "Component Cooling Water Flow Rate Measurements on  
Unit 1 and Unit 2 Safety Injection Pumps June 1996," dated July 1997

TES Report Number 420DC-97.159, "Component Cooling Water Flow Rate Measurements on  
Unit 1 and Unit 2 Residual Heat Removal Pumps January 1997," dated September 1997

TES Report Number 420DC-97.50, "CCW Flow Rate Measurements on Unit 1 and Unit 2  
Centrifugal Charging Pumps December 1996 - January 1997," dated April 1997

**Section 1R12: Maintenance Effectiveness and Implementation**

Maintenance Effectiveness

Action Requests

A0501364  
A0503036  
A0503139  
A0503249  
A0503262  
A0503273  
A0503364

Maintenance Implementation

Action Requests

A0592791  
A0541418

A0592795  
A0555968  
A0560825  
A0467127  
A0543927  
A0555461  
A0524579  
A0592795  
A0589783  
A0506562  
A0543927  
A0560188  
A0560825  
A0541418  
A0601265  
A0589303  
A0588886

#### Nonconformance Report

N0002156  
N0002164  
N0002168

#### Licensee Event Reports

2-2003-007-01, "Technical Specification 3.8.4 Violation Due to Common Mode Battery,"  
Revision 01

2-2003-005-01, "Technical Specification 3.7.5.C Required Shutdown Due to Personnel Error,"  
Revision 01

2-2003-002-00, "Unanalyzed Condition in the Unit 2 Component Cooling Water System Due to a  
Valve Liner Failure," Revision 00

#### Procedures and Programs

MA1.ID17, "Maintenance Rule Monitoring Program," Revision 13

"Maintenance Rule Periodic Assessment," dated September 10, 2003

#### Miscellaneous Documents

Maintenance Rule Expert Panel Meeting No. 86 Minutes, July 9, 2002

Maintenance Rule Expert Panel Meeting No. 101, February 11, 2004

System Health Report for Auxiliary Saltwater System, May 2004

System Health Report for Component Cooling Water system, 2<sup>nd</sup> Quarter 2004

System Health Report for Diesel Generator System, July 2004

System Health Report for Diesel Generator Fuel Oil System, July 2004

Diablo Canyon Power Plant Maintenance Rule (a)(1) SSCs, Status as of August 11, 2004

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Action Requests

A0448816  
A0486655  
A0524386  
A0579796  
A0596480  
A0616519

**Section 1R19: Postmaintenance Testing**

Work Order

R0233219

Procedures

PMT 63.22, "Replacement Startup Transformer 1-2 Installation Testing," Revision 0  
STP P-CSP-21, "Routine Surveillance Test of Containment Spray Pump 2-1," Revision 7

**Section 1R23: Temporary Modifications**

Action Requests

A0547026  
A0578905

Calculation

92-15, "Air Flow Requirements Due to Inverter Replacement"

Drawings

425852, "Piping and Mechanical Design Review Isometric - Auxiliary Saltwater Piping Intake Structure," Revision 26

OVID 106717, "Saltwater," Sheet 7, Revision 132

1055E25, "Display I/O Rod Position Indication System," Revision F, Westinghouse Electric Corporation

1055E26, "Data I/O," Revision E, Westinghouse Electric Corporation

Procedures

CF4.ID7, "Temporary Modifications," Revision 15

**Section 2OS2: ALARA Planning and Controls (71121.02)**

## Corrective Action Documents (Action Requests)

A0603554  
A0603688  
A0603863  
A0604176  
A0604244  
A0605254  
A0605414  
A0605993  
A0606340  
A0608007  
A0608408  
A0608620  
A0608909  
A0609889  
A0610617  
A0612428

## Self-Assessments

033440054, Evaluation of Significant Event Notification 240 as Applicable to Diablo Canyon Power Plant

## Shielding Requests

TSR 04-0151  
TSR 04-0170  
TSR 04-0171

## Hot Spot Packages

Hot Spot #109  
Hot Spot #111

## Radiation Work Permits

04-1030-01, 1R12 NI and Excore Annulus Work  
04-1036-01, 1R12 Repair of Pressurizer Heater Cables  
04-1051-00, 1R12 RCP Motor Maintenance & 1-2 10 Year Inspection  
04-1062-01, 1R12 Containment Valves and other breaches < 100 mr/entry

## Procedures

OM4.NQ5, Internal Audits, Revision 8

RCP D-205, Performing ALARA Reviews, Revision 14

RCP D-220, Control of Access to High, Locked High, and Very High Radiation Areas, Revision 26

RP1.DC4, Radiological Hot Spot Identification and Control Program, Revision 1A



RP1, Radiation Protection, Revision 4

RP1.ID1, Requirements for the ALARA Program, Revision 2B

RP1.ID2, Use and Control of Temporary Radiation Shielding, Revision 5B

RP1.ID6, Personnel Dose Limits and Monitoring Requirements, Revision 6

RP1.ID9, Radiation Work Permits, Revision 7

RP1.ID10, Embryo/Fetus Protection Program

ALARA Committee Minutes

January 7, 2004

February 11, 2004

March 10, 2004

March 29, 2004

April 15, 2004

## LIST OF ACRONYMS

ADAMS	agency document and management system
AFW	auxiliary feedwater
AR	action request
ASW	auxiliary saltwater
AV	apparent violation
CCW	component cooling water
CFR	<i>Code of Federal Regulations</i>
CSP	containment spray pump
EAL	emergency action level
ECG	equipment control guideline
EFM	earthquake force monitor
FIN	finding
FSAR	Final Safety Analysis Report
IMC	Inspection Manual Chapter
LER	licensee event report
NCV	noncited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PARS	publicly available records system
PED	personnel electronic dosimeter
PG&E	Pacific Gas and Electric Company
QE	quality evaluation
RCS	reactor coolant system
RI	resident inspector
RP	radiation protection
RPV	reactor pressure vessel
RWP	radiation work permit
SDP	significance determination process
SRI	senior resident inspector
SSC	structures, systems, and components
TS	Technical Specifications