



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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May 8, 2007

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SUBJECT: DIABLO CANYON POWER PLANT - NRC INTEGRATED INSPECTION
REPORT 05000275/2007002 AND 05000323/2007002

Dear Mr. Keenan:

On March 31, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Diablo Canyon Power Plant, Units 1 and 2. The enclosed integrated report documents the inspection findings that were discussed on April 5, 2007, with Mr. James Becker 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.

There were two NRC-identified findings of very low safety significance (Green) identified in this report. These findings involved violations of NRC requirements. However, because of their very low risk significance and because they are entered into your corrective action program, the NRC is treating these two findings as noncited violations consistent with Section VI.A of the NRC Enforcement Policy. If you contest any noncited violation 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/

Vince G. Gaddy, Chief
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Division of Reactor Projects

Dockets: 50-275; 50-323
Licenses: DPR-80; DPR-82

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NRC Inspection Report 05000275/2007002
and 05000323/2007002
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SUNSI Review Completed: __yes__ ADAMS: ☒ Yes ☐ No Initials: __vgg__
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Dockets: 50-275, 50-323
Licenses: DPR-80, DPR-82
Report: 05000275/2007002; 05000323/2007002
Licensee: Pacific Gas and Electric Company
Facility: Diablo Canyon Power Plant, Units 1 and 2
Location: 7 ½ miles NW of Avila Beach
Avila Beach, California
Dates: January 1 through March 31, 2007
Inspectors: T. Jackson, Senior Resident Inspector
T. McConnell, Resident Inspector
M. Brown, Resident Inspector
Approved By: V. G. Gaddy, Chief
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SUMMARY OF FINDINGS

IR 05000275/2007-002, 05000323/2007-002; 1/1/07 - 3/31/07; Diablo Canyon Power Plant Units 1 and 2; Equipment Alignment and Temporary Modifications.

This report covered a 13-week period of inspection by resident inspectors. Two NRC-identified, Green, noncited violations were 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. An NRC-identified, noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was determined for the failure of engineering personnel to appropriately update the heat dissipation calculation for vital 480 V switchgear rooms. Since 1994, Calculation 90-DC, "Heat Dissipation of Electrical Equipment – 480 V Switchgear," Revision 4, has not been updated with changes in analyzed bus electrical loading. The calculation was input to other ventilation calculations to determine air flow balancing to 480 V switchgear and inverter rooms. This issue was entered into Pacific Gas and Electric Company's corrective action program as Action Requests A0688992 and A0689527.

The finding is greater than minor because it is associated with the Mitigating Systems Cornerstone attribute of procedure quality and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance since it did not represent a loss-of-system safety function, an actual loss-of-safety function of a single train for greater than its technical specifications allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event (Section 1R04.2).

Cornerstone: Barrier Integrity

- Green. An NRC-identified, noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was determined for the failure of maintenance personnel to make modifications to the Control Room Condenser CR-38 filter mount consistent with the component's design documentation and Procedure CF4.ID7, "Temporary Modifications," Revision 18. Specifically, on August 15, 2006, maintenance personnel used vice-grip pliers, C-clamps, and plastic tie-wraps to secure in place the filter mount, which was significantly

corroded. The modification had not been documented or analyzed at the time it was placed into service. After subsequent engineering reviews, the condenser was considered inoperable due to the loss of seismic qualification. This issue was entered into Pacific Gas and Electric Company's corrective action program as Action Request A0688202.

The finding is greater than minor because it is associated with the Barrier Integrity Cornerstone attribute of design control for the control room barrier and affects the associated cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance because the finding did not represent degradation of the barrier function of the control room against radiological hazards, smoke, or toxic atmosphere. This finding has a crosscutting aspect in the area of problem identification and resolution, associated with the corrective action program component, in that maintenance personnel failed to adequately identify the degraded condition of the control room condenser when it was initially discovered (Section 1R23).

REPORT DETAILS

Summary of Plant Status

Diablo Canyon Unit 1 operated at 100 percent power for the duration of the inspection period.

Diablo Canyon Unit 2 operated 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 completed a review of Pacific Gas and Electric Company's (PG&E's) readiness of seasonal susceptibilities involving cold temperatures. The inspectors: (1) reviewed plant procedures, the Final Safety Analysis Report (FSAR) Update, and technical specifications (TS) to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of the system listed below to ensure that adverse weather protection features (heat tracing, space heaters, weatherized enclosures, etc.) were sufficient to support operability, including the ability to perform safe shutdown functions; (3) evaluated operator staffing levels to ensure PG&E could maintain the readiness of essential systems required by plant procedures; and (4) reviewed the corrective action program (CAP) to determine if PG&E identified and corrected problems related to adverse weather conditions.

- January 16, 2007, Units 1 and 2, Vital batteries

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample (cold weather).

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors: (1) walked down portions of the four below listed risk important systems and reviewed plant procedures and documents to verify that critical portions of the

selected systems were correctly aligned; and (2) compared deficiencies identified during the walkdown to the FSAR Update and CAP to ensure problems were identified and corrected.

- January 23, 2007: Unit 2, Auxiliary Feedwater Pump 2-1
- January 31, 2007: Unit 2, Centrifugal Charging Pump 2-1
- February 6, 2007: Unit 1, Safety Injection Pump 1-1
- February 21, 2007: Unit 2, Diesel Engine Generator 2-1

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdowns

a. Inspection Scope

The inspectors: (1) reviewed plant procedures, drawings, the FSAR Update, TSs, and vendor manuals to determine the correct alignment of the vital 480 V system; (2) reviewed outstanding design issues, operator workarounds, and FSAR Update documents to determine if open issues affected the functionality of vital 480 V system; and (3) verified that PG&E was identifying and resolving equipment alignment problems. Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

Introduction: A Green NRC-identified, noncited violation 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was determined for the failure of engineering personnel to appropriately update the heat dissipation calculation for vital 480 V switchgear rooms. Since 1994, Calculation 90-DC, "Heat Dissipation of Electrical Equipment – 480 V Switchgear," Revision 4, has not been updated with changes in analyzed bus electrical loading. The calculation is input to other ventilation calculations to determine air flow balancing to 480 V switchgear and inverter rooms.

Description: The inspectors reviewed Calculation 357A-DC, "Units 1 & 2 Load Flow, Short Circuit, and Motor Starting," Revision 10, and noted that Calculation 90-DC received input from Calculation 357A-DC. The inspectors also reviewed Calculation 90-DC and observed that the assumed maximum vital 480 V bus loading was 80 percent of the bus maximum rating. However, Calculation 357A-DC identified

the potential for the vital 480 V buses to exceed their rating, particularly if the pressurizer heaters were supplied from the bus. The inspectors questioned the discrepancy between the two calculations. PG&E electrical engineers reviewed the calculation and determined that Calculation 90-DC had not been updated since 1994. Engineers initiated Action Requests (ARs) A0688992 and A0689527 to document the condition.

The engineering staff used a database called the design calculation index to track links between calculations. Therefore, if one calculation was changed, the design calculation index could be used to identify other calculations that may need to be updated as a result of that change. In the case of Calculation 90-DC, the link showing that Calculation 357A-DC provided input into Calculation 90-DC was missing. Pacific Gas and Electric Company evaluated the extent of condition in the design calculation index database to determine if links to other calculations had been omitted but did not find any other examples. Additionally, engineering staff has initiated actions to update Calculation 90-DC and determining any necessary changes to the 480 V switchgear and inverter rooms.

Analysis: The performance deficiency associated with this finding was the failure of engineering personnel to maintain Calculation 90-DC. The finding is greater than minor because it is associated with the Mitigating Systems Cornerstone attribute of procedure quality and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance since it did not represent a loss-of-system safety function, an actual loss-of-safety function of a single train for greater than its TS allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event.

Enforcement: 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design. Contrary to this, since 1994, engineering personnel failed to update Calculation 90-DC in regards to applicable changes in Calculation 357A-DC. The apparent cause of the violation was a discrepancy in the design calculation index, which tracked the links between the calculations. In the case of Calculation 90-DC, the link showing that Calculation 357A-DC provided input into Calculation 90-DC was missing. Pacific Gas and Electric Company has initiated corrective actions to: (1) update Calculation 90-DC, (2) determine if any air flow changes to rooms are in need of change, and (3) review the extent-of-condition for missing calculation links in the design calculation index. Because this finding is of very low safety significance and has been entered into PG&E's CAP as ARs A0688992 and A0689527, this violation is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000275; 323/200700201, Failure to Update 480 V Switchgear Heat Dissipation Calculation.

1R05 Fire Protection (71111.05)

.1 Quarterly Inspection

a. Inspection Scope

The inspectors walked down the six plant areas listed below to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify that they remained functional; (3) observed fire suppression systems to verify that they remained functional and that access to manual actuators was unobstructed; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features and that the compensatory measures were commensurate with the significance of the deficiency; and (7) reviewed the FSAR Update to determine if PG&E identified and corrected fire protection problems.

- January 22, 2007, Unit 1, 12 kV switchgear and cable spreading rooms
- January 25, 2007, Unit 1, Welding in centrifugal charging pump room
- January 30, 2007, Unit 2, Component cooling water pump rooms
- January 31, 2007, Unit 2, Centrifugal charging pump rooms
- February 22, 2007, Unit 2, Diesel engine generator rooms
- March 9, 2007, Unit 1, Diesel engine generator rooms

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

.2 Annual Inspection

a. Inspection Scope

On January 14, 2007, the inspectors reviewed fire brigade response to a wildland fire on PG&E's owner-controlled property. The inspectors assessed the following aspects of the response: (1) number of personnel responding, (2) use of protective clothing, (3) use of fire procedures and declarations of emergency action levels, (4) command of the fire brigade and overall response, (5) implementation of prefire strategies and briefs, (6) access routes to the fire and the timeliness of the fire brigade response, (7) establishment of communications, (8) effectiveness of radio communications,

(9) placement and use of fire hoses, (10) entry into the fire area, (11) use of fire fighting equipment, and (12) searches for fire victims and fire propagation. The location of the fire was approximately 1.5 miles north of the plant and started in a trailer. The fire had already consumed the trailer and approximately 10 to 15 acres of brush at the time the fire brigade was alerted to the fire by security force personnel. Security personnel observed smoke coming from the other side of the hills between the plant and the fire scene.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

Semi-Annual Internal Flooding

a. Inspection Scope

The inspectors: (1) reviewed the FSAR Update, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; (2) reviewed the FSAR Update and CAP to determine if PG&E identified and corrected flooding problems; (3) verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and (4) walked down the below listed areas to verify the adequacy of (a) equipment seals located below the floodline, (b) floor and wall penetration seals, (c) watertight door seals, (d) common drain lines and sumps, (e) sump pumps, level alarms, and control circuits, and (f) temporary or removable flood barriers.

- January 30, 2007, Units 1 and 2, Diesel fuel oil transfer pump vaults

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On January 23, 2007, the inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training scenario involved a pressurizer pressure instrument failure, a seismic event, a small-break loss-of-coolant accident, and a loss of emergency coolant recirculation.

Documents reviewed by the inspectors included:

- Lesson ECA1-MS1, Revision 2
- Procedure EP G-3, "Emergency Notification of Offsite Agencies," Revision 47

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Maintenance Effectiveness Inspection

a. Inspection Scope

The inspectors reviewed the two maintenance activities listed below to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the Maintenance Rule, 10 CFR Part 50, Appendix B, and the TSs.

- February 8, 2007, Unit 1, Auxiliary feedwater discharge motor-operated valves
- February 26, 2007, Unit 1, Containment Isolation Valve VAC-1-FCV-681

Documents reviewed by the inspectors included ARs A0663705 and A0674769.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

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

.1 Risk Assessments and Management of Risk

a. Inspection Scope

The inspectors reviewed the five assessment activities listed below to verify: (1) performance of risk assessments when required by 10 CFR 50.65(a)(4) and PG&E procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that PG&E recognizes, and/or enters as applicable, the appropriate risk category according to the risk assessment results and PG&E procedures; and (4) PG&E identified and corrected problems related to maintenance risk assessments.

- January 8, 2007, Unit 2, Component Cooling Water Pump 2-3 preventive maintenance and reactor coolant pump under-voltage/under-frequency relay testing
- February 7, 2007, Unit 2, 480 V Motor Control Center Bus D de-energized for breaker maintenance, reactor coolant pump undervoltage/underfrequency relay testing, and Condensate Booster Pump 2-3 maintenance
- February 27, 2007, Unit 1, 230kV Disconnect Switch 23 cleaning, inspection, and repair
- March 12, 2007, Unit 1, Diesel Engine Generator 1-2 planned extended maintenance coincident with Spent Fuel Pit Pump 1-2 maintenance
- March 29, 2007, Unit 2, Morro Bay to Diablo Canyon 230kV line outage with Auxiliary Feedwater Pump 2-1 maintenance

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

.2 Emergent Work

a. Inspection Scope

The inspectors: (1) verified that PG&E performed actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems and barrier integrity systems; (2) verified that emergent work-related activities such as troubleshooting, work planning/scheduling, establishing plant conditions, aligning

equipment, tagging, temporary modifications, and equipment restoration did not place the plant in an unacceptable configuration; and (3) reviewed the FSAR Update to determine if PG&E identified and corrected risk assessment and emergent work control problems.

- January 25, 2007, Unit 1, Main turbine control system (Triconex) human-machine interface lock-up
- March 13, 2007, Unit 1, Reactor Coolant Pump 1-2 No. 2 seal increased leakoff rate
- March 29, 2007, Unit 1, Eagle 21 Protection Set 1 - Rack 4 loop processor failure

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the FSAR Update and design bases documents to review the technical adequacy of the operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any TS; (5) used the significance determination process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that PG&E has identified and implemented appropriate corrective actions associated with degraded components.

- January 17, 2007, Unit 1, Turbine-driven Auxiliary Feedwater Pump 1-1 steam supply line vent cap leak
- February 5, 2007, Unit 1, Battery 1-3 cell cover cracking
- February 26, 2007, Unit 2, Diesel Engine Generator 2-3 lube oil heater
- March 7, 2007, Unit 1, Component Cooling Water Pump 2-1 mechanical seal leakage
- March 8, 2007, Unit 1, Diesel Engine Generator 1-1 crankshaft rod journal bearing wear

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed key affected parameters associated with energy needs, materials/replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flowpaths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the one modification listed below. The inspectors verified that: (1) modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; (2) postmodification testing maintained the plant in a safe configuration during testing by verifying that unintended system interactions will not occur, SSC performance characteristics still meet the design basis, the appropriateness of modification design assumptions, and the modification test acceptance criteria has been met; and (3) PG&E has identified and implemented appropriate corrective actions associated with permanent plant modifications.

- February 14, 2007, Replacement of 2 ampere control power fuses for Containment Air Particulate Radiation Monitor RM-11 with 5A fuses.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the five postmaintenance test activities of risk-significant systems or components listed below. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design basis documents to determine the safety functions; (2) evaluate the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or

reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly realigned, and deficiencies during testing were documented. The inspectors also reviewed the FSAR Update to determine if PG&E identified and corrected problems related to postmaintenance testing.

- January 24, 2007, Unit 2, Auxiliary Feedwater Pump Discharge Valve FW-2-LCV-113
- January 25, 2007, Unit 2, Containment Structure Sump Level Indicator LI-61
- February 8, 2007, Unit 2, Auxiliary Saltwater Pump 2-1 repack
- February 23, 2007, Unit 2, Diesel Engine Generator 2-3 lube oil heater replacement
- March 7 & 14, 2007, Unit 1, Diesel Engine Generators 1-1 and 1-2 Day Tank Level Switches DEG-1-LS-202/203 and DEG-1-LS-206/207

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the FSAR Update, procedure requirements, and TS to ensure that the six surveillance activities listed below demonstrated that the SSCs tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumpers; (7) test data; (8) testing frequency and method demonstrated TS operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of American Society of Mechanical Engineers Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested SSCs not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarm setpoints. The inspectors also verified that PG&E identified and implemented any needed corrective actions associated with the surveillance testing.

- January 18, 2007, Unit 1, Containment Hydrogen Monitor Cell 82

- January 24, 2007, Unit 1, Auxiliary Feedwater Pump 2-3 (Inservice Test)
- February 8, 2007, Unit 1, Moderator temperature coefficient determination
- February 12, 2007, Unit 1, Solid-state protection system and reactor trip breaker testing
- March 4 & 12, 2007, Unit 1, Diesel fuel oil day tank level instrument tests for Diesel Engine Generators 1-1 and 1-2
- March 17, 2007, Units 1 and 2, Diesel fuel oil storage tank inventory

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the FSAR Update, plant drawings, procedure requirements, and TSs to ensure that the one below listed temporary modification was properly implemented. The inspectors: (1) verified that the modifications did not have an effect on system operability/availability; (2) verified that the installation was consistent with modification documents; (3) ensured that the postinstallation test results were satisfactory and that the impact of the temporary modifications on permanently installed SSCs were supported by the test; (4) verified that the modifications were identified on control room drawings and that appropriate identification tags were placed on the affected drawings; and (5) verified that appropriate safety evaluations were completed. The inspectors verified that PG&E identified and implemented any needed corrective actions associated with temporary modifications.

- January 30, 2007, Unit 2, Control Room Condenser CR-38 filter mount

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

Introduction: The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure of maintenance personnel to make modifications to Control Room Condenser CR-38 filter mount consistent with the component's design documentation and PG&E's design control procedures.

Specifically, maintenance personnel used vice-grip pliers, C-clamps, and plastic tie-wraps to secure in place the filter mount, which was significantly corroded. The modification had not been documented or analyzed at the time it was placed into service.

Description: On January 30, 2007, while performing a routine walkdown of the plant, the inspectors noted excessive corrosion on the filter mount for Control Room Condenser CR-38. Additionally, the inspectors noted that a pair of vice-grip pliers, two c-clamps, and two plastic tie-wraps were used to maintain the structural integrity of the filter housing. The inspectors questioned whether a design change package or temporary modification had been processed to evaluate the use of the pliers, clamps, and tie-wraps. Procedure CF4.ID7, "Temporary Modifications," Revision 18, requires PG&E staff to evaluate temporary changes to plant structures, systems, and components through a design control process. Pacific Gas and Electric Company staff stated that a design change package or temporary modification had not been developed for the modification, and that the actual change had not been documented.

Action Request A0687884 stated that the modification to Control Room Condenser CR-38 was made on August 15, 2006. The maintenance crew working on the condenser was requested by the painting crew to remove the filters for painting work. Once the filters were removed; the painting crew began painting preparations, but discovered significant corrosion. The preparations had to be terminated to prevent further metal loss. When reinstalling the filters, the maintenance crew observed the degradation and installed the modification to secure the filters in place. Both crews believed that the other crew had initiated an AR without confirming that the other crew had actually performed that action.

Action Request A0679395 was initiated on October 7, 2006 by an operator to question the presence of the pliers, clamps, and tie-wraps on Control Room Condenser CR-38. The shift manager walked down the system and concluded that it was still operable. The shift manager also contacted a member of the engineering fix-it-now team concerning the modification. Although they concluded that this condition met the requirements for a design change, a design change was not implemented because they believed that the filter housing was nonsafety related, applicable information was already covered in the AR, and the system was considered operable.

After the inspector's discovery of the condition, engineering staff initially stated that the condenser filter housing was nonsafety related because it did not perform a safety function; therefore, it would not require a design change. The inspectors continued to question the nonsafety related classification of the filter housing since the Diablo Canyon Power Plant Q-List identified the control room condensers as safety-related and the filters as nonsafety related. Specifically, the inspectors questioned the seismic qualification of the condensers and the original classification of the condenser when it was purchased. Upon further engineering review, the seismic qualification of Control Room Condenser CR-38 was considered indeterminate; thus operators declared the condenser inoperable. Pacific Gas and Electric Company has initiated actions to repair the condenser filter housing at the next available maintenance outage window.

The inspectors noted that ARs A0571619, A0571719, and A0572474 were written in January 2003 to document the need to replace the control room condenser filter mounts as a result of corrosion. Due to the postponement of funding, the filter mounts were not replaced. Pacific Gas and Electric Company planned to replace the filter mounts in the 2008 to 2009 time frame, as outlined in PHIP 2005-S023-008.

Analysis: The performance deficiency associated with this finding involved the failure of maintenance personnel to make modifications to Control Room Condenser CR-38 filter mount consistent with the component's design documentation and PG&E's design control procedures. The finding is greater than minor because it is associated with the Barrier Integrity Cornerstone attribute of design control for the control room barrier and affects the associated cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance because the finding did not represent degradation of the barrier function of the control room against radiological hazards, smoke, or toxic atmosphere. This finding has a crosscutting aspect in the area of problem identification and resolution, associated with the CAP component, in that maintenance personnel failed to adequately identify the degraded condition of the control room condenser when it was initially discovered.

Enforcement: 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design. Contrary to this, on August 15, 2006, maintenance personnel failed to make modifications to Control Room Condenser CR-38 filter mount consistent with the component's design documentation and PG&E's design control procedures. Specifically, maintenance personnel used vice-grip pliers, C-clamps, and plastic tie-wraps to secure the condenser's filter mount, which had degraded due to corrosion. The change was not evaluated under PG&E's design control procedures, including Procedure CF4.ID7. The apparent cause of the violation was a lack of understanding for the classification of the control room condenser and the requirements for a design change or temporary modification. The corrective actions to restore compliance included removal of the pliers, C-clamps, and plastic tie-wraps and replacement of the degraded filter mount. Because this finding is of very low safety significance and has been entered into PG&E's CAP as AR A0688202, this violation is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000323/200700202, Inappropriate Temporary Modification to Control Room Condenser.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151)

Cornerstone: Initiating Events

a. Inspection Scope

The inspectors sampled PG&E submittals for the three PIs listed below for the period of January 2006 to December 2006 for Units 1 and 2. The definitions and guidance of Nuclear Energy Institute 99-02, "Regulatory Assessment Indicator Guideline," Revision 4, were used to verify PG&E's basis for reporting each data element in order to verify the accuracy of PI data reported during the assessment period. The inspectors reviewed licensee event reports, monthly operating reports, and operating logs as part of the assessment.

- Unplanned Scrams Per 7,000 Critical Hours
- Unplanned Scrams With Loss of Normal Heat Removal
- Unplanned Power Changes Per 7,000 Critical Hours

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a daily screening of items entered into PG&E's CAP. This assessment was accomplished by reviewing ARs and event trend reports, and attending daily operational meetings. The inspectors: (1) verified that equipment, human performance, and program issues were being identified by PG&E at an appropriate threshold and that the issues were entered into the CAP; (2) verified that corrective actions were commensurate with the significance of the issue; and (3) identified conditions that might warrant additional follow-up through other baseline inspection procedures.

b. Findings

No findings of significance were identified.

.2 Selected Issue Follow-Up Inspection

a. Inspection Scope

In addition to the routine review, the inspectors selected the one issue listed below for a more in-depth review. The inspectors considered the following during the review of PG&E's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

- February 6, 2007, Units 1 and 2, Containment high range radiation monitors

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 Wildland Fire North of Plant

a. Inspection Scope

On January 14, 2007, a wildland fire started in a ranch trailer on PG&E's owner-controlled area. The fire was approximately 1.5 miles north of the plant and eventually consumed approximately 300 acres of brush. Diablo Canyon fire brigade responded initially followed by California Department of Forestry, who then assumed command of the fire fighting efforts. The cause of the fire was determined to be an electrical short caused by rodents chewing through a wire in a ranch trailer. The inspectors: (1) observed plant parameters and status, (2) evaluated performance of mitigating systems and operators, (3) confirmed that PG&E properly classified the event in accordance with emergency action level procedures and made timely notifications to the NRC and state/local governments, and (4) communicated the details of the events and conditions to NRC management as input to determining the need for additional inspection effort.

Documents reviewed by the inspectors included:

- Procedure CP M-6, "Fire," Revision 29
- Procedure AD7.DC6, "Online Maintenance Risk Management," Revision 9

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.2 (Closed) Licensee Event Report (LER) 05000275; 323/2006001, "Excessive Dead Birds Found at the Pacific Ocean Cooling Water Intake"

On August 15, 2006, during diving operations to clean the bar racks associated with the Diablo Canyon Power Plant cooling water intake structure, approximately 100 dead cormorants were discovered. Cormorants are diving sea birds common to the California central coast and often feed in the intake cove. Pacific Gas and Electric Company noted that prior to the discovery of the dead birds, birds had started nesting in large numbers on a large rock at the southern end of the intake cove. Pacific Gas and Electric Company submitted four of the cormorants' remains to the California Department of Fish and Game, which had the remains analyzed at the California Animal Health and Food Safety Laboratory at the University of California at Davis. On January 25, 2007, the California Department of Fish and Game provided PG&E a report on the diagnosis of the cormorant's death. The cause of death was determined to be acute bacterial septicemia (bacterial infection throughout the body). The type of bacteria was a gram-negative slender bacteria. The laboratory had tested the remains for various viruses known to affect avian species, and the tests returned negative. The remains were also tested for various toxins, and those tests also returned negative. PG&E biologists surmised that, due to the abnormally large population of cormorants in the area, some of the birds may have fed on dead fish versus the normal diet of live fish. The bacteria would have been obtained from the dead fish. No other dead cormorants were found after the initial discovery in August 2006. No violation of NRC requirements was identified in the LER. This LER is closed.

.3 (Closed) LER 05000323/2006003, "Manual Reactor Trip Due to Reactor Coolant Pump High Temperature Indication"

On December 10, 2006, operators initiated an unplanned reactor shutdown due to indications of increasing Reactor Coolant Pump (RCP) 2-2 stator temperature. In accordance with Procedure AR PK05-02, "RCP No. 22," Revision 19, operators manually tripped the reactor and shutdown RCP 2-2 when temperature indication reached 300°F. At the time of the manual reactor trip, the reactor was subcritical in Mode 3 (Hot Standby) with Control Rod Bank A withdrawn at 106 steps. All other control rods were fully inserted.

The inspectors observed the reactor shutdown and subsequent reactor trip. All control shutdown rods were fully inserted upon the reactor trip. All other plant systems responded appropriately to the reactor trip. Maintenance personnel identified that the stator resistance temperature detector had failed and provided a false increasing stator temperature indication. The failed temperature detector was replaced. This event was first documented in NRC Inspection Report 05000275; 323/2006005. No violation of NRC requirements was identified in this LER. This LER is closed.

.4 (Closed) LER 05000323/2006004, "Automatic Reactor Trip due to Circulating Water Pump Surge Capacitor Failure"

On December 12, 2006, with Unit 2 at approximately 25 percent power, an electrical failure occurred in the Circulating Water Pump (CWP) 2-1 motor enclosure. As a result of the electrical failure, 12 kV Bus D undervoltage protection relay tripped the breakers for CWP 2-1 and RCPs 2-2 and 2-4. With 2 out of 4 RCP breakers having opened, an automatic reactor trip signal was generated. All control rods were fully inserted in response to the reactor trip signal and the auxiliary feedwater system was manually actuated, per plant procedures, prior to an automatic autostart signal for that system. All plant systems responded appropriately following the reactor trip.

The electrical failure was the result of the spontaneous failure of a surge capacitor located within the CWP 2-1 motor enclosure. When the failure occurred, operators within the intake building reported an explosion. Subsequently, operators made an emergency declaration, Notice of Unusual Event, Number 23, "Confirmed Explosion Onsite," at 1:59 pm Pacific Standard Time. The Notice of Unusual Event was terminated at 2:30 pm on the same day when it was confirmed that the explosion was the result of the surge capacitor failure.

The inspectors responded to the automatic reactor trip and verified that all plant systems functioned per design. The inspectors also observed operator actions, including those associated with the emergency declaration. The failure of CWP 2-1 surge capacitor was reviewed and determined to be a random equipment failure. This event was first documented in NRC Inspection Report 05000275; 323/2006005. No violation of NRC requirements was identified in this LER. This LER is closed.

40A6 Meetings, Including Exit

Exit Meeting Summary

The resident inspection results were presented on April 5, 2007, to Mr. James Becker, Vice President – Diablo Canyon Operations and Station Director, and other members of PG&E management. Pacific Gas and Electric Company 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

PG&E personnel

J. Becker, Vice President - Diablo Canyon Operations and Station Director
R. Hite, Manager, Radiation Protection
D. Jacobs, Vice President - Nuclear Services
S. Ketelsen, Manager, Regulatory Services
K. Langdon, Director, Operations Services
M. Meko, Director, Site Services
K. Peters, Director, Engineering Services
J. Purkis, Director, Maintenance Services
P. Roller, Director, Performance Improvement
D. Taggart, Manager, Quality Verification
R. Waltos, Manager, Emergency Preparedness

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000275; 323/200700201	NCV	Failure to Update 480 V Switchgear Heat Dissipation Calculation (Section 1R04.2)
05000323/200700202	NCV	Inappropriate Temporary Modification to Control Room Condenser (Section 1R23)

Closed

05000275; 323/2006001	LER	Excessive Dead Birds Found at the Pacific Ocean Cooling Water Intake (Section 4OA3.2)
05000323/2006003	LER	Manual Reactor Trip Due to Reactor Coolant Pump High Temperature Indication (Section 4OA3.3)
05000323/2006004	LER	Automatic Reactor Trip due to Circulating Water Pump Surge Capacitor Failure (Section 4OA3.4)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather (71111.01)

Action Requests

A0686513

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AR PK15-09	(Unit 2) Electrical Rooms Temp Monitor	19
OP H-10:I	(Unit 2) Auxiliary Building Switchgear Ventilation - Make Available and System Operation	28

Other Documents

<u>Number</u>	<u>Title</u>
IEEE Std. 450-1995	IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications

Section 1R04: Equipment Alignment (71111.04)

Action Requests

A0658827	A0643322	A0662147	A067131	A0375119	A0585750
A0640379	A0656280	A0661116	A0673094	A0673114	A0680591
A0681885	A0682651	A0682966			

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP D-1:II	AFW System - Alignment Verification For Plant Startup	26
OP B-1A:IX	CVCS - Alignment Verification For Plant Startup	36
OP B-3A:II	Safety Injection System - Alignment Verification Checklist for Plant Startup	23
EOP E-1.3	Transfer to Cold Leg Recirculation	23

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STP M-9A	Diesel Engine Generator Routine Surveillance Test	72
OP J-6B:I	Diesel Generator 2-1 Make Available	21

Section 1R05: Fire Protection (71111.05)

Action Requests

A0562033

Drawings

<u>Number</u>	<u>Title</u>	<u>Number</u>
108018, Sheet 5A	Charging Pumps' Seal & Lube Oil Coolers Emergency Tie-In From Aux. Bldg. Fire Protection System	29
111906, Sheet 11	Turbine Building Elev. 85'	1
111906, Sheet 6	Turbine Building Elev. 85'	2

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CP M-6	Fire	29
OM8.ID1	Fire Loss Prevention	18
OM8.ID4	Control of Flammable and Combustible Materials	14
STP M-69A	Monthly Fire Extinguisher Station Inspection Inside the Protected Area	37
STP M-69B	Monthly CO2 Hose Reel and Deluge Valve Inspection	14
STP M-70C	Inspection/Maintenance of Doors	12

Section 1R06: Flood Protection Measures (71111.06)

Action Requests

A0142619 A0142738 A0541418 A0592791 A0686124

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STP V-18M	Check Valve Inspections - High Maintenance Valves	8

Work Orders

R0286191

Section 1R13: Maintenance Risk Assessments and Emergent Work Control (71111.13)Action Requests

A0673952 A0687190 A0690647 A0690761 A0690808 A0692008

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AD7.DC6	On-line Maintenance Risk Management	9
MA1.DC11	Risk Assessment	7
OP J-6B:IX	Diesel Generator Extended On-Line Maintenance	0
OP J-2:VIII	Guidelines for Reliable Transmission Service for DCPD	12

Work Orders

R0000712

Other Documents

<u>Title</u>	<u>Date</u>
PG&E Letter DCL-03-179, Response to NRC Request for Additional Information Regarding License Amendment Request 03-06, "Revision to Technical Specification 3.8.1, 'AC Sources Operating'"	12/23/2003
NRC Letter to PG&E, Diablo Canyon Power Plant, Unit No. 1 (TAC No. MB9146) and Unit No. 2 (TAC No. MB9147) - Issuance of Amendment RE: Extensions of the Completion Times for Restoring an Inoperable Diesel Generator From 7 Days to 14 Days	4/20/2004

Section 1R15: Operability Evaluations (71111.15)**Action Requests**

A0660745	A0663200	A0670341	A0673036	A0689495	A0689645
A0689716	A0683442	A0683931	A0686403	A0686623	A0689761
A0690169	A0690401				

Section 1R17: Permanent Plant Modifications (71111.17)**Action Requests**

A0630749	A0632591	A0646629	A0686960	A0687095	A0687191
A0688164					

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
333-DC Sec I	Unit 1 Class 1-E Fuses "Fuse Adequacy Analysis"	6E

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
066144	DCPP Unit 1 Fuse Report	17
663227-97	Console Assy. Wiring Diagram Unit 1	6

Other Documents

<u>Title</u>	<u>Revision</u>
Vendor Instruction Manual 663227-80, Westinghouse Electric Corporation Radiation Monitoring System	24

Section 1R19: Post-Maintenance Testing (71111.19)**Action Requests**

A0649704	A0680025	A0683755	A0687113	A0690786	A0690788
A0690789	A0690850	A0690899			

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STP V-2U4D	Exercising S/G No. 4 AFW Supply Valves LCV-109 and LCV-113	4
STP V-3P6B	Exercising Valves LCV-115 and 113 AFW Pump Discharge	14
STP M-9A	Diesel Engine Generator Routine Surveillance Test	72
STP M-81J	Test DFO Day Tank Level Instruments	11

Work Orders

C0202881 C0210170

Section 1R22: Surveillance Testing (71111.22)Action Requests

A0626724	A0649704	A0686786	A0684966	A0690786	A0690788
A0690789	A0690850	A0690899	A0691262		

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STP I-38-A.1	SSPS Train A Actuation Logic Test in Modes 1, 2, 3, or 4	13B
STP I-38-A.2	SSPS Train A SI Reset Timer and Slave Relay K602 Test in Modes 1, 2, 3, or 4	6
STP I-46B	Containment Hydrogen Monitor Channels 82 and 83	28
STP M-10A	Diesel Fuel Oil Storage Tank Inventory	18
STP M-81J	Test DFO Day Tank Level Instruments	11
STP P-AFW-23	Routine Surveillance Test of Motor-Driven AFW Pump 2-3	15
STP R-7B	Determination of Moderator Temperature Coefficient at Power	23

Section 4OA2: Problem Identification and Resolution (71152)

Action Requests

A0408031 A0606466

Other Documents

<u>Title</u>	<u>Date</u>
NRC Information Notice 97-45, "Environmental Qualification Deficiency for Cables and Containment Penetration Pigtailes"	7/2/1997
NRC Information Notice 97-45, Supplement 1, "Environmental Qualification Deficiency for Cables and Containment Penetration Pigtailes"	2/17/1998

LIST OF ACRONYMS

ADAMS	Agency Document and Management System
AR	action request
CAP	corrective action program
CFR	<i>Code of Federal Regulations</i>
CWP	circulating water pump
FSAR	Final Safety Analysis Report
LER	licensee event report
NCV	noncited violation
NRC	Nuclear Regulatory Commission
PG&E	Pacific Gas and Electric Company
RCP	reactor coolant pump
SSC	structure, system, and component
TS	Technical Specifications