



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

October 27, 2009

John T. Conway
Senior Vice President-Energy Supply and
Chief Nuclear Officer
Pacific Gas and Electric Company
P.O. Box 3
Mail Code 104/6/601
Avila Beach, California 93424

Subject: DIABLO CANYON POWER PLANT - NRC INTEGRATED INSPECTION
REPORT 05000275/2009004 AND 05000323/2009004

Dear Mr. Conway:

On September 25, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Diablo Canyon Power Plant. The enclosed integrated inspection report documents the inspection findings, which were discussed on September 28, 2009, with Mr. James Becker, Site Vice President and other members of your staff.

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

This report documents one self-revealing, two NRC identified findings of very low safety significance (Green) and one Severity Level IV violation. All of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the violations or the significance of the noncited violations, 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, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Diablo Canyon Power Plant. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at the Diablo Canyon Power Plant. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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 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
Project Branch B
Division of Reactor Projects

Docket: 50-275
50-323
License: DPR-80
DPR-82

Enclosure:

NRC Inspection Report 05000/275/2009004 and 0500323/2009004
w/Attachment: Supplemental Information

cc w/Enclosure:

Sierra Club San Lucia Chapter
ATTN: Andrew Christie
P.O. Box 15755
San Luis Obispo, CA 93406

Nancy Culver
San Luis Obispo
Mothers for Peace
P.O. Box 164
Pismo Beach, CA 93448

Chairman
San Luis Obispo County
Board of Supervisors
1055 Monterey Street, Suite D430
San Luis Obispo, CA 93408

Truman Burns\Robert Kinosian
California Public Utilities Commission
505 Van Ness Ave., Rm. 4102
San Francisco, CA 94102

Diablo Canyon Independent Safety Committee
Attn: Robert R. Wellington, Esq.
Legal Counsel
857 Cass Street, Suite D
Monterey, CA 93940

Director, Radiological Health Branch
State Department of Health Services
P.O. Box 997414 (MS 7610)
Sacramento, CA 95899-7414

City Editor
The Tribune
3825 South Higuera Street
P.O. Box 112
San Luis Obispo, CA 93406-0112

James D. Boyd, Commissioner
California Energy Commission
1516 Ninth Street (MS 31)
Sacramento, CA 95814

James R. Becker, Site Vice President
Diablo Canyon Power Plant
P.O. Box 56
Avila Beach, CA 93424

Jennifer Tang
Field Representative
United States Senator Barbara Boxer
1700 Montgomery Street, Suite 240
San Francisco, CA 94111

Chief, Radiological Emergency Preparedness Section
National Preparedness Directorate
Technological Hazards Division
Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Chief, Radiological Emergency Preparedness Section
Chemical and Nuclear Preparedness and
Protection Division
Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Electronic distribution by RIV:

Regional Administrator (Elmo.Collins@nrc.gov)
 DRP Director (Dwight.Chamberlain@nrc.gov)
 DRP Deputy Director (Anton.Vegel@nrc.gov)
 DRS Director (Roy.Caniano@nrc.gov)
 DRS Deputy Director (Troy.Pruett@nrc.gov)
 Senior Resident Inspector (Michael.Peck@nrc.gov)
 Resident Inspector (Tony.Brown@nrc.gov)
 Branch Chief, DRP/B (Vincent.Gaddy@nrc.gov)
 Senior Project Engineer, DRP/B (Rick.Deese@nrc.gov)
 DC Site Secretary (Agnes.Chan@nrc.gov)
 Public Affairs Officer (Victor.Dricks@nrc.gov)
 Team Leader, DRP/TSS (Chuck.Paulk@nrc.gov)
 RITS Coordinator (Marisa.Herrera@nrc.gov)

Only inspection reports to the following:

DRS STA (Dale.Powers@nrc.gov)
 Shawn Williams, OEDO RIV Coordinator (Shawn.Williams@nrc.gov)
 ROPreports
 W. A. Maier, RSLO (Bill.Maier@nrc.gov)
 R. E. Kahler, NSIR (Robert.Kahler@nrc.gov)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000275, 05000323

License: DPR-80, DPR-82

Report: 05000275/2009004
05000323/2009004

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: June 27 through September 25, 2009

Inspectors: M. S. Peck, Senior Resident Inspector
M. A. Brown, Resident Inspector
J. D. Braisted, Nuclear Safety Professional Development Program
Participant
G. L. Guerra, CHP, Emergency Preparedness Inspector
B. T. Larson, Senior Operations Engineer
S. M. Garchow, Senior Operations Engineer
G. W. Apger, Operations Engineer

Approved By: V. G. Gaddy, Chief, Project Branch B
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000275/2009004, 05000323/2009004; 6/27/2009 – 9/25/2009; Diablo Canyon Power Plant, Integrated Resident and Regional Report; Maintenance Effectiveness, Fire Protection, Refueling and Other Outage Activities and Identification and Resolution of Problems.

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by regional based inspectors. One self-revealing, two NRC-identified findings of very low safety significance (Green), and one Severity Level IV noncited violation 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 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing finding was identified after Pacific Gas and Electric failed to implement planned corrective actions resulting in the loss of cooling to a main transformer, a rapid shutdown and a manual reactor trip of Unit 2. On June 30, 2009, cooling to a main transformer was lost because a fuse opened in the 480 volt power circuit due to loose terminal connections in the cooling control panel. Plant operators rapidly shut-down the unit from full power after transformer cooling was lost. A previous failure of transformer cooling due to loose terminal connections occurred on Unit 1, also resulting in a reactor trip. Corrective actions to prevent recurrence following the previous event included replacement of the main transformer terminations in the cooling control panels. Review of the work orders revealed that these corrective actions were not completed and the work documents were closed. While the failure to complete the corrective actions was a latent issue, the inspectors concluded that the licensee had a recent opportunity to identify the issue. Plant technicians implemented thermograph monitoring of main transformer cooling circuits and identified hot 480 volt power terminations in the Unit 2 main transformer cooling disconnect box in April 2009. These hot terminations should have prompted Pacific Gas and Electric to review internal operating experience related to main transformer cooling issues. The licensee entered this finding into corrective program as Notification 50260721.

The inspectors concluded that the finding is greater than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of those events that interrupt plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined the finding to have very low safety significance because the condition did not contribute to both the likelihood of a reactor trip and the unavailability of mitigation equipment or functions. This finding has a crosscutting aspect in the area of problem identification and resolution, associated with the operating

experience component because Pacific Gas and Electric failed to perform an adequate internal operating experience review following the discovery of hot terminations on Unit 2 main transformer in April 2009 [P.2(a)] (Section 1R12).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of Diablo Canyon Facility Operating License Condition (5), "Fire Protection," after Pacific Gas and Electric failed to maintain Fire Door 155 in the rated condition. On September 1, 2009, the inspectors identified that Fire Door 155 was inoperable because the external latching mechanism device was not engaged. Fire Door 155 was required to provide a 1½-hour rated barrier between Fire Areas 4B and S-2. The licensee re-engaged the latching mechanism and entered the condition into the corrective action program as Notification 50265691. On September 16, 2009, the inspectors again identified that Fire Door 155 was inoperable because the external latching mechanism device was not engaged. The licensee subsequently determined that the latching mechanism had been defective. The inspectors concluded the most significant contributor to the violation was the less than adequate corrective action taken by the licensee following identification of the problem on September 1, 2009.

This finding is more than minor because the degraded fire barrier affected the mitigating systems cornerstone external factors attribute objective to prevent undesirable consequences due to fire. The inspectors determined that the inoperable door is a fire confinement category finding and that the fire barrier was moderately degraded because the door would not perform the rated barrier function. The inspectors concluded that this finding is of very low safety significance because a non-degraded automatic full area water-based fire suppression system was in place in the exposing fire area. The licensee entered this violation into the corrective action program as Notification 50268494. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee did not thoroughly evaluate the degraded fire door such that the resolution address causes and extent of condition [P.1(c)] (Section 1R05).

- Green. The inspectors identified a noncited violation of Technical Specification 5.4.1.b, "Emergency Operating Procedures," after plant operators failed to enter Emergency Operating Procedures E-0, "Reactor Trip or Safety Injection," and E-0.1, "Reactor Trip Response," following a Unit 2 reactor trip on June 30, 2009. Plant operators initiated a rapid load reduction from full power following loss of cooling to a main transformer bank. Plant operators manually tripped the reactor at about two percent power and proceeded to the procedure for placing the unit in cold shutdown. Plant operators did not perform the required steps in Emergency Operating Procedures E-0 and E-0.1 following the reactor trip. The inspectors concluded that the most significant contributor to the violation was less than adequate direction in the procedure used for rapid load reduction. The licensee entered this violation into the corrective action program as Notification 50262363.

The finding is greater than minor because the failure of operations personnel to implement emergency operator procedures was associated with the mitigating

systems cornerstone human performance attribute to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors concluded the significance of this finding is of very low safety significance because the finding was not a design or qualification deficiency, did not result in loss of equipment operability or functionality, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a crosscutting aspect in the area of human performance associated with the resource component because Pacific Gas and Electric did not have a complete rapid load reduction procedure [H.2(c)] (Section 1R20).

- Severity Level IV. The inspectors identified a noncited violation of 10 CFR 50.71 after Pacific Gas and Electric failed to update the Final Safety Analysis Report Update with a critical operator action assumed in the plant steam generator tube rupture accident analysis. The steam generator tube rupture accident analysis assumed that the ruptured steam generator will not overfill with water during the accident. To ensure a margin to overfill, the accident analysis included a critical assumption that plant operators would manually trip the turbine-driven auxiliary feedwater pump within 5.54 minutes following the reactor trip. Final Safety Analysis Report Update Section 15.4.3.1, "Identification of Causes and Accident Description," and Final Safety Analysis Report Update Table 15.4-12, "Operator Action Times for Design Basis SGTR Analysis," provided a detailed description of the time dependant operator actions assumed in the accident analysis. The inspectors identified that neither section included the critical assumed operator action to trip the turbine-driven auxiliary feedwater pump. The inspectors concluded that the licensee had a reasonable opportunity to identify and correct the problem when the results of the revised steam generator tube rupture accident, supporting steam generator replacement, was updated in the Final Safety Analysis Report Update in October 2008. The licensee entered this violation into the corrective action program as Notification 50269753.

The inspectors evaluated this finding with the traditional enforcement process because the issue affected the NRC's ability to perform its regulatory function. The inspectors concluded that the finding is greater than minor because the failure to update the required critical operator action assumed in the accident analysis could have a material impact on safety or licensed activities. The inspectors concluded that the violation is Severity Level IV because the erroneous information was not used to make an unacceptable change to the facility or procedures. The inspectors concluded that this finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to implement a corrective action program with a low threshold for identifying issues and failed to identify the inaccuracies in the accident analysis as described in the Final Safety Analysis Report Update [P.1(a)] (Section 4OA2.3).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

At the beginning of the inspection period, Diablo Canyon Unit 1 was operating at full power. On September 9, 2009, the licensee reduced Unit 1 to 87 percent power following the failure of a feedwater heater. On September 18, the licensee shutdown Unit 1 to repair the feedwater heater and a failed condensate booster pump breaker. The licensee restarted Unit 1 on September 20 and achieved full power on September 23. Unit 1 remained at full power for the remainder of the inspection period.

At the beginning of the inspection period, Diablo Canyon Unit 2 was shutdown for a forced outage following a loss of main transformer cooling. Pacific Gas and Electric restarted the unit on July 3 and achieved full power on July 4. Plant operators shut down Unit 2 on August 13, after diagnostic equipment indicated degradation of a main transformer high voltage bushing. On August 22, Pacific Gas and Electric completed replacement of the high voltage bushing and restarted the unit. On August 26, the licensee reduced power to 80 percent following the failure of a steam generator safety valve. On September 18, the licensee raised reactor power 97 percent power following NRC approval of an exigent license amendment which allowed the licensee to raise the high level trip set point with an inoperable safety relief valve. On September 19, the licensee raised Unit 2 to full power. The licensee operated the unit at full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of the licensee's adverse weather procedures for winter storm seasonal extremes (e.g., extreme high temperatures, extreme low temperatures, or hurricane season preparations). The inspectors: verified that weather-related equipment deficiencies identified during the previous year were corrected prior to the onset of seasonal extremes; and evaluated the implementation of the adverse weather preparation procedures and compensatory measures for the affected conditions before the onset of, and during, the adverse weather conditions

During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the final safety analysis report update and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- Intake structure including Unit 1 and Unit 2 auxiliary saltwater systems, intake screens, screen wash system, and preparations for mitigating debris loading of intake screens.

These activities constitute completion of one readiness for seasonal adverse weather sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial Equipment Walk-downs

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk significant systems:

- Unit 1, Train 1-2 of containment spray
- Unit 2, Train 2-1 of safety injection system

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system; and therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, final safety analysis report update, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two partial system walkdown samples as defined by Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On September 17, 2009, the inspectors performed a complete system alignment inspection of the Unit 1 auxiliary feedwater system to verify the functional capability of the system. The inspectors selected this system because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one complete system walkdown sample as defined by Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk significant plant areas:

- Unit 1, containment, Fire Area 1, August 7, 2009
- Unit 1, vital 4 kV switchgear rooms, Fire Area 1-3, August 13, 2009
- Unit 2, fuel building, Fire Area FB-2, August 25, 2009
- Unit 2, auxiliary building, 85 foot level, Fire Area AB-1, Zone 3-L, September 1, 2009

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk

as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four quarterly fire protection inspection samples as defined by Inspection Procedure 71111.05-05.

b. Findings

.1 Failure to Identify and Correct a Degraded Fire Barrier

Introduction. The inspectors identified a Green noncited violation of Diablo Canyon Facility Operating License Condition (5), Fire Protection," after Pacific Gas and Electric failed to maintain the integrity of Fire Door 155 in the rated condition.

Description. On September 1, 2009, the inspectors identified that Fire Door 155 was inoperable because the external latching mechanism device was not engaged. Fire Door 155 was required to provide a 1½-hour rated barrier between Fire Areas 4B and S-2. The door was inoperable because the latching mechanism was required to be engaged for the door to perform the fire barrier function. Equipment Control Guideline 18.7, "Fire Rated Assemblies," required the licensee to maintain Fire Door 155 operable or implement compensatory actions within one hour. The door included clear signage stating that the door must be latched by placing the vertical bolt into the frame. The licensee re-engaged the latching mechanism and entered the condition into the corrective action program as Notification 50265691. On September 16, 2009, the inspectors again identified that Fire Door 155 was inoperable because the external latching mechanism device was not engaged. The licensee subsequently determined that the latching mechanism had been defective. The inspectors concluded the most significant contributor to the violation was the licensee's less than adequate corrective action following identification of the problem on September 1, 2009.

Analysis. The failure of Pacific Gas and Electric to ensure that Fire Door 155 was maintained in the rated configuration is a performance deficiency. This finding is more than minor because the degraded fire barrier affected the mitigating systems cornerstone external factors attribute objective to prevent undesirable consequences due to fire. The inspectors used the Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," to analyze this finding. The inspectors determined that the inoperable door is a fire confinement category finding and that the fire barrier was moderately degraded because the door would not perform the rated barrier function. The inspectors concluded that this finding is of very low safety significance because a non-degraded automatic full area water-based fire suppression system was in place in the exposing fire area. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee did not thoroughly evaluate the degraded fire door such that the resolution address causes and extent of condition [P.1(c)].

Enforcement. Diablo Canyon Facility Operating License DPR-80, License Condition (5), "Fire Protection," required Pacific Gas and Electric to implement and maintain in effect all provisions of the approved fire protection plan as described by Final Safety Analysis Report Update. Final Safety Analysis Report Update, Appendix 9.5a, Fire Hazards Analysis, and Equipment Control Guideline 18.7, required that Fire Door 155 be maintained operable as a fire area barrier or to implement compensatory actions. Contrary to the above, on September 1 and September 16 2009, the inspectors identified that plant personnel failed to maintain Fire Door 155 operable as a fire area barrier. Because this finding is of very low safety significance and was entered into the corrective action program as Notification 50265691, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000275;323/2009004-01, Failure to Identify and Correct a Degraded Fire Barrier.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the final safety analysis report update, engineering calculations, and abnormal operating procedures for licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as fire suppression or circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood related items identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Unit 1, auxiliary saltwater system, July 22, 2009

Specific documents reviewed during this inspection period are listed in the attachment. This inspection constitutes one internal flooding sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed licensee programs, verified performance against industry standards, and reviewed critical operating parameters and maintenance records for the Unit 2 component cooling water heat exchangers. The inspectors verified that performance tests were satisfactorily conducted for heat exchangers/heat sinks and reviewed for problems or errors; the licensee utilized the periodic maintenance method

outlined in EPRI Report NP 7552, "Heat Exchanger Performance Monitoring Guidelines;" the licensee properly utilized biofouling controls; the licensee's heat exchanger inspections adequately assessed the state of cleanliness of their tubes; and the heat exchanger was correctly categorized under 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one heat sink inspection sample as defined by Inspection Procedure 71111.07-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Quarterly Requalification Inspection

a. Inspection Scope

On August 4, 2009, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment. These activities constitute completion of one quarterly licensed operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings of significance were identified.

.2 Biennial Requalification Inspection

a. Inspection Scope

The licensed operator requalification program involved two training cycles that were conducted over a 2-year period. In the first cycle, the annual cycle, the operators were administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators were administered an operating test and a comprehensive written examination. The biennial testing cycle ended May 22, 2009.

To assess the performance effectiveness of the licensed operator requalification program, the inspectors performed the following inspection activities:

- Reviewed seven written examination packages and four weeks of operating tests to evaluate the quality and content of the licensee's examination materials
- Reviewed the licensee's methodology to construct requalification examinations (sample plan)
- Observed and independently graded three in-plant job performance measures, five simulator job performance measures and two simulator scenarios to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content
- Conducted personnel interviews to determine understanding of the policies and practices for administering requalification examinations
- Reviewed examination security measures to ensure compliance with 10 CFR 55.49
- Reviewed four curriculum review committee operations continuing training meetings minutes to evaluate the effectiveness of the licensee's process for revising and maintaining its licensed operator continuing training program
- Reviewed two remediation plans to verify the adequacy and effectiveness of the remedial training
- Reviewed the watch standing proficiency records for one operating crew, the records for one license reactivation and ten randomly selected medical records to ensure conformance with operator license conditions
- Reviewed the results of the annual operating test and biennial written examination to assess whether operator failure rates are consistent with NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and determine significance associated with failure rates using the NRC Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process"

- Reviewed a summary of open discrepancy reports, simulator annual performance test packages, test packages used to verify core physics parameters, and documentation identifying differences between the simulator and the reference plant to determine conformance with simulator requirements

On June 10, 2009, the licensee informed the lead inspector of the following results:

- 75 of 77 licensed operators passed the biennial written examination
- 13 of 13 crews passed the simulator portion of the operating test
- 77 of 77 licensed operators passed the simulator portion of the operating test
- 76 of 76 licensed operators passed the job performance measures portion of the operating test. One licensed operator did not complete the job performance measures and the operator's qualification was removed

The individuals who failed the written examination were remediated, retested, and passed their retake examinations.

These activities constitute one biennial licensed operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- Notification 50023844, solid state protection system failure, and Notification 50081264, goal setting for solid state protection system
- Notification 50034426, failure of Unit 2 residual heat removal hot leg check valve, RHR-2-8704A
- Notification 50252709, loss of cooling on Unit 2 main transformer "C" phase main transformer

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures

- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or (a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

Introduction. The inspectors identified a self-revealing finding after the failure to implement adequate corrective actions resulted in the loss of cooling to Unit 2 main transformer while at full power. The loss of transformer cooling required Pacific Gas and Electric to perform a rapid unplanned shutdown and a manual reactor trip of Unit 2.

Description. On June 30, 2009, cooling to a main transformer was lost because a fuse opened in the 480 volt power circuit due to loose terminal connections in the cooling control panel. Plant operators rapidly shutdown the unit from full power after transformer cooling was lost. A previous failure of transformer cooling due to loose terminal connections and undersized wiring occurred in Unit 1, also resulting in a fuse failure and a reactor trip. The licensee documented the event and corrective actions to prevent recurrence in Quality Evaluation Q0011969. Corrective actions to prevent recurrence following the previous event included replacement of the main transformer terminations in the cooling control panels. This corrective action was controlled by Work Order C0157741. However, Work Order C0157741 was closed without completing the specified corrective actions. While the failure to complete the corrective actions was a latent issue, the inspectors concluded that the licensee had a recent opportunity to identify the issue. Plant technicians implemented thermographic monitoring of main transformer cooling circuits and identified hot 480 volt power terminations in the Unit 2 main transformer cooling disconnect box in April 2009. These hot terminations should have prompted the licensee to review internal operating experience related to main transformer cooling issues. The licensee entered this finding into corrective program as Notification 50260721.

Analysis. The failure of Pacific Gas and Electric to complete the corrective actions specified in Work Order C0157741 was a performance deficiency. The inspectors concluded that the finding is greater than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of those events that interrupt plant stability and challenge critical safety functions during shutdown as well as power operations. Using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the inspectors determined the finding to have very low safety significance because the condition did not contribute to both the likelihood of a reactor trip and the unavailability of mitigation equipment or functions. This finding has a crosscutting aspect in the area of problem identification and resolution, associated with the operating experience component because the licensee failed to perform an adequate internal operating experience review following the discovery of hot terminations on Unit 2 main transformer in April 2009 [P.2(a)].

Enforcement. This issue was entered into the licensee's corrective program as Notification 50260721. No violation of NRC requirements occurred because main transformer cooling was neither technical specifications nor quality related. FIN 05000323/2009004-02, "Failure to Perform Corrective Actions Resulted in an Unplanned Trip."

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

a. Inspection Scope

The inspectors reviewed licensee evaluation and management of plant risk for the maintenance and emergent work activities affecting risk significant and safety related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- July 8, 2009, removal of auxiliary salt water Train 1-1 for planned maintenance
- August 20, 2009, risk assessment Notification 50262995, mode transition with Radiation Monitor 68 inoperable
- August 20, 2009, risk assessment Notification 5025253, mode transition with Unit 2 digital metal impact monitor system Channel 753 inoperable
- September 1, 2009, Unit 2, removal of 230 kV capacitor banks from service
- September 10, 2009, Unit 1, reduction in power to 87 percent to attempt repairs on Feedwater Heaters 1-5A and 1-6A due to excessive tube leakage

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements

and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five maintenance risk assessments and emergent work control inspection samples as defined by Inspection Procedure 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- Notification 50246456, independent assessment of 230 kV system
- Notification 50261612, emergency core cooling interruption during sump recirculation realignment
- Notification 50201080, Unit 2, removal of 230 kV capacitor banks from service
- Notification 50257406, Unit 2, Emergency Diesel Generator 2-1 bent fuel tubing
- Notification 50259700, Unit 1 and Unit 2, supplier quality problem associated with 480-volt motor controller cabinet buckets
- Notification 50256584, Unit 1, containment atmosphere particulate radioactivity monitor count rate increasing
- Notification 50268232, Unit 1, reactor cavity removable stairs retaining pins removed without updating civil calculations
- Notification 50247464, Unit 1, Steam Generator 1-4 10% atmospheric dump valve stroked too fast during testing

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and the final safety analysis report update to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with

operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of eight operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Exhaust Fan E-2 preventive maintenance, August 20, 2009
- Diesel Generator 2-2 preventive maintenance, August 19, 2009
- Replacement of Unit 2 main transformer high voltage bushing, August 13, 2009

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, final safety analysis report update, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three post-maintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the following outages to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth:

- Unit 1 forced outage, September 18 - 20, 2009
- Unit 2 forced outage, June 30 - July 3, 2009
- Unit 2 forced outage, August 13 - 22, 2009

During the outages, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below:

- Configuration management, including maintenance of defense-in-depth, is commensurate with the outage safety plan for key safety functions and compliance with the applicable technical specifications when taking equipment out of service
- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error
- Status and configuration of electrical systems to ensure that technical specifications and outage safety-plan requirements were met, and controls over switchyard activities
- Monitoring of decay heat removal processes, systems, and components
- Verification that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss
- Controls over activities that could affect reactivity
- Maintenance of secondary containment as required by the technical specifications
- Startup and ascension to full power operation, tracking of startup prerequisites
- Licensee identification and resolution of problems related to refueling outage activities

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three other outage inspection samples as defined in Inspection Procedure 71111.20-05.

b. Findings

Introduction. The inspectors identified a Green noncited violation of Technical Specification 5.4.1.b, "Emergency Operating Procedures," after plant operators failed to enter Emergency Operating Procedures E-0, "Reactor Trip or Safety Injection," and E-0.1, "Reactor Trip Response," following a rapid power reduction and manual Unit 2 reactor trip on June 30, 2009.

Description. Plant operators failed to perform Emergency Procedures E-0 and E-0.1 following a Unit 2 manual reactor trip on June 30, 2009. Plant operators initiated a rapid load reduction from full power following the loss of cooling to a main transformer bank. Plant operators manually tripped the reactor at approximately two percent power and proceeded to Section 6.3, "Placing Residual Heat Removal in Service to Cold Shutdown," of Procedure OP L-5, "Plant Cooldown from Minimum Load to Cold Shutdown." Plant operators did not perform the required steps in Emergency Operating Procedures E-0 and E-0.1. Emergency Operating Procedure E-0 would have verified proper functioning of the automatic protection systems following a reactor trip, assessed plant conditions to identify the appropriate recovery procedure, and transition to Emergency Operating Procedure E-0.1. Emergency Operating Procedure E-0.1 would have ensured actions were taken to stabilize and control the plant following a reactor trip without a safety injection. The inspectors concluded that the most significant contributor to the violation was less than adequate direction in the rapid load reduction procedure.

Analysis. The failure of plant operators to verify proper response of the automatic protection systems following a manual reactor trip was a performance deficiency. The finding is greater than minor because the failure of operations personnel to implement emergency operator procedures was associated with the mitigating systems cornerstone human performance attribute to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the inspectors concluded the significance of this finding is of very low safety significance because the finding was not a design or qualification deficiency, did not result in the loss of equipment operability or functionality, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a crosscutting aspect in the area of human performance associated with the resource component because Pacific Gas and Electric did not have a complete rapid load reduction procedure [H.2(c)].

Enforcement. Technical Specification 5.4.1.b required the licensee to implement the emergency operating procedures. Emergency Operating Procedure E-0 required that the procedure be implemented following actuation of a manual reactor trip. Emergency operating procedure E-0 also required plant operators transition to Emergency Operating Procedure E-0.1 to complete the reactor trip recovery. Contrary to the above, plant operators did not implement Emergency Operating Procedures E-0 or E-0.1 following a Unit 2 manual reactor trip on June 30, 2009. Because this finding is of very low safety significance and was entered into the corrective action program as Notification 50262363, this violation is being treated as a noncited violation, consistent

with Section VI.A of the NRC Enforcement Policy: NCV 05000323/2009004-03, "Failure to Follow Emergency Operating Procedures Following a Reactor Trip."

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the final safety analysis report update, procedure requirements, and technical specifications to ensure that the six surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- July 10, 2009, Unit 2, routine surveillance test of steam generator power operating relief valves
- July 16, 2009, Unit 2, routine surveillance exercising control rods

- July 24, 2009, Unit 2, Emergency Diesel Generator 2-2 routine surveillance test
- August 13, 2009, Unit 1, routine seal table inspection
- August 18, 2009, Unit 1, inservice test of motor-driven Auxiliary Feedwater Pump 1-2
- August 19, 2009, Unit 1, reactor coolant system leakage surveillance

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four routine surveillance tests, one inservice inspection test, and one reactor coolant leakage test samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors performed an in-office review of Diablo Canyon Emergency Plan, Revision 4, effective June 3, 2009, and Emergency Action Level Procedure EP G-1, "Emergency Classification and Emergency Plan Activation, Revision 39, effective May 18, 2009. The emergency plan was revised to add references for the Independent Spent Fuel Storage Facility Installation to various sections of the emergency plan and also make minor administrative changes; Emergency Procedure EP G-1 added an unusual event classification emergency action level for the Independent Spent Fuel Storage Facility Installation.

This revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, to Nuclear Energy Institute Report 99-01, "Emergency Action Level Methodology," Revision 4, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q). This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two samples as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on September 2, 2009, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the training simulator and technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the second quarter 2009 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index - Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - heat removal system performance indicator for Diablo Canyon Units 1 and 2 for the period from the second quarter 2008 through the second quarter 2009. To determine the accuracy of the performance indicator data reported during those periods,

performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of the second quarter 2008 through the second quarter 2009 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two mitigating systems performance index heat removal system samples as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - residual heat removal system performance indicator for Diablo Canyon Units 1 and 2 for the period from the second quarter 2008 through the second quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports and NRC integrated inspection reports for the period of the second quarter 2008 through the second quarter 2009 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection; and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two mitigating systems performance index residual heat removal system samples as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.4 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - cooling water systems performance indicator for Diablo Canyon Units 1 and 2 for the period from the second quarter 2008 through the second quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports and NRC integrated inspection reports for the period of the second quarter 2008 through the second quarter 2009 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection; and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two mitigating systems performance index cooling water system samples as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

40A2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included: the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors recognized a corrective action item documenting:

- Notification 50237461, time-critical operator action controls, April 30, 2009
- Notification 50257475, Unit 2, condensate booster pump failure, July 25, 2009

These activities constitute completion of two in-depth problem identification and resolution samples as defined in Inspection Procedure 71152-05.

b. Findings

Introduction. The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.71 after Pacific Gas and Electric failed to update the Final Safety Analysis Report Update with a major operator action assumed in the plant steam generator tube rupture accident analyses.

Description. In August 2009, the inspectors identified that Pacific Gas and Electric did not update the Final Safety Analysis Report Update with the appropriate design basis information associated with the steam generator tube rupture accident analyses. Final Safety Analysis Report Update, Revision 18, Section 15.4.3, "Steam Generator Tube Rupture," provided a description of the critical assumptions used in the accident analysis. The steam generator tube rupture accident analysis, WCAP-16638-P, "Diablo Canyon Units 1 and 2 Replacement Steam Generator Program NSSS Licensing Report,"

assumed that the ruptured steam generator will not overflow with water during the accident. Maintaining a margin to overflow allowed the licensee to significantly reduce the radiological source term assumed to release from the steam generators during the accident. To ensure that the steam generator does not overflow, the accident analysis included a critical assumption that plant operators would manually trip the turbine-driven auxiliary feedwater pump within 5.54 minutes following the reactor trip. Final Safety Analysis Report Update Section 15.4.3.1, "Identification of Causes and Accident Description," and Final Safety Analysis Report Update Table 15.4-12, "Operator Action Times for Design Basis SGTR Analysis," provided a detail description of the time dependant operator actions assumed in the accident analysis. The inspectors identified that neither Final Safety Analysis Report Update Section 15.4.3.1 nor Table 15.4-12 included the critical assumed operator action to trip the turbine driven auxiliary feedwater pump. The inspectors concluded that the licensee had a reasonable opportunity to identify and correct the problem when the results of the revised steam generator tube rupture accident, supporting steam generator replacement, was updated in the Final Safety Analysis Report Update in October 2008. The inspectors concluded that the most significant contributor to the violation was the failure of engineering personnel to identify and enter into the corrective action program the discrepancy between the accident analysis and Final Safety Analysis Report Update.

Analysis. The failure of Pacific Gas and Electric to update the Final Safety Analysis Report Update with current plant design basis information was a performance deficiency. The inspectors evaluated this finding with the traditional enforcement process because the issue affected the NRC's ability to perform its regulatory function. The inspectors used the NRC Enforcement Policy, Supplement I – Reactor Operations, to determine the significance of the finding. The inspectors concluded that the finding is greater than minor because the failure to update the required critical operator actions assumed in the accident analysis could have a material impact on safety or licensed activities. The inspectors concluded that the violation is Severity Level IV because the erroneous information was not used to make an unacceptable change to the facility or procedures. The inspectors concluded that this finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to implement a corrective action program with a low threshold for identifying issues and failed to identify the inaccuracies in the accident analysis as described in the Final Safety Analysis Report Update [P.1(a)].

Enforcement. Title 10 of the Code of Federal Regulations 50.71(e) required Pacific Gas and Electric to periodically update the Final Safety Analysis Report Update originally submitted as part of the application for the license, to assure that the information included in the report contains the latest information developed. This periodic update required the licensee to include the effects of all changes made in the facility or procedures as described in the Final Safety Analysis Report and all safety analyses and evaluations performed by the applicant or licensee. Contrary to the above, Pacific Gas and Electric failed to include the effects of all changes made in the procedures as described in the Final Safety Analysis Report Update and steam generator tube rupture safety analyses and evaluations within the periodic update. Specifically, a critical manual action to terminate the turbine-driven auxiliary feedwater flow assumed in the accident analysis was not updated in the Final Safety Analysis Report Update, Revision 18. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's corrective action program as Notification 50269753, this violation is being treated as an NCV, consistent with the NRC

Enforcement Policy: NCV 05000275;323/2009004-04, "Failure to Update the Final Safety Analysis Report Update with Current Accident Analysis."

.4 Annual Sample: Review of Operator Workarounds

a. Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of the operator workarounds on system availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of operator workarounds. The documents listed in the attachment were reviewed to accomplish the objectives of the inspection procedure. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee was identifying operator challenges at an appropriate threshold, had entered them into their corrective action program and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Additionally, all temporary modifications were reviewed to identify any potential effect on the functionality of Mitigating Systems, impaired access to equipment, or required equipment uses for which the equipment was not designed. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified operator workarounds.

The above constitutes completion of one operator workarounds annual inspection sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with Pacific Gas and Electric security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings

Exit Meeting Summary

The inspectors briefed Mr. J. Welsh, Operations Services Director, and other members of the licensee's management staff on the biennial licensed operator requalification inspection. PG&E acknowledged the findings presented. The lead inspector obtained the final biennial examination results and telephonically exited with Mr. W. Hendy, Operations Training Manager, on July 2, 2009. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On July 9, 2009, the inspector conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency action levels to Mr. M. Ginn, Manager, Emergency Preparedness, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 28, 2009, the inspectors presented the inspection results to Mr. J. Becker, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Becker, Site Vice President
M. Ginn, Emergency Planning Manager
W. Guldemon, Director, Site Services
W. Hendy, Operations Training Manager
S. Ketelsen, Manager, Regulatory Services
K. Peters, Station Director
M. Somerville, Manager, Radiation Protection
T. Swartzbaugh, Manager, Operations
L. Walter, Learning Services Director
J. Welsch, Director, Operations Services

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000275/2009004-01; 05000323/2009004-01	NCV	Failure to Identify and Correct a Degraded Fire Barrier (Section 1R05)
05000323/2009004-02	FIN	Failure to Perform Corrective Actions Resulted in an Unplanned Trip (Section 1R12)
05000323/2009004-03	NCV	Failure to Follow Emergency Operating Procedures Following a Reactor Trip (Section 1R20)
05000275/2009004-04; 05000323/2009004-04	NCV	Failure to Update the Final Safety Analysis Report Update with Current Accident Analysis (Section 4OA2.3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP O-28	Intake Management	10

NOTIFICATIONS

50266093

Section 1R04: Equipment Alignments

NOTIFICATIONS

50037574 50232638

Section 1R06: Flood Protection Measures

DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
Regulatory Guide 1.102	Flood Protection for Nuclear Power Plants	1
LER 97-011-01	Auxiliary Saltwater Systems Outside Design Basis for Flooding Because of Inadequate Corrective Actions Due to Personnel Error	Dec. 23, 1997

CALCULATIONS

M-270	Auxiliary Saltwater - Pump Vault Drain System	Feb. 6, 1998
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NOTIFICATIONS

50257386 50257228

Section 1R07: Heat Sink Performance

PROCEDURES/DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
420DC-08.10	Diablo Canyon Power Plant CCW 2-1 and 2-25 Heat Exchanger Tests Pre-2R14	Feb. 22, 2008
420DC-06.28	DCPP CCW 2-1 and 2-2 Heat Exchanger Tests Pre-2R13	May 2, 2006
420DC	Final Unit 1 CCW Heat Exchanger 1-1 Test Results	Apr. 22, 1996
420DC-04.68	DCPP 1R12 and 2R12 CCW Heat Exchanger Tests 2004 through 2005	Mar. 3, 2005
PEP M-234	CCW Heat Exchanger Performance Test	11
EPRI NP-7552	Heat Exchanger Performance Monitoring Guidelines	December 1991
420DC.09.29	Diablo Canyon Power Plant CCW 2-1 and 2-2 Heat Exchanger Tests Pre 2R15	Sept. 10, 2009

Section 1R11: Licensed Operator Requalification Program

.1 Quarterly Regualification Inspection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FRH-1	Loss of Heat Sink	16

.2 Biennial Regualification Inspection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
CF2.DC1	Configuration Management Plan for the Operator Training Simulator	5
SQA99-2	Operator Training Simulator Software Quality Assurance Plan	0
TQ2.DC3	Licensed Operator, Non-Licensed Operator, and Shift Technical Advisor Continuing Training Program	17
TQ2.ID4	Training Program Implementation	16
TQ2.ID5	Training Program Evaluation	10
OP1.DC10	Conduct of Operations	16A
OM10.DC4	Emergency Classifications and Notifications	2

DOCUMENTS

<u>TITLE</u>	<u>REVISION</u>
Simulator Change Requests dated	May 18, 2009
Simulator annual performance test packages	
Simulator core physics parameters test packages	
Time Critical Operator Action Documentation Table	May 19, 2009
2007 – 2008 Biennial Written Examination Packages #3-9	
Curriculum Review Committee Operations Continuing Training Meeting Minutes	June 26, 2008, Aug. 1, 2008, Sept. 19 and Nov. 25, 2008
Overtime Hours Report for Licensed Operators	May 1, 2008 to May 21, 2009
Licensed Operator Exam Banks “A” and “B”	
2009 ARQ Operating Tests, Weeks 1 – 4	
LJP-004, 012 & 038 In-Plant Job Performance Measures	
Simulator Job Performance Measures LJC-005, 026, 031, 041, and EPD-710J-01	

Dynamic Simulator Scenarios ECA00-B and E2ECA21-B

Section 1R12: Maintenance Effectiveness

PROCEDURES / DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
NCR 60017622	Root Cause Evaluation Report, "Loss of Cooling on U2 Main Transformer "C" Phase"	1
	System 62 Maintenance Rule Summary Report	Aug. 12, 2009
	System 70 , 500kV, Health Report	Sept. 9, 2009
161	Maintenance Rule Expert Panel Meeting Minutes	July 15, 2009
162	Maintenance Rule Expert Panel Meeting Minutes	Aug. 24, 2009
Quality Evaluation Q0011969	Curtailment Caused by Main Bank Transformer Cooling Problem	Jan. 29, 1999

NOTIFICATIONS

A0441096 50231031

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OM4.ID2	Plant Staff Review Committee	18

Section 1R15: Operability Evaluations

PROCEDURES / DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
NSAL 09-6	Emergency Core Cooling System Flow Interruption/Reduction During Sump Recirculation Realignment	0
OM4.ID2	Plant Staff Review Committee	18
OM4.ID3	Assessment of Industry Operating Experience	15
30-01-01	Civil Engineering Calculation	1
STP V-3R1	Exercising 10% Atmospheric Dump Valves	47
OP1.DC16	Control of Plant Equipment Not Required by the Technical Specifications	10
0-TS-09-0100	TSC radiation monitor RM-68 inoperable	Sept. 14, 2009
60018335	Repair Order – RM-68 Paper Drive	

Section 1R15: Operability EvaluationsPROCEDURES / DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
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NOTIFICATIONS

50256877	50257753	50213439	50209705	50268232
50248806	50214357	A0490312	50260936	50267284
50266886	50269772	50260730	50261057	

Section 1R19: Postmaintenance TestingPROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
64009006	Repair Order – Clean/Lubricate/Inspect Fan	0
MP M-23.4	Preventive Maintenance of Plant Ventilation Fans	33
64014572	Repair Order - Diesel Generator 2-2	0
STP M-9L	Diesel Generator Shutdown Lockout Relay Test	27
STP M-9B	Over Speed Trip Test of Diesel Generator	24
68006301	Repair Order – Troubleshoot IDD Monitor Unit 2	0
68006354	Repair Order – Test Bushing Adapters	0
STP M-9D1	Diesel Generator Full Load Rejection Test	0
64012940	Repair Order – Power Factor Testing	0
STP M-21-RTS	Return Diesel Generator Engine to Service Following Outage Maintenance	7

ACTION REQUESTS

A0409645	A0644019
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Section 1R20: OutagePROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2Y15	2Y15 Outage Safety Plan	0

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
STP R-1A	Exercising Full Length Control Rods	20
STP V-3R1	Exercising 10% Atmospheric Dump Valves PCV-19, 20, 21, 22 and Manual Isolation Valves MS-1015, MS-2015, MS-3015, MS-4015	47
STP P-AFW-12	Routine Surveillance Test of Motor Driven Auxiliary Feedwater Pump 1-2	16
Rounds Sheet 69-11831-11	Containment Round Sheet	Jan. 2, 2009
STP I-1B	Routine daily Checks Required by Licenses	113
STP M-9A	Diesel Engine Generator Routine Surveillance Test	79
STP R-7D	Determination of Moderator Temperature Coefficient at Power with Temperature Coastdown	0
STP I-1F	Routine Monthly Checks Required by License Behind Rad Doors	5

NOTIFICATIONS

50257919 50257364 50260541

Section 1EP4: Emergency Action Level and Emergency Plan Changes

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EP G-1	Emergency Classification and Emergency Plan Activation	39
	Diablo Canyon Emergency Plan	4

Section 1EP6: Drill Evaluation

PROCEDURES/DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
OM10.DC1	Emergency Preparedness Drills and Exercises	5
	Delta Qual and AA Drill (All Facilities)	Aug. 26, 2009

NOTIFICATIONS

50265943 50265692 50266815 50266816

Section 4OA1: Performance Indicator Verification (71151)

DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
	MSPI Unavailability Data – Auxiliary Feedwater	
	MSPI Unavailability Data – Residual Heat Removal	
	MSPI Unavailability Data – Component Cooling Water and Auxiliary Salt Water	
	DCPP MSPI Basis Document	0

NOTIFICATIONS

50269334 50241890 50268144

Section 4OA2: Identification and Resolution of Problems

PROCEDURES/DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
XI3.ID2	Final Safety Analysis Report Update Revision and Maintenance	9C
WCAP-16638-P	Diablo Canyon Units 1 and 2 Replacement Steam Generator Program NSSS Licensing Report	Jan. 2008
WCAP-11723	LOFTTR2 Analysis for a Steam Generator Tube Rupture for the Diablo Canyon Power Plant Units 1 and 2	Feb. 1988
WCAP-10698-P-A	SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill	Aug. 1987

CALCULATIONS

357P-DC	4160V Second Level Undervoltage Relay and Timer Setpoints	Oct. 22, 1998
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NOTIFICATIONS

50237461 50257494 50257495