



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV
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ARLINGTON, TEXAS 76011-4125

August 10, 2011

John T. Conway
Senior Vice President and
Chief Nuclear Officer
Pacific Gas and Electric Company
77 Beale Street, B32
San Francisco, CA 94105

Subject: DIABLO CANYON POWER PLANT - NRC INTEGRATED INSPECTION
REPORT 05000275/2011003 AND 05000323/2011003

Dear Mr. Conway:

On June 26, 2011, 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 June 28, 2011, with Mr. K. Peters, Vice President, Engineering and Projects, 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.

Based on the results of this inspection, the NRC identified six issues that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC determined that violations are associated with three of these issues. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section 2.3.2 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 crosscutting aspect assigned to 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.

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). To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Geoffrey B. Miller, Chief
Project Branch B
Division of Reactor Projects

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

Enclosure:

NRC Inspection Report 05000275/2011003 and 05000323/2011003
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000275, 05000323

License: DPR-80, DPR-82

Report: 05000275/2011003
05000323/2011003

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: March 28 through June 26, 2011

Inspectors: M. Peck, Senior Resident Inspector
L. Micewski, Resident Inspector
C. Aldredge, Health Physicist
I. Anchondo, Reactor Inspector
L. Carson II, Senior Health Physicist
S. Garchow, Senior Operations Engineer
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L. Willoughby, Senior Project Engineer

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

SUMMARY OF FINDINGS

IR 05000275/2011003, 05000323/2011003; 3/28/2011 – 6/26/2011; Diablo Canyon Power Plant, Integrated Resident and Regional Report; Fire Protection, Plant Modifications, Identification and Resolution of Problems, and Radiological Hazard Assessment and Exposure Controls.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspection by regional based inspectors. Three Green noncited violations of significance and three Green findings 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." The crosscutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Crosscutting Areas." 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: Mitigating Systems

- Green. The inspectors identified a noncited violation of Diablo Canyon Facility Operating License Condition 2.C (5), "Fire Protection," after Pacific Gas and Electric failed to implement the required compensatory actions described in Equipment Control Guideline 18.7, "Fire Rated Assemblies." On December 28, 2010, the licensee blocked open Fire Doors 175 and 182-2, entrances to the Unit 1 and 2 safety injection pump room to address auxiliary building ventilation flow balance problems. The supporting engineering evaluation failed to identify that the doors were rated fire barriers as described in the fire hazard analysis. If a fire had occurred, these blocked open doors would have allowed smoke and hot gases to pass from fire area AB-1 to impact equipment in adjacent fire areas 3-B-2 (Unit 1) and 3-D-2 (Unit 2). Equipment Control Guideline 18.7 required the licensee to either establish a continuous fire watch on at least one side of the inoperable fire doors or verify that the fire detection or automatic suppression system on at least one side of the fire doors was operable and establish an hourly fire watch. The licensee took corrective actions to establish the required fire watches and enter the finding into the corrective action program as Notification 50409975.

The inspectors concluded that the failure of Pacific Gas and Electric to maintain the fire doors in the rated configuration as described in the Final Safety Analysis Report Update "Fire Hazard Analysis," was a performance deficiency. This finding was more than minor because the degraded fire barriers affected the Mitigating Systems Cornerstone external factors attribute objective to prevent undesirable consequences due to fire. The inspectors concluded that the finding was of very low safety significance (Green) because the finding only affected the ability to reach and maintain cold shutdown conditions. This finding had 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 problems associated with modification of the safety injection pump room fire doors such that the resolutions addressed causes and extent of conditions, as necessary [P.1(c)](Section 1R05).

- Green. The inspectors identified a self-revealing finding following the unplanned loss of 230 kV preferred offsite power to Unit 1 due to inadequate work planning. On May 17, 2011, Unit 1 lost preferred offsite power after a technician began cutting a hole in a startup bus control panel using a reciprocating saw. The reciprocating saw induced vibration on the control panel and caused the phase differential protection relay to actuate which separated the startup bus from preferred offsite power. All three Unit 1 emergency diesel generators automatically started after offsite power was lost to the plant vital loads. Procedure AD7.DC8, "Work Control," stated that when performing nonroutine work, including modifications on electrical or instrument equipment, the equipment shall be isolated to prevent any unintended equipment actuations. The licensee had authorized the cutting work while the Unit 1 startup bus was in service. The licensee took corrective action to restore offsite power and entered the finding into the corrective action program as Notification 50402706.

The inspectors determined that the failure to adequately evaluate the effect of the cutting activity on the energized plant equipment was a performance deficiency. This performance deficiency was more than minor because the finding was associated with the Mitigating Systems Cornerstone human performance attribute and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The senior reactor analyst utilized Table 3.7 from the plant specific risk-informed notebook and determined that the risk based on Phase 2 estimation was Green. Additionally, the analyst performed a bounding analysis that corroborated the Phase 2 result based on three complete losses of preferred power during the refueling outage with a total exposure time of 2.9 hours. Using the standardized plant analysis risk model for Diablo Canyon Units 1 and 2, the analyst quantified the conditional core damage probability for any initiator resulting in a consequential loss of offsite power as 1.2×10^{-4} . Given these conditions, the analyst noted that the change in core damage frequency could be approximated as the product of these two values (3.9×10^{-8}). This indicated that the subject finding was of very low risk significance (Green). This finding has a crosscutting aspect in the area of human performance associated with the work control component, in that Pacific Gas and Electric failed to appropriately plan work activities by incorporating risk insights, job site conditions, and plant structures, systems, and components [H.3(a)](Section 1R18).

- Green. The inspectors identified a self-revealing finding following two unplanned losses of 230 kV preferred offsite power to Unit 1 due to personnel errors. On May 26, 2011, Unit 1 lost preferred offsite power after a technician incorrectly installed test equipment on the Unit 2 startup bus control circuit during a post-modification test. The Unit 1 phase differential protection relay actuated and separated the startup bus from preferred offsite power after the technician energized the test circuit. On May 27, 2011, Unit 1 again lost preferred offsite power after a technician incorrectly installed test equipment on a Unit 1 wiring termination when the post-modification test specified that the test equipment was to be installed on Unit 2. The Unit 1 phase differential protection relay actuated and separated the startup bus from preferred offsite power. In each event, all three emergency diesel generators automatically started after offsite power was

lost to the plant vital loads. The licensee took corrective action to reestablish offsite power and entered the finding into the corrective action program as Notifications 50405004 and 50405010.

The inspectors concluded that the failure to follow post-modification testing work instructions was a performance deficiency. This performance deficiency was more than minor because the finding was associated with the Mitigating Systems Cornerstone human performance attribute and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The senior reactor analyst utilized Table 3.7 from the plant specific risk-informed notebook and determined that the risk based on Phase 2 estimation was Green. Additionally, the analyst performed a bounding analysis that corroborated the Phase 2 result based on three complete losses of preferred power during the refueling outage with a total exposure time of 2.9 hours. Using the standardized plant analysis risk model for Diablo Canyon Units 1 and 2, the analyst quantified the conditional core damage probability for any initiator resulting in a consequential loss of offsite power as 1.2×10^{-4} . Given these conditions, the analyst noted that the change in core damage frequency could be approximated as the product of these two values (3.9×10^{-8}). This indicated that the subject finding was of very low risk significance (Green). This finding had a crosscutting aspect in the area of human performance associated with the work practices component because the licensee failed to effectively communicate human error prevention techniques; and consequently, these techniques were not used commensurate with the risk of the assigned task [H.4(a)](Section 1R18).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," after Pacific Gas and Electric failed to adequately evaluate the impact of protected area boundary modifications. These modifications affected the ability of plant operators to transfer water from the raw water storage reservoirs to the auxiliary feedwater system using temporary hoses. Plant engineers authorized a series of security modifications which included the installation of physical intrusion barriers, including delay fences and razor wire between the raw water reservoirs and the auxiliary feedwater system. The licensing basis evaluation did not address raw water makeup to the auxiliary feedwater system using temporary hoses as described in Final Safety Analysis Report Update Section 6.5, "Auxiliary Feedwater System," and Section 3.7.6, "Seismic Evaluation to Demonstrate Compliance with the Hosgri Earthquake Requirements Utilizing a Dedicated Shutdown Flowpath." The licensee took immediate corrective actions to establish a route for the temporary hoses, including preplanned security compensatory measures, and entered this finding into the corrective action program as Notification 50410997.

The failure to adequately evaluate the impact of the security modifications on the plant licensing and design bases was a performance deficiency. This performance deficiency was more than minor because the finding affected the Mitigating Systems Cornerstone design control attribute and objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors concluded that the finding was of very low safety significance (Green) because the finding was

confirmed not to result in the loss of operability or functionality. 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 thoroughly evaluate the security modifications such that the resolutions addressed causes and extent of conditions, as necessary [P.1(c)](Section 40A2).

Cornerstone: Barrier Integrity

- Green. The inspectors identified a finding after Pacific Gas and Electric failed to periodically review and update the severe accident management guidelines. Procedure OM10.ID5, "Severe Accident Management," required the licensee to review and update the severe accident management guidelines biennially to ensure that any changes in plant design or procedures, experience in severe accident management requalification training, and any changes in industry understanding of severe accidents were incorporated into the severe accident management guidelines. As a result of the licensee's failure to implement the periodic review, the severe accident management guidelines did not incorporate the latest owners' group guidance or recent plant design and hardware changes. The licensee took corrective actions to implement the biennial reviews and entered this finding into the corrective action program as Notification 50399554.

Pacific Gas and Electric's failure to follow procedural requirements for periodic review of the severe accident management guidelines was a performance deficiency. The finding was more than minor because if left uncorrected, the failure to review and update the severe accident management guidelines has the potential to lead to a more significant safety concern. This finding affected the barrier integrity cornerstone because the severe accident management guidelines are procedures that would be used to maintain the functionality of the containment should a severe accident occur. The inspectors concluded that the finding was of very low safety significance because it did not represent a degradation of the radiological, smoke, or toxic atmosphere barrier function; or represent an actual open pathway in the physical integrity of the reactor containment; or involve the function of the containment hydrogen igniters. The finding did not have any crosscutting aspects because the performance deficiency occurred more than three years ago and is not indicative of current licensee performance in that the licensee has improved the design review process since the performance deficiency occurred (Section 40A2).

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a noncited violation of Technical Specification 5.4.1(a) for the failure to follow procedures for testing and using the high-efficiency particulate air ventilation units used to prevent personal contamination. Licensee immediate actions included removing all high-efficiency particulate air ventilation units installed for the Unit 2 outage and testing all high-efficiency particulate air ventilation units as required by procedure. This matter was placed in the licensee's corrective action program as Notifications 50399479, 50399560, and 50399682.

This failure to follow procedures was a performance deficiency. The finding was more than minor because it was associated with the program and process

attribute of the occupational radiation safety cornerstone. The finding affected the objective to ensure adequate protection of the worker's health and safety from exposure to unintended radiation from radioactive material during routine civilian nuclear reactor operation. Using the Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined the finding was of very low safety significance because (1) it was not associated with as low as is reasonably achievable (ALARA) planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This finding was determined to have a crosscutting aspect in the area of human performance, associated with work practices, because the licensee did not effectively communicate expectations regarding procedural compliance and the personnel following the procedures [H.4(b)](Section 2RS01).

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

At the beginning of the inspection period, Pacific Gas and Electric Company was operating Diablo Canyon Unit 1 at full power and the licensee had shutdown Unit 2 at the end of the previous inspection period following a feedwater flange failure. On March 31, 2011, plant operators restarted Unit 2 and returned the unit to full power on April 2, 2011. On April 19, 2011, plant operators reduced Unit 1 to 85 percent power following a through-wall leak on a feedwater heater. The licensee repaired the leak and returned Unit 1 to full power on April 21, 2011. On May 1, 2011, plant operators shutdown Unit 2 for refueling. On June 4, 2011, the licensee completed Unit 2 refueling activities and began restart activities. On June 9, 2011, plant operators completed Unit 2 power ascension to full power. Pacific Gas and Electric operated both units at full power for the remainder of the inspection period.

1. REACTOR SAFETY

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

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed a partial system walk down of the following risk-significant system:

- Auxiliary Saltwater 2-2, April 13 and 14, 2011

The inspectors selected this system based on the risk significance relative to the reactor safety cornerstones at the time it was 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 (FSARU), technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant train of equipment in order to identify conditions that could have rendered the systems incapable of performing its intended functions. The inspectors also inspected accessible portions of the system 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 one partial system walkdown sample as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On April 21, 2011, the inspectors performed a complete system alignment inspection of the long term cooling water 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 inspected 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 in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

.3 System Walkdown Associated With Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation In Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

a. Inspection Scope

On May 17, 2011, the inspectors conducted a walkdown of containment spray in sufficient detail to reasonably assure the acceptability of the licensee's walkdowns (TI 2515/177, Section 04.02.d).

In addition, the inspectors verified that the licensee had isometric drawings that describe the containment spray system configurations and had acceptably confirmed the accuracy of the drawings (TI 2515/177, Section 04.02.a). The inspectors verified the following related to the isometric drawings:

- High point vents were identified
- High points that do not have vents were acceptably recognizable
- Other areas where gas can accumulate and potentially impact subject system operability, such as at orifices in horizontal pipes, isolated branch lines, heat

exchangers, improperly sloped piping, and under closed valves, were acceptably described in the drawings or in referenced documentation

- Horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines that exceed specified criteria were identified
- All pipes and fittings were clearly shown
- The drawings were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations and the drawings were documented and entered into the Corrective Action Program for resolution

The inspectors verified that Piping and Instrumentation Diagrams (P&IDs) accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations, the isometric drawings, and the P&IDs were documented and entered into the Corrective Action Program for resolution (TI 2515/177, Section 04.02.b).

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

This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later inspection report.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

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:

- Fire Area 3-I-1, Unit 2 Centrifugal Charging Pump Room, April 18, 2011
- Fire Areas TB-1, TB-2, TB-3, TB-8, TB-9, and TB-17, Units 1 and 2 Diesel Generator Rooms, April 27, 2011
- Fire Zone 12-E, Unit 1 Isophase Room, May 11, 2011
- Fire Area 1-A, Unit 1 Containment Annular Area, May 12, 2011
- Fire Zones 3-M, Unit 1 Safety Injection Pump Room and 3-N, Unit 2 Safety Injection Pump Room, May 12, 2011

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 five quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

Inadequate Fire Hazards Evaluations

Introduction. The inspectors identified a Green noncited violation of Diablo Canyon Facility Operating License Condition 2.C (5), "Fire Protection," after Pacific Gas and Electric failed to implement the required compensatory actions described in the FSARU fire protection plan for two disabled fire doors between December 28, 2010 and June 28, 2011.

Description. On May 5, 2011, the inspectors identified that the licensee had not implemented the fire watches as required by Equipment Control Guideline 18.7, "Fire Rated Assemblies," after blocking open Fire Doors 175 and 182-2, entrance to the Unit 1 and 2 safety injection pump rooms. The licensee had blocked open the fire doors on December 28, 2010 as part of corrective actions (Notifications 50339808 and 5039809) to address an auxiliary building ventilation flow balance problem. FSARU Section 9.5A, "Fire Hazard Analysis," described the fire doors as providing a 1½ hour rated fire barrier between fire zones 3-M and 3-L for Unit 1 and 3-N and 3-L for Unit 2. Fire zones 3-L, 3-M, and 3-N were part of fire area AB-1 which was divided into multiple fire zones containing Unit 1 equipment, Unit 2 equipment and rooms common to both units for the fire hazard analysis. Equipment Control Guideline 18.7 required the licensee to either establish a continuous fire watch on at least one side of the inoperable fire doors or verify that the fire detection or automatic suppression system on at least one side of the fire doors was operable and establish an hourly fire watch.

The blocked open fire doors provided a path for hot gases and smoke from a fire in one fire area to affect redundant safe shutdown equipment in the adjoining fire area. Fire zone 3-L contained safe shutdown equipment for both residual heat removal trains for both units and fire area 3-B-2 (3-D-2, Unit 2) contained safe shutdown equipment for

residual heat removal train B. A penetration, without a fire damper, connected fire zone 3-M (3-N, Unit 2) with fire area 3-B-2 (3-D-2, Unit 2). The configuration was approved by the NRC as a deviation from the requirements of 10 CFR Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," for not providing a 3-hour rated fire barrier between redundant shutdown. NRC approval of the deviation, as described in Supplemental Safety Evaluation Report 23, was based on the limited quantities of smoke and hot gases that could propagate beyond the perimeter of these fire areas as a result of the unprotected penetrations. Most of these penetrations were located away from the redundant shutdown systems, and hot gases passing through the penetrations would not affect components of cabling of the redundant division. The inspectors concluded that the blocked open fire doors between fire zones 3-M and 3-N into fire zone 3-L invalidated the technical basis for NRC approval of the deviation.

The inspectors concluded that several less than adequate engineering evaluations were the most significant contributor to the finding. On December 28, 2010, the licensee implemented Order 60031469 to block open the fire doors. The licensee incorrectly concluded that these fire doors were not fire rated assemblies as described in the NRC-approved fire protection plan and did not implement the compensatory actions prescribed in Equipment Control Guideline 18.7. On March 29, 2011, a fire protection system engineer identified that the supporting engineering evaluation had failed to address the fire barrier function of the blocked open doors. The engineer entered this problem into the corrective action program as Notification 50385594. On April 21, 2011, the licensee revised the supporting evaluation to address this concern. The licensee concluded that compensatory measures were not required because the equipment in fire zones 3-M and 3-N were not relied upon for safe shutdown following a fire. On May 5, 2011, the inspectors observed that fire doors were blocked open and that the licensee had not implemented the prescribed Equipment Control Guideline compensatory measures. On May 11, 2011, the licensee again revised the supporting evaluation in response to the inspectors' questions related to safe shutdown equipment affected by the blocked open doors. The revised evaluation again concluded that Equipment Control Guideline compensatory measures were not required based on a review of combustibles loading in the affected fire zones. On June 20, 2011, the inspectors identified that the revised fire evaluation was inadequate because it did not include the potential affect on train B safe shutdown equipment located in adjacent fire area 3-B-2 (3-D-2, Unit 2). The licensee entered this condition into the corrective action program as Notification 50409970. The licensee again revised the evaluation to address exposed equipment in fire areas 3-B-2 and 3-D-2. On June 23, 2011, the inspectors identified that the revised engineering evaluation was also inadequate because the licensee failed to demonstrate the requirements of Appendix R to Part 50, Section III.G.2, to maintain fire barriers between protected shutdown related systems. On June 28, 2011, the licensee updated this issue in Notification 50409975 and took corrective actions to implement the prescribed Equipment Control Guideline 18.7 compensatory actions for the inoperable fire doors.

Analysis. The failure of Pacific Gas and Electric to maintain Fire Doors 175 and 182-2 in the rated configuration as described in the FSARU, "Fire Hazard Analysis," was a performance deficiency. This finding was more than minor because the degraded fire barriers 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 doors were a fire confinement category finding and that the fire barriers were highly degraded because the doors were blocked open. The inspectors concluded that the finding was of very low safety significance (Green) because the finding only affected the ability to reach and maintain cold shutdown conditions. This finding had 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 problems associated with modification of the safety injection room doors such that the resolutions addressed causes and the extent of conditions, as necessary [P.1(c)].

Enforcement. Diablo Canyon Facility Operating License DPR-80/DPR-82, License Condition (5), “Fire Protection,” required Pacific Gas and Electric to implement and maintain all provisions of the approved fire protection plan as described by the FSARU. FSARU, Appendix 9.5A, “Fire Hazards Analysis,” and Equipment Control Guideline 18.7, required that the licensee maintain fire doors 175 and 182-2 as operable fire area barriers or to implement prescribed compensatory actions. Contrary to the above, between December 28, 2010, and June 28, 2011, Pacific Gas and Electric failed to maintain Fire Doors 175 and 182-2 as an operable fire barrier or implement the prescribed compensatory actions. Because this finding was of very low safety significance and was entered into the corrective action program as Notification 50409975, this violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000275; 05000323/2011003-01, “Inadequate Fire Hazard Evaluations.”

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the FSARU, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- April 21 and 22, 2011, Units 1 and 2, Auxiliary saltwater pump vaults
- April 25, 2011, Units 1 and 2, 12 kilo-volt and 4 kilo-volt underground vault electrical distribution
- April 26, 2011, Units 1 and 2, Component cooling water rooms

These activities constitute completion of three flood protection measures inspection samples as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

1R08 In-service Inspection Activities (71111.08)

.1 Inspection Activities Other Than Steam Generator Tube Inspection, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, and Boric Acid Corrosion Control (71111.08-02.01)

a. Inspection Scope

The inspectors observed 11 nondestructive examination activities and reviewed 2 nondestructive examination activities that included 3 types of examinations. The licensee did not identify any relevant indications accepted for continued service during the nondestructive examinations.

The inspectors directly observed the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Feedwater	2-S6-3678/B	Dye Penetrant
Pressurizer Spray	WIB-332	Ultrasonic
Pressurizer Spray	WIB-335	Ultrasonic
Pressurizer Spray	WIB-336	Ultrasonic
Steam Generator 2-1 Shell	FW-33.01.01	Ultrasonic
Steam Generator 2-1 Shell	FW-11.07.01	Ultrasonic
Pressurizer Spray	WIB-790	Dye Penetrant
Reactor Coolant Pump Support Lug	RCP 2-1	Dye Penetrant
Surge Line	WIB-434	Ultrasonic
Surge Line	WIB-436	Ultrasonic
Chemical and Volume Control	CVCS-2-69	Dye Penetrant

The inspectors reviewed records for the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Coolant	MRP139 Reactor Hot Leg Exams	Ultrasonic/Eddy Current
Reactor Coolant	MRP139 Reactor Cold Leg Exams	Ultrasonic/Eddy Current

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with the ASME Code requirements and applicable procedures. The inspectors also verified the qualifications of all nondestructive examination technicians performing the inspections were current.

The inspectors observed one weld and reviewed one weld.

The inspectors directly observed a portion of the following welding activities:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELD TYPE</u>
Chemical and Volume Control	CVCS-2-69	Gas Tungsten Arc Welding

The inspectors reviewed records for the following welding activities:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELD TYPE</u>
Chemical and Volume Control	CVCS-2-69	Gas Tungsten Arc Welding
Main Steam	MS-5409	Gas Tungsten Arc Welding
Chemical and Volume Control	CVCS-8385B	Gas Tungsten Arc Welding

The inspectors verified, by review, that the welding procedure specifications and the welders had been properly qualified in accordance with ASME Code, Section IX, requirements. The inspectors also verified, through observation and record review, that essential variables for the welding process were identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements for Section 02.01.

b. Findings

No findings were identified.

.2 Vessel Upper Head Penetration Inspection Activities (71111.08-02.02)

a. Inspection Scope

The inspectors reviewed the results of licensee personnel's visual inspection of pressure-retaining components above the reactor pressure vessel head to verify that there was no evidence of leaks or boron deposits on the surface of the reactor pressure vessel head or related insulation. The inspectors verified that the personnel performing the visual inspection were certified as Level II and Level III VT-2 examiners. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements for Section 02.02.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control Inspection Activities (71111.08-02.03)

a. Inspection Scope

The inspectors evaluated the implementation of the licensee's boric acid corrosion control program for monitoring degradation of those systems that could be adversely affected by boric acid corrosion. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control walkdown as specified in Procedure STP R-8C, "Containment Walkdown for Evidence of Boric Acid Leakage," Revision 9. The inspectors also reviewed the visual records of the components and equipment. The inspectors verified that the visual inspections emphasized locations where boric acid leaks could cause degradation of safety-significant components. The inspectors also verified that the engineering evaluations for those components where boric acid was identified gave assurance that the ASME Code wall thickness limits were properly maintained. The inspectors confirmed that the corrective actions performed for evidence of boric acid leaks were consistent with requirements of the ASME Code. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements for Section 02.03.

b. Findings

No findings were identified.

.4 Steam Generator Tube Inspection Activities (71111.08-02.04)

a. Inspection Scope

The licensee did not perform steam generator inspection activities this refueling outage.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems (71111.08-02.05)

a. Inspection scope

The inspectors reviewed 26 condition reports which dealt with inservice inspection activities and found the corrective actions for inservice inspection issues were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering inservice inspection issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry inservice inspection

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

These actions constitute completion of the requirements of Section 02.05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Quarterly Review

a. Inspection Scope

On June 23, 2011, 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 were identified.

.2 Biennial Requalification Inspection

The licensed operator requalification program involves a training cycle that is conducted over a 2-year period. In the first part of the cycle, the annual cycle, the operators are administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators are administered an operating test and a comprehensive written examination.

a. Inspection Scope

To assess the performance effectiveness of the licensed operator requalification program, the inspectors conducted personnel interviews, reviewed both the operating tests and written examinations, and observed ongoing operating test activities.

The inspectors interviewed six licensee personnel, consisting of four operators and two instructors, to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written examinations and operating tests. These reviews included observations of portions of the operating tests by the inspectors. The operating tests observed included a sample of job performance measures and simulator scenarios that were used in the current biennial requalification cycle. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content. The inspectors also reviewed medical records of licensed operators for conformance to license conditions and the licensee's system for tracking qualifications and records for license maintenance and reactivation.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analyses into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. Examination results were also assessed to determine if they were consistent with the guidance contained in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors", Revision 9, Supplement 1, and NRC Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

In addition to the above, the inspectors reviewed examination security measures, simulator fidelity and existing logs of simulator deficiencies.

The inspectors completed one inspection sample of the biennial licensed operator requalification program.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- Reactor Coolant System Leak Detection, Notification 50387698
- Plant Vent Radiation Monitoring, Notification 50373538

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 two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed licensee personnel's 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:

- Removal of preferred offsite power, Units 1 and 2, Risk Assessment 11-12, Revision 0, May 12, 2011
- Centrifugal Charging Pump 2-1 removed from service during auxiliary feedwater flow testing, Unit 2, Notification 50384293, Task 13, June 7, 2011
- Special risk assessment after the licensee determined that the diesel generators were not tested within the Technical Specification parameters, PRA Risk Assessment 11-09, Revision 0, April 7, 2011

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 three maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- Notification 50400100, Units 1 and 2, Gas intrusion in the Containment Spray System, May 14, 2011
- Notification 50401415, Residual Heat Removal Pump 21 unexpected change in performance, May 18, 2011

- Notification 5040966, Units 1 and 2, Reactor and steam generators design calculations demonstrating compliance with ASME Code Section III stress limits omitted accident loading, May 30, 2011
- Notification 50406732, Unit 2, Containment Fan Cooler 2-5 degraded annular ring expansion boot, June 6, 2011
- Notification 50406827, Units 1 and 2, Potential for pressurizer overfill following a feed line break, June 6, 2011

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 FSARU to the licensee personnel'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 five operability evaluations inspection samples as defined in Inspection Procedure 71111.15-04

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Modifications

a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed:

- Temporary Modification Order 60031469, Modifications Safety Injection Pump Rooms, Units 1 and 2

The inspectors reviewed the temporary modification and the associated safety-evaluation screening against the system design bases documentation, including the FSARU and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the modification documents and that

configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

.2 Permanent Modifications

The inspectors reviewed key parameters associated with energy needs, materials, replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flow paths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the permanent modification identified as below:

- Modification DCP 1000000486, Replacement of Unit 2 Centrifugal Charging Pump 2-2 Pump Casing
- Order 68004507, 230 kV Reliability Improvement Project, Unit 2

The inspectors verified that 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; post modification testing will maintain the plant in a safe configuration during testing by verifying that unintended system interactions will not occur; systems, structures and components' performance characteristics still meet the design basis; the modification design assumptions were appropriate; the modification test acceptance criteria will be met; and licensee personnel identified and implemented appropriate corrective actions associated with permanent plant modifications. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two samples for permanent plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

1. Unplanned Loss of Preferred Offsite Power Due to Less Than Adequate Work Planning

Introduction. The inspectors reviewed a Green self-revealing finding following the unplanned loss of 230 kV preferred offsite power to Unit 1 due to inadequate work planning.

Description. On May 17, 2011, Unit 1 lost preferred offsite power after a technician began cutting a hole in a startup bus control panel using a reciprocating saw. The reciprocating saw induced vibration on the control panel

and caused the phase differential protection relay to actuate. The differential relay separated the startup bus from preferred offsite power. All three Unit 1 emergency diesel generators automatically started after offsite power was lost to the plant vital switchgear. The technician performed the cutting operation as part of the 230 kV Reliability Improvement modification. Procedure AD7.DC8, "Work Control," Appendix 1, stated that when performing nonroutine work, including modifications on electrical or instrument equipment, the equipment shall be isolated to prevent any unintended equipment actuations. The licensee had authorized the cutting work while the Unit 1 startup bus in service. The project manager requested an engineering evaluation to assess the effect of induced vibration from the reciprocating saw on the energized control circuits prior to beginning the cutting activity; however, the licensee allowed the work to begin prior to the completion of the evaluation.

Analysis. The inspectors determined that the failure to adequately evaluate the effect of the cutting activity on energized plant equipment was a performance deficiency. This performance deficiency was more than minor because the finding was associated with the Mitigating Systems Cornerstone human performance attribute and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors used the Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," to analyze the finding because the loss of the preferred source of offsite power was a failure of the safety function. The senior reactor analyst utilized Table 3.7 from the plant specific risk-informed notebook and determined that the risk based on Phase 2 estimation was Green. Additionally, the analyst performed a bounding analysis that corroborated the Phase 2 result.

The inspectors determined that a complete loss of preferred power had occurred a total of three times during the refueling outage for a total exposure of 2.9 hours. Using the Standardized Plant Analysis Risk Model for Diablo Canyon 1 and 2, the analyst quantified the conditional core damage probability for any initiator resulting in a consequential Loss of Offsite Power (LOOP) as 1.2×10^{-4} . Given these conditions, the analyst noted that the change in core damage frequency could be approximated as the product of these two values (3.9×10^{-8}). This indicated that the subject finding was of very low risk significance (Green). This finding has a crosscutting aspect in the area of human performance, associated with the work control component, in that Pacific Gas and Electric failed to appropriately plan work activities by incorporating risk insights; job site conditions; and plant structures, systems, and components [H.3(a)].

Enforcement. This finding did not involve enforcement action because no regulatory requirement violation was identified. Since the finding does not involve a violation, is of very low safety significance, and has been entered into the corrective action program as Notification 50402706, this issue is identified as FIN 05000275/2011003-02; "Unplanned Loss of Preferred Offsite Power Due to Less than Adequate Work Planning".

2. Unplanned Loss of Preferred Offsite Power Due to Failure to Follow Work Instructions

Introduction. The inspectors reviewed a Green self-revealing finding following two unplanned losses of 230 kV preferred offsite power to Unit 1 due to personnel errors.

Description. On May 26, 2011, Unit 1 lost preferred offsite power after a technician incorrectly installed test equipment on the Unit 2 startup bus control circuit as part of the 230 kV Reliability Improvement post-modification test. The Unit 1 phase differential protection relay actuated and separated the startup bus from preferred offsite power after the technician energized the test circuit. All three emergency diesel generators automatically started after offsite power was lost to the plant vital switchgear. Following the event, the licensee determined that the technician had installed the test equipment on the incorrect wiring termination. The technician used Work Order 60002297 and Electrical Maintenance Procedure MP E-60.5, "Generic Current Circuit Loop Functional Test Instructions" to perform the test. Procedure MP E-60.5 required the technician to thoroughly research the schematics and connection diagrams prior to beginning the test activity. The inspectors concluded that failure to effectively use human error prevention techniques was the most important contributor to the event.

On May 27, 2011, Unit 1 again lost preferred offsite power after a technician incorrectly installed test equipment on a Unit 1 wiring termination instead of on the Unit 2 component as specified in the post modification test. The Unit 1 phase differential protection relay actuated and separated the startup bus from preferred offsite power. All three emergency diesel generators also automatically started after offsite power was lost to the plant vital switchgear. The inspectors concluded that failure to effectively use human error prevention techniques was the most important contributor to the event.

Analysis. The inspectors concluded that the failure of the plant technicians to follow post-modification testing work instructions was a performance deficiency. This performance deficiency was more than minor because the finding was associated with the Mitigating Systems Cornerstone human performance attribute and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors used the Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," to analyze the finding because the loss of the preferred offsite power system was a failure of the safety function. The senior reactor analyst utilized Table 3.7 from the plant specific risk-informed notebook and determined that the risk based on Phase 2 estimation was Green. Additionally, the analyst performed a bounding analysis that corroborated the Phase 2 result.

The inspectors determined that a complete loss of preferred power had occurred a total of three times during the refueling outage for a total exposure of 2.9 hours. Using the Standardized Plant Analysis Risk Model for Diablo Canyon 1 and 2, the analyst quantified the conditional core damage probability for any initiator

resulting in a consequential LOOP as 1.2×10^{-4} . Given these conditions, the analyst noted that the change in core damage frequency could be approximated as the product of these two values (3.9×10^{-8}). This indicated that the subject finding was of very low risk significance (Green). This finding had a crosscutting aspect in the area of Human Performance associated with the work practices component because the licensee failed to effectively communicate human error prevention techniques, and consequently, these techniques were not used commensurate with the risk of the assigned task [H.4(a)].

Enforcement. This finding did not involve enforcement action because no regulatory requirement violation was identified. Since the finding does not involve a violation, is of very low safety significance, and has been entered into the corrective action program as Notifications 50405004 and 50405010, this issue is identified as FIN 05000275/2011003-03; "Unplanned Loss of Preferred Offsite Power Due to the Failure to Follow Work Instructions."

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:

- Unit 1, Corrective and preventive maintenance of steam generator pressure control valve PCV-19, April 5, 2011
- Unit 1, Corrective maintenance of steam generator atmospheric dump valve PCV-19, April 8, 2011
- Unit 2, Preventive maintenance of auxiliary saltwater pump 2-1, April 13, 2011
- Unit 2, Preventive maintenance of safety injection pump 2-1, April 14, 2011
- Unit 1, Corrective and preventive maintenance of vital battery charger 1-2, May 5, 2011
- Unit 2, Corrective maintenance of component cooling water heat exchanger saltwater inlet valve FCV-602, May 13, 2011
- Unit 2, Residual heat removal pump 2-1, pre-service test, May 17, 2011
- Unit 2, Centrifugal Charging Pump 2-2 pump casing replacement, May 20, 2011

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:

- 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, the FSARU, 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 postmaintenance 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 eight postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings 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 Unit 2 refueling outage, conducted on May 1, 2011, 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. During the refueling outage, 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
- 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
- Refueling activities
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing.
- 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 one refueling outage and other outage inspection sample as defined in Inspection Procedure 71111.20-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the FSARU, procedure requirements, and technical specifications to ensure that the 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.

- April 15, 2011, Unit 1, Routine flow test of auxiliary salt water pump 1-2 and component cooling water heat exchanger 1-2
- April 16, 2011, Unit 2, Inservice test of component cooling water pump 2-1
- May 5, 2011, Unit 2, Containment isolation valve local leak rate test, penetrations 68 and 69
- May 5, 2011, Unit 2, Containment isolation valve local leak rate test, penetration 82A
- May 13, 2011, Unit 2, Routine test of component cooling water heat exchanger backup air accumulator test
- May 28, 2011, Unit 2, Routine test of essential power automatic transfer to emergency onsite power
- May 29, 2011, Unit 2, Integrated test of plant safeguards and emergency power

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

These activities constitute completion of seven surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings were identified.

.2 Surveillance Testing associated with Temporary Instruction (TI) 2515/177, "Managing gas accumulation in emergency core cooling, decay heat removal, and containment spray systems"

c. Inspection Scope

When reviewing STP M-89, "ECCS Venting," and PEP M-248, "Ultrasonic Testing of Emergency Core Cooling System Piping," the inspectors verified that the procedures were acceptable for test residual heat removal system during power operation, maintenance, and void determination.

The inspectors reviewed procedures used for conducting surveillances and determination of void volumes to ensure that the void criteria was satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance (TI 2515/177, Section 04.03.a). Also, the inspectors reviewed procedures used for filling and venting following conditions which may have introduced voids into the subject systems to verify that the procedures acceptably addressed testing for such voids and provided acceptable processes for their reduction or elimination (TI 2515/177, Section 04.03.b). Specifically, the inspectors verified that:

- Gas intrusion prevention, refill, venting, monitoring, trending, evaluation, and void correction activities were acceptably controlled by approved operating procedures (TI 2515/177, Section 04.03.c.1)
- Procedures ensured the system did not contain voids that may jeopardize operability (TI 2515/177, Section 04.03.c.2)
- Procedures established that void criteria were satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance (TI 2515/177, Section 04.03.c.3)
- The licensee entered changes into the corrective action program as needed to ensure acceptable response to issues. In addition, the inspectors confirmed that a clear schedule for completion was included for the corrective action program (TI 2515/177, Section 04.03.c.5)
- Procedures included independent verification that critical steps were completed (TI 2515/177, Section 04.03.c.6)

The inspectors verified the following with respect to surveillance and void detection:

- Specified surveillance frequencies were consistent with Technical Specifications SR requirements (TI 2515/177, Section 04.03.d.1)
- Surveillance frequencies were stated or, when conducted more often than required by Technical Specifications, the process for their determination was described (TI 2515/177, Section 04.03.d.2)
- Surveillance methods were acceptably established to achieve the needed accuracy (TI 2515/177, Section 04.03.d.3)

- Surveillance procedures included up-to-date acceptance criteria (TI 2515/177, Section 04.03.d.4)
- Procedures included effective follow-up actions when acceptance criteria are exceeded or when trending indicates that criteria may be approached before the next scheduled surveillance (TI 2515/177, Section 04.03.d.5)
- Measured void volume uncertainty was considered when comparing test data to acceptance criteria (TI 2515/177, Section 04.03.d.6)
- Venting procedures and practices utilized criteria such as adequate venting durations and observing a steady stream of water (TI 2515/177, Section 04.03.d.7)
- An effective sequencing of void removal steps was followed to ensure that gas does not move into previously filled system volumes (TI 2515/177, Section 04.03.d.8)
- Qualitative void assessment methods included expectations that the void will be significantly less than allowed by acceptance criteria (TI 2515/177, Section 04.03.d.9)
- Venting results were trended periodically to confirm that the systems are sufficiently full of water and that the venting frequencies are adequate. The inspectors also verified that records on the quantity of gas at each location are maintained and trended as a means of preemptively identifying degrading gas accumulations (TI 2515/177, Section 04.03.d.10)
- Surveillances were conducted at any location where a void may form, including high points, dead legs, and locations under closed valves in vertical pipes (TI 2515/177, Section 04.03.d.11)
- The licensee ensure that systems were not pre-conditioned by other procedures that may cause a system to be filled, such as by testing, prior to the void surveillance (TI 2515/177, Section 04.03.d.12)
- Procedures included gas sampling for unexpected void increases if the source of the void is unknown and sampling is needed to assist in determining the source (TI 2515/177, Section 04.03.d.13)

The inspectors verified the following with respect to filling and venting:

- Revisions to fill and vent procedures to address new vents or different venting sequences were acceptably accomplished (TI 2515/177, Section 04.03.e.1)
- Fill and vent procedures provided instructions to modify restoration guidance to address changes in maintenance work scope or to reflect different boundaries from those assumed in the procedure (TI 2515/177, Section 04.03.e.2)

- Fill and vent procedures provided instructions to modify restoration guidance to address changes in maintenance work scope or to reflect different boundaries from those assumed in the procedure (TI 2515/177, Section 04.03.e.2)

The inspectors verified the following with respect to void control:

- Void removal methods were acceptably addressed by approved procedures (TI 2515/177, Section 04.03.f.1)
- The licensee had reasonably ensured that the Unit 2 residual heat removal pumps was free of damage following a gas-related event in which pump acceptance criteria was exceeded (TI 2515/177, Section 04.03.f.2)

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

This inspection effort counts towards the completion of TI 2515/177 which will be closed on a later Inspection Report.

These activities constitute completion of two surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

d. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

This area was inspected to (1) review and assess licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities and the implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures, (2) verify the licensee is properly identifying and reporting Occupational Radiation Safety Cornerstone performance indicators, and (3) identify those performance deficiencies that were reportable as a performance indicator and which may have represented a substantial potential for overexposure of the worker.

The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed walkdowns of various portions of the plant, performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation reported by the licensee in the Occupational Radiation Safety Cornerstone

- The hazard assessment program, including a review of the licensee's evaluations of changes in plant operations and radiological surveys to detect dose rates, airborne radioactivity, and surface contamination levels
- Instructions and notices to workers, including labeling or marking containers of radioactive material, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions
- Programs and processes for control of sealed sources and release of potentially contaminated material from the radiologically controlled area, including survey performance, instrument sensitivity, release criteria, procedural guidance, and sealed source accountability
- Radiological hazards control and work coverage, including the adequacy of surveys, radiation protection job coverage, and contamination controls; the use of electronic dosimeters in high noise areas; dosimetry placement; airborne radioactivity monitoring; controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools; and posting and physical controls for high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements
- Audits, self-assessments, and corrective action documents related to radiological hazard assessment and exposure controls since the last inspection

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

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.01-05.

b. Findings

Failure to Follow Procedures for Testing HEPA Ventilation Units

Introduction. The inspectors identified a Green noncited violation of Technical Specification 5.4.1(a) for failure to follow procedures for testing and using high-efficiency particulate air ventilation units used to prevent personnel contamination.

Description. During tours of the licensee's Unit 2 containment and auxiliary buildings on May 12, 2011, inspectors examined high-efficiency particulate air ventilation units installed for use during the Unit 2 outage. The inspectors observed a work activity that required the use of ALARA engineering controls to prevent the spread of contamination. Radiation Work Permit 11-2073 allowed work to be performed on residual heat removal valve 2-8730A. This valve was contaminated with radioactivity levels as high as 100,000 disintegrations per minute per 100 centimeters squared with 30 millirad beta radioactivity measured internally. As instructed by Radiation Work Permit 11-2073, ALARA engineering controls were put in place to prevent the spread of contamination. Specifically, the licensee installed a glove box around the valve body with a high-efficiency particulate air ventilation unit and hose connection to remove potential

contamination away from workers. Inspectors examined the valve bonnet and observed the transfer of the valve disk to the enclosed decontamination facility, which also had a high-efficiency particulate air ventilation unit installed to exhaust potential airborne radioactivity. The inspectors also examined this high-efficiency particulate air ventilation unit. Both high-efficiency particulate air ventilation units were Model SP 500 Series. The inspectors noted that the high-efficiency particulate air ventilation units did not have any indication that they were functionally tested before being placed into service. The inspectors interviewed licensee personnel to seek an understanding of the requirements and expectations that were in place to ascertain the operability and functionality of high-efficiency particulate air ventilation units. The licensee provided the following two procedures for the inspectors to review:

- RCP D-440, Criteria for Use and Operation of HEPA Equipped Ventilation, Revision 2
- RCP D-781, Use of Reactor Plant Services Model SP 500/700 Series cfm HEPA Units, Revision 2

According to these procedures, the Radiation Protection Department was responsible for assuring the appropriate use and operation of high-efficiency particulate air ventilation units was in accordance with technical guidance and procedures. Procedure RCP D-781, Section 4.7, required high efficiency particulate air units to be tested prior to use, within the current 12-month period, or after filter media change-out, and that the tested high-efficiency particulate air units be marked for ease of identification. In addition, procedure RCP D-440 required an extensive inspection of all high-efficiency particulate air unit components prior to use and during operations. The inspectors asked to review documentation of high-efficiency particulate air unit efficiency testing. The licensee stated that the high-efficiency particulate air units had not been tested as required by the procedure in at least three years and that high-efficiency particulate air unit efficiency testing was unnecessary because they routinely changed out the filter media. At the time of this inspection, the Radiation Protection Department had five high-efficiency particulate air ventilation units installed for use during the Unit 2 outage.

Analysis. The performance deficiency identified with this finding was a failure to follow written procedures for testing and using high-efficiency particulate air ventilation units. The finding was more than minor because it was associated with the program and process attribute of the occupational radiation safety cornerstone. The finding affected the objective to ensure the adequate protection of the worker's health and safety from exposure to unintended radiation from radioactive material during routine civilian nuclear reactor operation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined the finding to have very low safety significance because: (1) it was not associated with ALARA planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This finding was determined to have a crosscutting aspect in the area of human performance, associated with work practices, because the licensee did not effectively communicate expectations regarding procedural compliance and that personnel follow procedures [H.4(b)].

Enforcement. Technical Specification 5.4.1(a) requires, in part, that written procedures in Appendix A of Regulatory Guide 1.33, "Quality Assurance Requirements," be

established, implemented, and maintained. Section 7(e) of Regulatory Guide 1.33 requires general procedures for controlling radioactivity, contamination and radiation exposure. Procedure RCP D-781, Revision 2, "Use of Reactor Plant Services Model SP 500/700 Series cfm HEPA Units," Section 4.7, requires high-efficiency particulate air units to be tested prior to use, within the current 12-month period, or after filter media change-out. The procedure further stated that tested and accepted high-efficiency particulate air units shall be marked for ease of identification. Contrary to the above, on May 12, 2011, the inspectors identified that Model SP-500 high-efficiency particulate air ventilation units that were installed for the Unit 2 refueling outage had not been tested prior to use or after filter media change-out, in at least three years, and no acceptance test mark was used on the high-efficiency particulate air units. Licensee immediate actions included removing five high-efficiency particulate air ventilation units from service that were installed during the Unit 2 outage. This violation was of very low safety significance and was placed in the licensee's corrective action program as Notifications 50399479, 50399560, and 50399682. This violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000323/2011003-04, "Failure to Follow Procedures for Testing HEPA Ventilation Units."

2RS02 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

This area was inspected to assess performance with respect to maintaining occupational individual and collective radiation exposures ALARA. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel and reviewed the following items:

- Site-specific ALARA procedures and collective exposure history, including the current 3-year rolling average, site-specific trends in collective exposures, and source-term measurements
- ALARA work activity evaluations/postjob reviews, exposure estimates, and exposure mitigation requirements
- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and manhour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

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

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.02-05.

b. Findings

No findings were identified.

2RS03 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

This area was inspected to verify that in-plant airborne concentrations are being controlled consistent with ALARA principles and that the use of respiratory protection devices onsite does not pose an undue risk to the wearer. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items:

- The licensee's use, when applicable, of ventilation systems as part of its engineering controls
- The licensee's respiratory protection program for use, storage, maintenance, and quality assurance of NIOSH certified equipment, qualification and training of personnel, and user performance
- The licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions, status of SCBA staged and ready for use in the plant and associated surveillance records, and personnel qualification and training
- Audits, self-assessments, and corrective action documents related to in-plant airborne radioactivity control and mitigation since the last inspection

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

These activities constitute completion of the one sample as defined in Inspection Procedure 71124.03-05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

40A1 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 first Quarter 2011 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 were identified.

.2 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the third quarter 2010 through first quarter of 2011. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed corrective action program records associated with high radiation area (greater than 1 rem/hr) and very high radiation area non-conformances. The inspectors reviewed radiological, controlled area exit transactions greater than 100 mrem. The inspectors also conducted walkdowns of high radiation areas (greater than 1 rem/hr) and very high radiation area entrances to determine the adequacy of the controls of these areas.

These activities constitute completion of the occupational exposure control effectiveness sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the third quarter 2010 through first quarter of 2011. The objective of the inspection was to determine the accuracy and

completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed the licensee's corrective action program records and selected individual annual or special reports to identify potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose.

These activities constitute completion of the radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Safety System Functional Failures (MS05)

a. Inspection Scope

The inspectors sampled licensee submittals for the safety system functional failures performance indicator for Units 1 and 2 for the period from the first quarter 2010 through the first quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73." The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports, and NRC integrated inspection reports for the period of January 2010 through March 2011, to validate the accuracy of the submittals. 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 safety system functional failures samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Mitigating Systems Performance Index - Emergency ac Power System (MS06)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - emergency ac power system performance indicator for Units 1 and 2 for the period from the first quarter 2010 through the first quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory

Assessment Performance Indicator Guideline,” Revision 6. The inspectors reviewed the licensee’s operator narrative logs, mitigating systems performance index derivation reports, issue reports, event reports, and NRC integrated inspection reports for the period of January 2010 through March 2011, 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 emergency ac power system samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.6 Mitigating Systems Performance Index - High Pressure Injection Systems (MS07)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - high pressure injection systems performance indicator for Units 1 and 2 for the period from the first quarter 2010 through the first quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6. 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 January 2010 through March 2011, 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 high pressure injection system samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings 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 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 were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of January 2011 through June 2011 although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

These activities constitute completion of a single semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings and Observations

Adverse Trend in Problem Evaluation

The inspectors identified that the adverse trend associated with the thoroughness of Pacific Gas and Electric's problem evaluation continued through June 2011. The inspectors first documented the adverse trend in September 2008 (described in Section 4OA2 of Inspection Report 05000275; 05000323/2008005). The NRC subsequently identified a substantive crosscutting issue associated with this theme in the 2009 annual assessment. This theme continued with four findings during the last two quarters in 2010 (described in Section 4OA2 of Inspection Report 05000275; 323/2010005) and three additional findings during the first two quarters of 2011.

In May 2010, Pacific Gas and Electric concluded that the leadership team had not provided adequate standards, effectively demonstrated or reinforced behaviors, or established sustainable programs in the area of evaluation as the root cause of the adverse trend (Notification 60024480, Adverse Trend in Thoroughness of Problem Evaluation). The licensee subsequently implemented the following corrective actions:

- Provided expectations to the senior leadership team on coaching standards and responsibility for implementing an effective evaluation program (completed July 1, 2010)
- Established generic governance for evaluation programs (completed June 8, 2010)

- Trained program sponsors and program owners on the structure of an effective program governance (completed April 4, 2011)
- Program implementation to ensure evaluation programs incorporate the essential elements for their sustainability (completed January 19, 2011)

In December 2010, the inspectors completed an independent assessment of the trend and agreed with the licensee's root cause. The inspectors also identified that a thread of less than adequate implementation and application of current licensing and design bases requirements by plant engineering and operations personnel was common to many of the trend examples (discussed as "Inspectors Assessment of Licensee's Actions," Section 4OA2 of NRC Integrated Inspection Report 05000275/2010005 and 05000323/2010005). While the licensee implemented extensive corrective actions to the address this theme, the inspectors concluded that this underlying thread continued through current examples of poor problem evaluation. The inspectors determined that the licensee's corrective actions to ensure that the senior leadership team communicated expectations and established accountability for effective evaluations involving implementation of the current design and licensing basis have not been fully effective. Recent examples include:

- Four examples of less than adequate engineering evaluations performed between December 2010 and June 2011 to support modifications of two fire rated assemblies (discussed as NCV 05000275;05000323/201103-01, "Inadequate Fire Hazards Evaluations," in Section 1R05 of this report). The inspectors concluded that poor use of design and licensing basis information by plant engineers was common to all four examples.
- Two examples of less than adequate licensing basis reviews associated with security upgrades. One review was performed by the Operations Procedure Group and the other by Plant Engineering (discussed as NCV 05000275; 323/201103-07 "Less than Adequate Evaluation of New Security Modifications," in Section 4OA2 of this report). The inspectors concluded that plant operators and engineers did not properly evaluate the proposed modifications against the plant design and licensing basis as described in the FSARU.
- One example of a less than adequate engineering evaluation of the capacity and capability of the 230 kV preferred offsite power system. The inspectors concluded that the plant engineers and operators did not adequately use design and licensing basis information when performing the evaluation (discussed as NCV 05000275/2011002-01; 05000323/2011002-01, "Inadequate Design Control for the Preferred Offsite Power System").

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

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

- Emergency diesel generator design and licensing basis issues, Notifications 50307598, 50307598, 50378557, and 503688801

- Notification 50399554, Inadequate Review of Severe Accident Management Guidelines

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

b. Findings

Inadequate Review of Severe Accident Management Guidelines

Introduction. The inspectors identified a Green finding after Pacific Gas and Electric failed to periodically review and update the severe accident management guidelines.

Description. The inspectors identified that Pacific Gas and Electric had failed to implement the requirements of Procedure OM10.ID5, "Severe Accident Management," to periodically review and update the severe accident management guidelines. This biennial review was to ensure that any changes in plant design or procedures, experience in severe accident management requalification training, and any changes in industry understanding of severe accidents, was incorporated in the severe accident management guidelines. As a result of the licensee's failure to implement the periodic review, the severe accident management guidelines did not incorporate the latest owners' group guidance, or recent plant design and hardware changes.

Analysis. Pacific Gas and Electric's failure to follow procedural requirements for periodic review of the severe accident management guidelines was a performance deficiency. The finding was more than minor because if left uncorrected the failure to review and update the severe accident management guidelines has the potential to lead to a more significant safety concern. The finding affected the barrier integrity cornerstone because the severe accident management guidelines are procedures that would be used to maintain the functionality of containment should a severe accident occur. The inspectors used the Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," to analyze this finding. The inspectors concluded that the finding was of very low safety significance because it did not represent a degradation of the radiological, smoke, or toxic atmosphere barrier function; or represent an actual open pathway in the physical integrity of reactor containment; or involve the function of the containment hydrogen igniters. This finding did not have any crosscutting aspects because the performance deficiency occurred more than three years ago and is not indicative of current licensee performance in that the licensee has improved the design review process since the performance deficiency occurred.

Enforcement. This finding does not involve enforcement action because no regulatory requirement violation was identified. The licensee documented the finding in the corrective action program as Notification 50399554. The issue is being characterized as FIN 05000275; 05000323/2011003-05, "Inadequate Review of Severe Accident Management Guidelines."

2. Discussion Item: Requirement to Perform an Operability Evaluation Following Receipt of New Seismic Information (Unresolved Item 05000275; 05000323/2011002-03)

Introduction. The inspectors identified an unresolved item during the first quarter 2011 after Pacific Gas and Electric failed to perform an operability evaluation following completion of new seismic studies in January 2011 (Unresolved Item 05000275; 05000323/2011002-03). On June 24, 2011, the licensee concluded that all plant structures, systems, and components were operable with the higher ground motions associated with the new seismic information. However, the licensee did not fully consider all of the current design and licensing basis requirements during the evaluation.

Description. On June 24, 2011, the licensee completed an operability evaluation of new seismic information received on January 7, 2011 (Notification 50410266). The new information concluded that an earthquake on the Shoreline, Los Osos, or San Luis Bay Faults could produce greater site vibratory ground motion than the safe shutdown earthquake as described in the FSARU. The licensee concluded that all plant structures, systems, and components would be capable of performing the design basis functions following exposure to the higher ground motions. The licensee's conclusion was based on a comparison of the ground motions to the Hosgri Event qualification basis.

The inspectors identified that the licensee did not evaluate the impact of the higher ground motions on plant structures, systems, and components using the Design and Double Design Earthquake analysis methods as described in the FSARU. The new predicted ground motions were greater than described for the Design and Double Design Earthquake safety analyses. The inspectors determined that the seismic qualification of some plant systems, structures and components were more limiting for the Design and Double Design Earthquakes than for the Hosgri Event. This issue continues to be unresolved pending NRC review of the Diablo Canyon current licensing bases requirements for new seismic information, including whether or not the licensee is only required to evaluate new seismic information using the Hosgri Event.

40A5 Other Activities

.1 (Closed) NRC Temporary Instruction 2515/183, "Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event"

a. Inspection Scope

The inspectors assessed the activities and actions taken by the licensee to assess its readiness to respond to an event similar to the Fukushima Daiichi nuclear plant fuel damage event. This included (1) an assessment of the licensee's capability to mitigate conditions that may result from beyond design basis events, with a particular emphasis on strategies related to the spent fuel pool, as required by NRC Security Order

Section B.5.b issued February 25, 2002, as committed to in severe accident management guidelines, and as required by 10 CFR 50.54(hh); (2) an assessment of the licensee's capability to mitigate station blackout (SBO) conditions, as required by 10 CFR 50.63 and station design bases; (3) an assessment of the licensee's capability to mitigate internal and external flooding events, as required by station design bases; and (4) an assessment of the thoroughness of the walkdowns and inspections of important equipment needed to mitigate fire and flood events, which were performed by the licensee to identify any potential loss of function of this equipment during seismic events possible for the site.

b. Findings and Observations

Inspection Report 05000275/2011006 and 05000323/2011006 (ADAMS Accession Number ML11133A310) documented detailed results of this inspection activity. Following issuance of the report, the inspectors conducted detailed follow-up on selected issues. The following findings and observations were identified during this follow-up inspection:

1. Long Term Cooling Water Hoses from Raw Water Reservoir to the Plant

Pacific Gas and Electric did not have procedures in place to route long term cooling hoses from the raw water reservoir to auxiliary feedwater system. The licensee had installed several security barriers along the 1,800 foot path since the system was last assembled in 1990. The licensee completed corrective actions to form a plan for breaching the security barriers and stationing compensatory security personnel. The licensee is currently evaluating a permanent modification for establishing long term cooling without breaching the security barriers (Notifications 50383106 and 50390257).

Less than Adequate Evaluation of New Security Modifications

Introduction. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," after Pacific Gas and Electric failed to adequately evaluate the impact of protected area boundary modifications on the ability to transfer water from the raw water storage reservoirs to the auxiliary feedwater system using temporary hoses.

Description. The inspectors identified that the licensee performed a less than adequate evaluation of the licensing basis impact for recent security modifications. In April 2010, the licensee authorized a series of security modifications (Order 60023989) between the raw water reservoirs and the auxiliary feedwater system connection. These modifications included the installation of physical intrusion barriers, including delay fences and razor wire. On March 8, 2011, the operations procedure group reviewed the modifications and concluded that the upgrades would not have an impact on operations procedures or on the ability to access plant equipment. The inspectors identified that security modifications did impact the ability of plant operators to perform Procedure OP D-1:V, "Auxiliary Feedwater System – Alternate Auxiliary Feedwater Supplies." Procedure OP D-1:V required the placement approximately 1,800 feet of canvas fire hose between the raw water reservoirs and the auxiliary feedwater system connection.

The inspectors identified a second example of a less than adequate evaluation with security Modification DDP 100000389, October 22, 2010. This modification involved relocation of boundary fence and other security enhancements. The licensing basis evaluation did not address raw water makeup to auxiliary feedwater using temporary hoses. FSARU Section 3.7.6, "Seismic Evaluation to Demonstrate Compliance with the Hosgri Earthquake Requirements Utilizing a Dedicated Shutdown Flow Path," stated that the detailed evaluation for the Hosgri earthquake was presented in "Seismic Evaluation for Postulated 7.5M Hosgri Earthquake, DCPD Units 1&2, PG&E." Section 5.1.1, "Single Failure Analysis," stated that water in the raw water storage reservoir would allow the licensee to remain in hot standby conditions for about eight days (single unit) by providing supplemental cooling water to the auxiliary feedwater system using a temporary hose. The report specified that these hoses would be easy to deploy because of the downhill slope and the labor would be minimized. Also, FSARU Section 6.5, "Auxiliary Feedwater System," stated that the two 2.5 million gallon raw water reservoirs were a supplemental source of water available to the auxiliary feedwater system to maintain hot standby conditions or to bring the plant to cold shutdown. The FSARU described the capability of providing this water source to the auxiliary feedwater system using a portable pump and hoses. Procedure TS3.ID2, "Licensing Basis Impact Evaluations," Appendix 7.8, required the engineers to evaluate the effect of the modifications on all systems, structures, and components described in the FSARU, including the raw water makeup to auxiliary feedwater.

The inspectors concluded that the most significant contributor to both examples was poor problem evaluation. The security modifications were part of corrective actions to address deficiencies in the Force on Force exercise (Notification 50295858). In the first example, the plant operations procedure group did a less than adequate evaluation to identify the impact of the security modifications on Procedure OP D-1:V. In the second example, the engineer performed a less than adequate evaluation to identify all the applicable FSARU sections impacted by the modifications. The licensee took corrective action to establish a procedure placing the temporary hoses through the security barriers, and entered this finding into the corrective action program as Notification 50410997.

Analysis. The licensee's failure to adequately evaluate the impact of the security modifications on the ability to provide raw water from the storage reservoirs to the feedwater system was a performance deficiency. This performance deficiency was more than minor because the finding affected the Mitigating Systems Cornerstone design control attribute and objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors used the Inspection Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," to analyze the finding because the performance deficiency involved a design or qualification deficiency. The inspectors concluded that the finding was of very low safety significance (Green) because the finding was confirmed not to result in the loss of operability or functionality. 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 thoroughly evaluate security force problems such that resolutions addressed causes and extent of conditions, as necessary. [P.1(c)]

Enforcement. Title 10 CFR Part 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," required that activities affecting quality be accomplished in accordance with instructions or procedures. Quality Procedure TS3.ID2, Appendix 7.8, required plant engineers to evaluate the impact of new security modifications on all systems, structures, and components described in the FSARU. Contrary to the above, on October 22, 2010, plant engineers failed to evaluate the impact of new security modifications on the ability to transfer raw water to the auxiliary feedwater system as described in FSARU Sections 3.7.6, and 6.5. Because this finding was of very low safety significance and was entered into the corrective action program as Notification 50410997, this violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000275; 323/201103-06 "Less than Adequate Evaluation of New Security Modifications."

2. During the TI-183 inspection, the inspectors were unable to verify that Procedure OP D-1:V, Auxiliary Feedwater System Alternate Auxiliary Feedwater Supplies, Revision 21, was adequate to support mitigation of the postulated earthquake on both units simultaneously. Procedure OP D-1:V used a diesel-driven long term cooling pump to provide inventory from the raw water storage tank to the turbine-driven auxiliary feedwater system. The licensee subsequently provided the inspectors with a copy of Test Procedure 3.10 A1, "Long term Cooling Water Pump Test," performed on May 30, 1990. This test demonstrated the capability of the long term cooling water pump and fire hose to supplement the plant firewater system. Based on the data provided, the inspectors concluded that Procedure OP O-11:V, with the staged equipment, was adequate to meet the minimum flow requirements for both units following a Hosgri event earthquake.
3. During the TI-183 inspection, the inspectors were unable to verify that Procedure EDMG EDG-12, "Start Diesel Generator without DC Power," Revision 0A, was adequate to start the diesel generators following an extended station blackout event. The inspectors identified several factors limiting the effectiveness of the procedure. After additional evaluation, the inspectors concluded that Procedure EDMG EDG-12 was adequate to meet the requirements specified in Section B.5.b of the NRC Security Order to start the diesel generators without battery power available for generator field flash available. However, the procedure was not adequate to start the diesel generator after an extended station blackout due to the loss of makeup to the starting air system. To address this issue, the licensee plans to purchase an engine powered air compressor (Notification 50391963).
4. The licensee had a contractual arrangement with a third party to provide equipment to pump sea water to the component cooling water heat exchanger following a B.5.b event. The inspectors concluded that this contractual arrangement fully met the licensee's commitment to B.5.b. However, during the TI-183 inspection, the inspectors identified that the contractor may not be capable of transporting the required equipment to the site following a Fukushima

Daiichi-type event. The licensee has staged the necessary equipment onsite (Notification 50385040).

5. During the TI-183 inspection, the inspectors were unable to verify the adequacy of Procedure ECA-0.0, Loss of All AC Power, Revision 26. The licensee did not have an updated analysis to predict when core damage would likely occur during and following a station blackout event. This is a concern for a Fukushima Daiichi-type event due to plant access limitations after fuel damage occurs. However, the inspectors concluded that the licensee was in full compliance with the Station Blackout Rule, using the alternate AC power option, and an updated analysis was not required by current regulations. The licensee entered this condition into the corrective action program for additional review (Notifications 50391455 and 0392082).
6. During the TI-183 inspection, the inspectors identified that some procedures developed for alternate spent fuel cooling and steam generator makeup following a B.5.b event would not be applicable for mitigation of a Fukushima Daiichi-type event. Several of these procedures relied on availability of makeup water from the non-seismically qualified sections of the fire water system. These piping sections would not likely survive a large earthquake. The inspectors concluded that these procedures fully met the licensee's commitment to B.5.b.

.2 (Closed) NRC Temporary Instruction 2515/184, "Availability and Readiness Inspection of Severe Accident Management Guidelines (SAMGs)"

The inspectors reviewed the licensee's severe accident management guidelines (SAMGs), implemented as a voluntary industry initiative in the 1990's, to determine (1) whether the SAMGs were available and updated, (2) whether the licensee had procedures and processes in place to control and update its SAMGs, (3) the nature and extent of the licensee's training of personnel on the use of SAMGs, and (4) licensee personnel's familiarity with SAMG implementation.

The results of this review were provided to the NRC task force chartered by the Executive Director for Operations to conduct a near-term evaluation of the need for agency actions following the Fukushima Daiichi fuel damage event in Japan. Plant-specific results for Diablo Canyon Nuclear Power Plant were provided as Enclosure 6 to a memorandum to the Chief, Reactor Inspection Branch, Division of Inspection and Regional Support, dated May 27, 2011 (ADAMS Accession Number ML111470264).

.3 (Open) NRC TI 2515/177, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)

As documented in Sections 1R04 and 1R22, the inspectors confirmed the acceptability of the described licensee's actions. This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later inspection report.

40A6 Meetings

Exit Meeting Summary

On May 12, 2011, the inspectors presented the inspection results of the review of inservice inspection activities to Mr. J. Becker, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. All proprietary information was disposed of upon completion of the inspection.

On May 13, 2011, the inspectors presented the results of the radiation safety inspections 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.

The inspectors briefed Mr. W. Hendy, Operations Training Manager, and other members of the licensee's staff on the results of the licensed operator requalification program inspection on April 7, 2011. The inspectors also discussed the final results of the requalification cycle telephonically on June 27, 2011. The licensee representatives acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On June 28 and August 10, 2011, the inspectors presented the inspection results to Mr. K. Peters, Vice President, Engineering and Projects, 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
K. Peters, Vice President, Engineering and Projects
J. Welsch, Station Director
J. Nimick, Director, Operations Services
S. David, Director, Site Services
D. Burns, Technical Training Manager
T. Baldwin, Manager, Regulatory Services
M. Somerville, Manager, Radiation Protection
P. Gerfen, Manager, Operations
R. Rogers, Supervisor, Radiation Protection
E. Davidson, Foreman, Radiation Protection
M. Harbor, Director, Maintenance
L. Walker, Director, Training
S. Westcott, Director, Engineering

NRC Personnel

D. Loveless, Senior Reactor Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000275; 05000323/2011003-01 05000275/2011003-02	NCV FIN	Inadequate Fire Hazard Evaluations (Section 1R05) Unplanned Loss of Preferred Offsite Power Due to Less than Adequate Work Planning (Section 1R18)
05000275/2011003-03	FIN	Unplanned Loss of Preferred Offsite Power Due to the Failure to Follow Work Instructions (Section 1R18)
05000323/2011003-04	NCV	Failure to Follow Procedures for Testing HEPA Ventilation Units (Section 2RS01)
05000275; 05000323/2011003-05	FIN	Inadequate Review of Severe Accident Management Guidelines (Section 4OA5)
05000275; 05000323/2011003-06	NCV	Less than Adequate Evaluation of New Security Modifications (Section 4OA5)

Discussed

05000275; 05000323/2011002-08	URI	Requirement to Perform an Operability Evaluation Following Receipt of New Seismic Information (Section 4OA2)
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LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignments

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
449289	Containment Spray Suction and Discharge Headers	8
466478	Containment Spray Piping and Mechanical	9
449300	Containment Spray Additive tank System	4
108012	Containment Spray Piping Schematic	20
PEP M-248	Ultrasonic Testing of ECCS Piping	7
STP P-CSP-21	Routine Surveillance Test of Containment Spray Pump 2-1	11
STP P-CSP-A21	Comprehensive testing of Containment Spray Pump 2-1	9
OP I-2: I	Containment Spray System – Make Available	18

Section 1R05: Fire Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
OM8.ID1	Fire Loss Prevention	22
RIS 2005-07	Compensatory measure to Satisfy the Fire Protection Program Requirements	April 19, 2005
IN 97-48	Inadequate or Inappropriate Interim Fire Protection Compensatory Measures	July 9, 1997
OM8.ID2	Fire System Impairment	16
OM8.ID4	Control of Flammable and Combustible Materials	19

Section 1R06: Flood Protection

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
UFSAR §3.4	Water Level (Flood) Design	15
UFSAR §9.2.2	Component Cooling Water	19

DCM S-14	Design Criteria Memorandum - Component Cooling Water System	1
DCM T-12	Design Criteria Memorandum - Pipe Break (HELB/MELB), Flooding, and Missiles	16
DCM S-21	Design Criteria Memorandum - Diesel Engine System	21A
DCP 1000000470	Design Change Package Summary and Evaluation – 230 kV System Dual Unit Trip Licensing Change	0

Section 1R08: Inservice Inspection Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
PDI-ISI-254-SE-NB	Remote Inservice Examination of Reactor Vessel Nozzle to Pipe and Safe End to Pipe Welds Using the Nozzle Scanner	1
WDI-STD-146	ET Examination of Reactor Vessel Pipe Welds Inside Surface	11
NDE-PDI-UT-2	Ultrasonic Examination	0
NDE-PT-1	Liquid Penetrant examination	0
GWS-ASME	Nuclear Welding Control Manual – ASME General Welding Standard	10
WPS 11	ASME/ANSI Welding Procedure Specification	8
STP R-8A	Reactor Coolant System Leakage Test	15
STP R-8C	Containment Walkdown for Evidence of Boric Acid Leakage	9
AD4.ID2	Plant Leakage Evaluation	10
ER1.ID2	Boric Acid Corrosion control Program	5

NONDESTRUCTIVE EXAMINATION REPORTS

WIB-332	WIB-335	WIB-336	SG 2-1 (0)	SG 2-1 (70)
SG 2-1 (45)	SG2-1 (60)	Fw-33.01.01 (0)	Fw-33.01.01 (70)	Fw-33.01.01 (45)
Fw-33.01.01 (60)	QV Report11-012	WIB-436	WIB-437	WIB-434
WIB-790	RCP 2-1 Sup. 1			

WELD MAPS

60024527-0010	60023693-0010	60022599-0010	60029346-0020
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NOTIFICATIONS

50273822	50274424	50038291	50276114	50235039
50366542	50364479	50386477	50384691	50384692
50384736	50384706	50384768	50384761	50384694
50384699	50384648	50384700	50384673	50384647
50384646	50384693	50384684	50384676	50384622
50384618	50384726	50384724	50384649	50384680
50378750	50373539			

MISCELLANEOUS

<u>TITLE</u>	<u>DATE</u>
ISI Program Third Interval QH Self Assessment	August 30, 2010
Diablo Canyon Unit 2 Refueling Outage 2R15, October 2009, Steam Generator Condition Monitoring and Operational Assessment, Mode 4 Report	October 27, 2009
Diablo Canyon Unit 2 Refueling Outage 2R16, May 2011, Steam Generator Degradation Assessment	April 8, 2011

Section 1R11: Licensed Operator Requalification Program

Quarterly Review

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
Lesson R111S2	Diagnostics/Fire in Vital Area	0

Biennial Requalification Inspection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
R09	10 RO Biennial Exam Package	5
R09	10 SRO Biennial Exam Package	5
R09	10 RO Biennial Exam Package	6

R09	10 RO Biennial Exam Package	6
R09	10 RO Biennial Exam Package	7
R09	10 RO Biennial Exam Package	7
R09	10 RO Biennial Exam Package	8
R09	10 RO Biennial Exam Package	8
	Licensed Operator Continuing Training Performance Plan Review, 4 th Quarter 2010	
	Biennial Exam Question Use Matrix	
	2010 1 st Quarter Operator Continuing Training Feedback	
	2009/2010 Licensed Operator Program of Instruction	
	List of Licensed Operators	April 5, 2011
	Lesson Plan R101C1 – H.B. Robinson Fire Event	
	List of Licensed Operator Requalification Exam Grades	
	Active Discrepancy SCR's Sorted by Assignment and Priority	April 7, 2011
	Medical and Training records for 15 licensed operators	
	Operator Curriculum Review Committee Meeting Minutes for last two years	
	Remedial Training Record, dated 4/23/09, for remediation from June 2009 to April 2011	
	Design Change Package 1000000379	

NOTIFICATIONS

50370567 50387494 50298563 50387428 50311720
50371705

Section 1R12: Maintenance Effectiveness

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
MA1.ID17	Maintenance Rule Monitoring Program	23

NOTIFICATIONS

50041037 50770403

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
AD7.DC6	On-Line Risk Management	42

Section 1R15: Operability Evaluations

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OM7.ID12	Operability Determination	17
STP M-9A	Diesel Engine Generator Routine Surveillance Test	86
MP E-21.6	Diesel Generator Electrical Governor and Voltage Regulator Adjustments	15
OP J-6B:VI	Diesel Generators – Manual Operation of DG 2-3	25

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
496278 Sh. 1	Electrical Schematic Diagram 4160V Diesel Generator Control No. 23	6
496279 Sh. 1	Electrical Schematic Diagram 4160V Diesel Generator Control No. 23	8

NOTIFICATIONS

50400945	50388512	50392069
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Section 1R18: Plant Modifications

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
CF3.ID9, A6	Design Change Package Summary and Evaluation	May 30, 2011
CF3.ID9, A 11	Independent Evaluation – Mechanical	May 30, 2011
STP P-CCP-A22	Comprehensive Test for Centrifugal Charging Pump 2-2	9
Order 6811987	CCP2-2 Replace Pump Case	May 23, 2011
PMT 69.03	230 kV SU System Reliability Upgrades Protection Control Circuit test	1
MP M-56.23A9.1	Gear Type Coupling Inspection	April 17, 2003

MP M-56.23	Laser Alignment of Rotation Equipment	11
STP V-15	ECCS Flow Balance Test	36
Special PSRC	RFR – Charging Pump	May 27, 2011
CF3.ID9, A14	Design Change Notice	December 14, 2010
DC-2-08-I-RO-22	Centrifugal Charging Pump 2-2 Discharge	0
AD7.DC8	Work Control	36
MP E-60.5	Generic Current Circuit Loop Functional Test Instructions	1
MP E-60.12	Relay Functional Test – Standby Start-up Transformer 21 Protection Scheme	6

NOTIFICATIONS

50400945	50365001	50308225	50401415	5036001
50402706	50405004	50405010		

Section 1R19: Postmaintenance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
MP E-35.6	Calibration of Plant Equipment Gas Bulb Sensor Temperature Channels	1
STP M-12B	Battery Changer Performance Test	15
MP E-64.1B	Molded Case Circuit Breaker Exercise and Maintenance	10
MP E-67.3C	Maintenance of Solid State Controls 400A Vital Station Battery Changers	8
STP M-12B	Battery Charger Performance Test	15
MP I-1.17-5	Battery Charger Volts Isolation transmitter	3
MP 1-2.24-4	Pressure Testing of Instrument Tubing Systems	7
MP M-17.9	Auxiliary Saltwater Pump Maintenance	21
STP V-3R1	Exercising 10% Atmospheric Dump Valves PCV-19	50
PMT 69.03	U1 230 kV SU System Reliability Upgrades Protection Control Circuit Test	1
MP E-63.6A	Maintenance of SF6 4 kV Circuit Breakers	18
MP M-56.23	Inspection – Gear Couplings	7
MP M-56.19	Laser Alignment of Rotating Equipment	11
STP M-109	Test of Backup Air Accumulator System to FCV-602, CCW Heat exchanger No. 1 Saltwater Inlet Valve	20

STP P-RHR-PS	Preservice Testing of Residual Heat Removal Pumps	7
STP 1-4 PCV19	10% Steam Dump Valve PCV-19 Calibration	10

ORDERS

Order 640156660	SIP 2-1 MTR I/B BRG Temp
Order 64057337	ASP 2-1 Repack pump
Order 6404614	V 18 M Group 2 Check Valve SW 2-987 Inspection
Order 64057334	ASP 2-1 Motor Brg Samples
Order 60032352	Replace isolation valve AIR-1-1-1224
Order 60032124	Addition of air filters on PCV-19
Order 60023123	BTC lamp test button broken
Order 64007353	BTC 12 Calibrate Control room Panel
Order 64021793	M 12B Performance test Battery Changer
Order 60011712	BTC 12 – Replace P&B Relays with Omron Relay
Order 64063626	OP J-9:11 Transfer BTC 12 to/from BTC 121
Order 60024203	SIP 21 I/B Brg temp (TIC 101) Reading Hig
Order 64048561	SIP 2-1: Motor Bearing Oil Sample
Order 60036328	2-FVC-602 fails STP V-3F4
Order 68011987	Replace CCP 2-2 Pump Case

NOTIFICATIONS

50399489 50341975

Section 1R20: Refueling Outage

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
OP A-2:III	Reactor Vessel Draining to Half Loop/Half Loop Operations with Fuel in the Vessel	43
SAP 900000031313	Evaluation for Temporary Laydown Loads – Refueling Outage 2R16	April 28, 2011

DOCUMENTS

2R16 Outage Safety Plan	Revision 0
2R16 Outage Safety Plan	Revision 1

NOTIFICATIONS

50400945

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
STP P-CCW-21	Inservice Testing of Component Cooling Water Pump	13
STP M 26	ASW Pump 1-1 & CCW Hx 1-2, System Flow Monitoring	30
STP V-668	Containment Isolation Valve Leak Testing	16
STP V-682A	Containment Isolation Valve Leak Test	10
STP M-109	Test of Backup Air Accumulator System to FCV-602, CCW Heat exchanger No. 1 Saltwater Inlet Valve	20
STP V 3F4	Exercising Valve FCV-602 CCW Hx 1 Saltwater Inlet	22
PEP M-248	Ultrasonic testing of ECCS Piping	7
STP M-89	ECCS System Venting	45
STP M-15	Integrated Test of Engineered Safeguards and Diesel Generators	48
STP M13-F	4 kV Bus F Non-SI Auto Transfer Test	43
STP M13-G	4 kV Bus G Non-SI Auto Transfer Test	40
STP M13-H	4 kV Bus H Non-SI Auto Transfer Test	35

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
449290	Safety Injection System Isometric – Suction & Discharge	13
449287	Residual Heat Removal Pump Discharge Isometric	19
445895	Safety Injection Reactor Loops Isometric	7
445894	Residual Heat Removal and SI Discharge to Reactor Loops	10
449288	Residual Heat Removal Pump Suction Isometric	12
445882	Residual Heat Removal Discharge Isometric	11
449321	Safety Injection System Isometric – To Cold Legs	17
449322	Safety Injection System Isometric – To Cold Legs	9
449288	Residual Heat Removal Pump Suction Isometric	12

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
RCP D-201	Writing Radiation Work Permits	1
RCP D-220	Control of Access to High, Locked High, and Very High Radiation Areas	38
RCP D-240	Radiological Posting	20
RCP D-440	Criteria for Use and Operation of HEPA Equipped Ventilation	2
RCP D-310	RCA Access Control	24
RCP D-500	Routine and Job Coverage Surveys	31
RCP D-620	Control of Radioactive Sources	7
RCP D-781	Use of Reactor Plant Services Model SP 500/700 Series cfm HEPA Units	2
RP1	Radiation Protection	7

NOTIFICATIONS

50239400	50249827	50254907	50252027	50313159
50323163	50314008	50355160	50380502	50374679
50388734	50397092	50399294	50399683	50399685

RADIATION WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>
11-2002	2R16 Scaffolding in containment
11-2019	2R16 Fuel Handling at the Spent Fuel Pool
11-2020	2R16 Reactor Disassembly
11-2049	2R16 Steam Generators Platform Completion
11-2073	Residual Heat Removal Valve (RHR)-2-8730A
11-2081	2R16 Core Exit Thermocouple Replacement

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
100610010	Radiation Protection Programs Audit	July 8, 2011
	Quality Performance Assessment (QPAR) – Third Period 2010	December 14, 2010

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
W.O. 64048300	Radioactive Source List	November 23, 2011
	Refuel Outage 15 Final Radiation Protection Report	December 1, 2009
	NSTS Annual Inventory Reconciliation	January 12, 2011

Section 2RS02: Occupational ALARA Planning and Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
RCP D-200	ALARA Planning and Controls	47
RCP D-201	Writing Radiation Work Permits	1
RCP D-500	Routine and Job Coverage Surveys	31
RP1	Radiation Protection	7
RP1.DC4	Radiological Hot Spot Identification and Control Program	5
RP1.ID1	Requirements for the ALARA Program	7
RP1.ID2	Use and Control of Temporary Radiation Shielding	10
RP1.ID9	Radiation Work Permits	11

NOTIFICATIONS

50351789	50352698	50353540	50355537	50356312
50361789	50364042	50366418	50367431	50375374
50375407	50377946	50379086	50383328	50387497
50391538	50397224	50397460		

RADIATION WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>
10-1002	1R16 Scaffolding in Containment
10-1066	1R16 Pressurizer Steam Seat Conversion P.03200
10-1133	1R16 Reactor Head Project ORVCH Disassembly
10-1137	1R16 Reactor Head Replacement Project Scaffolding Support
11-2002	2R16 Scaffolding in Containment
11-2019	2R16 Fuel Handling at the Spent Fuel Pool

11-2020	2R16 Reactor Disassembly
11-2049	2R16 Steam Generator Platform Completion
11-2081	2R16 Core Exit Thermocouple Replacement

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
100610010	Radiation Protection Programs Audit	July 8, 2010
	Quality Performance Assessment (QPAR) – Third Period 2010	December 14, 2010
	Optimized Site-Specific ALARA Assessment: PG&E Diablo Canyon Power Plant	March 2011

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
	2R16 SWP Dose Estimates chart	May 10, 2011
	2R16 CVCS Demin Strategy	February 25, 2011
	2R16 Plant Chemistry Strategy	February 25, 2011
	Exposure Reduction 5-Year plan 2010	1
	2R16 Plan of the Day Report	May 9-May 13, 2011
	1R16 Post-Outage Dose Report	May 10, 2011
TSR 11-215	Temporary Shielding Request: 140' CTMT Personnel Hatch	May 3, 2011
TSR 11-212	Temporary Shielding Request: LCV 459 & 460 Hanger Shadow Shield	May 9, 2011
TSR 11-221	Temporary Shielding Request: PCV 455B	May 7, 2011
TSR 11-261	Temporary Shielding Request: CCP 2-1 Suction Piping	May 10, 2011

Section 2RS03: In-Plant Airborne Radioactivity Control and Mitigation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
AD8.DC56	Containment Outage Ventilation Planning and Operation	5
RCP D-202	RP Work Instructions	3
RCP D-410	Issuing Respiratory Protective Equipment	15
RCP D-440	Criteria for Use and Operation of HEPA Equipped Ventilation Units	2

RCP D-707	MSA Firehawk M7 (NFPA) Self-Contained Breathing Apparatus Inspection	0
RCP D-707A	MSA Firehawk (NIOSH) Self-Contained Breathing Apparatus Inspection	0
RCP D-732	Respirator Fit Testing	21
RCP D-771	Operation of the Poseidon Model P250 Breathing Air Compressor	5A
RCP D-772	UNICUSIII Cylinder Recharging Station Operation	1
RCP D-781	Use of Reactor Plant Services Model SP.500/700 Series cfm HEPA Units	2
RCP D-821	Use and Operation of the Eberline AMS-4 Continuous Air Monitor	6

NOTIFICATIONS

50387496	50386897	50386128	50378913	50382262
50378490	50377295	50376224	50377002	50374199
50373518	50373460	50342746	50372004	50370076
50366191	50369859	50365200	50365632	50365196
50364804	50356312	50349137	50351789	50388507
50373649	50374493			

Section 40A5: Other Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OM10.ID5	Severe Accident Management	0A
OP AP-22	Spent Fuel Abnormalities	23b
OP B-7:XIV	Backup Spent fuel Pool Cooling System	0

NOTIFICATIONS

50399264	50399554	50382481
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