

# Diablo Canyon 1

## 2Q/2011 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Jun 26, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Fire Hazard Evaluations**

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)].

Inspection Report# : [2011003](#) (*pdf*)

**Significance:**  Jun 26, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Unplanned Loss of Preferred Offsite Power Due to Less than Adequate Work Planning**

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  $1.2 \times 10^{-4}$ . Given these conditions, the analyst noted that the change in core damage frequency could be approximated as the product of these two values ( $3.9 \times 10^{-8}$ ). 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)].

Inspection Report# : [2011003](#) (pdf)

**Significance:** G Jun 26, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Unplanned Loss of Preferred Offsite Power Due to the Failure to Follow Work Instructions**

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  $1.2 \times 10^{-4}$ . Given these conditions, the analyst noted that the change in core damage frequency could be approximated as the product of these two values ( $3.9 \times 10^{-8}$ ). 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)].

Inspection Report# : [2011003](#) (pdf)

**Significance:** G Jun 26, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Less Than Adequate Evaluation of New Security Modifications**

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)].

Inspection Report# : [2011003](#) (pdf)

**Significance:**  Mar 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Design Control for the Preferred Offsite Power System**

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," after Pacific Gas and Electric failed to ensure that the preferred offsite power system design basis was correctly translated into electrical dynamic loading Calculations 357A-DC, "Units 1 and 2 Load Flow, Short Circuit and Motor Starting Analysis," Revision 12 and 359-DC, "Offsite Power Dynamic Analysis," Revision 8. The licensee did not include the limiting load flow cases representing the largest total onsite demand for both units as required by the plant design basis. On July 7, 2010, the NRC clarified that the Diablo Canyon current licensing basis required the preferred offsite power system to have adequate capacity and capability to supply the most limiting loading requirements, including a dual unit trip. The licensee subsequently entered the condition into the corrective action program as Notification 50289590 and revised the station dynamic loading analysis to reflect the increased onsite power demand. The inspectors concluded that the failure to ensure that the dynamic loading analysis included all design basis requirements was a performance deficiency. This performance deficiency is more than minor because the finding was associated with the Mitigating Systems Cornerstone initial design control attribute and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Because the inspectors were unable to conclude that the preferred offsite power system had not been inoperable for greater than the allowed Technical Specification outage time, a senior reactor analyst performed a bounding Phase 3 analysis. The Phase 3 analysis demonstrated that the subject finding was of very low safety significance (Green), because of the small increase of probability of a loss of offsite power that the finding represented. 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 the current licensing basis requirements to ensure that resolutions addressed causes and extent of conditions, as necessary. [P.1(c)]

Inspection Report# : [2011002](#) (pdf)

**Significance:**  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Maintain a Fire Barrier**

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 maintain the integrity of Door 155 in the rated condition. On December 9, 2010, the inspectors identified that the fire door was inoperable. Equipment Control Guideline 18.7, "Fire Rated Assemblies," required the licensee to maintain Door 155 in a configuration that would provide at least a

1½-hour rated fire barrier. The inspectors previously identified that Door 155 was degraded as a fire barrier in 2009. The licensee entered the violation into the corrective action program as Notification 50367381 and took immediate corrective actions to restore the fire barrier to the rated condition and to implement weekly plant fire door walkdowns.

The inspectors concluded that the finding was more than minor because the degraded fire barrier affected the Mitigating Systems Cornerstone external factors attribute and objective to prevent undesirable consequences due to fire. The inspectors determined that the finding was within the fire confinement category and that the fire barrier was moderately degraded. The inspectors concluded that the finding was of very low safety significance (Green) because there was a non-degraded automatic full area water-based suppression system in the exposed fire area. 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 take effective corrective actions to following the previous occurrence of the violation [P.1(d)].

Inspection Report# : [2010005](#) (pdf)

**Significance:**  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Operability Determinations**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criteria V, “Instructions, Procedures, and Drawings,” after Pacific Gas and Electric failed to adequately evaluate two nonconforming conditions for operability as required by Procedure OM7.ID12, “Operability Determination.” On October 15, 2010, the inspectors identified a less than adequate technical evaluation supporting Prompt Operability Assessment 50350918, “Unit 2 - Insulation in Bio-Wall Penetration.” Engineering personnel failed to adequately evaluate the extent of condition after technicians identified about 632 pounds of Temp-Mat and 60 pounds of Min-K fibrous insulation in the Unit 1 reactor coolant loop biological shield wall penetrations. This fibrous material could have potentially been transported and plugged the emergency core cooling containment sump screen. The licensee performed the prompt operability assessment for Unit 2, which was operating at the time. The inspectors concluded that the engineering personnel inappropriately applied the leak-before-break methodology to exclude about 87 percent of this material from the extent of condition review in the prompt operability assessment.

The second example involved Prompt Operability Assessment Notification 50355265, “RHR Sump Margin,” which was completed by the licensee on October 23, 2010. In this example, engineering personnel failed to identify and demonstrate that the specified safety function of the refueling water storage tank could be maintained as required by the plant operability procedure. The inspectors identified that the post accident flow path from the reactor cavity to the containment sump was blocked by a large shield plug. This blockage reduced the amount of post accident inventory available at the containment sump at the time of transition from injection to recirculation mode of emergency core cooling operation. Engineering personnel failed to demonstrate that the safety function to ensure full sump submergence was maintained with the blocked flow path. Full submergence of the sump was used by the NRC as the basis for approval of Technical Specification 3.5.4, “Refueling Water Storage Tank,” inventory requirements. The licensee entered the violation into the corrective action program as Notification 50369117 and revised the prompt operability assessments using assumptions consistent with the current licensing bases.

The inspectors concluded that the performance deficiency was more than minor because the finding affected the Mitigating Systems Cornerstone initial 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 human performance associated with the decision making component because Pacific Gas and Electric did not use conservative assumptions in decisions to demonstrate component operability in either example [H.1(b)].

Inspection Report# : [2010005](#) (pdf)

**Significance:**  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Less than Adequate Containment Recirculation Sump Design Control**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," after Pacific Gas and Electric failed to ensure Calculation STA-255, "Minimum Required Refueling Water Storage Tank Level for GE Sumps," Revision 2, demonstrated adequate available refueling water storage tank inventory. On October 19, 2010, the inspectors identified that emergency core cooling post accident flow path from the reactor cavity to the containment sumps was blocked by a large steel plug on Unit 1. The accident analysis assumed this 35 square foot path was open to allow coolant from a pipe break inside the biological shield to communicate with containment sumps during the recirculation mode of emergency core cooling. The licensee credited the inventory from the reactor cavity when determining the minimum required refueling water storage tank volume in Calculation STA-255. Pacific Gas and Electric used Calculation STA-255 as the basis for determining the minimum required refueling water storage tank volume specified by Technical Specification 3.5.4, "Refueling Water Storage Tank." The inspectors identified that the recirculation flow path was also blocked on Unit 2. The inspectors concluded that the most significant contributor to the violation was inaccurate plant drawings used by plant engineers during the performance of Calculation STA-255. The licensee's corrective actions included completion of a prompt operability assessment justifying continued operation of Unit 2 and replacement of the shield plug with a movable platform on Unit 1 prior to plant restart.

The inspectors concluded that the performance deficiency was more than minor because the finding affected the Mitigating Systems Cornerstone plant modification 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 performance deficiency involved a design deficiency confirmed not to result in the loss of operability or functionality. This finding had a crosscutting aspect in the area of human performance associated with the resources component because Pacific Gas and Electric failed to use complete, accurate and up-to-date drawing for Calculation STA 255 [H.2(c)].

Inspection Report# : [2010005](#) (pdf)

**Significance:** G Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Emergency Diesel Generator Surveillance Testing**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," after Pacific Gas and Electric failed to develop and implement an adequate testing program for the emergency diesel generators that met design requirements and recommendations. Specifically, in December 2008, the inspectors identified that the diesel generator loading calculations were inadequate to demonstrate that the design bases were met. Pacific Gas and Electric updated the load calculations, but failed to make the necessary revisions to Surveillance Test Procedure STP M-9D1, "Diesel Generator Full Load Rejection Test." As a result, Pacific Gas and Electric failed to test several of the emergency diesel generators at the complete load as required by Regulatory Guide 1.108, Revision 1, which is part of the current licensing bases. The licensee entered this into the corrective action program as Notification 50368801, determined there was no loss of safety function for the affected components, and applied the provisions of Surveillance Requirement 3.0.3 for a missed surveillance test. The inspectors concluded the most significant contributor to the finding was less than adequate diesel generator loading evaluations to support corrective action from previous violations associated with the emergency diesel generator testing.

The inspectors concluded that the performance deficiency was more than minor because the finding affected the equipment control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that the finding was of very low safety significance (Green) because it did not represent an actual loss of safety function of a single train for greater than its technical specification allowed outage time. 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 perform an adequate evaluation of the nonconservative surveillance test such that the resolution addressed the fundamental basis for the surveillance [P.1 (c)].

Inspection Report# : [2010005](#) (pdf)

**Significance:** **G** Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Quality Verification Audits**

The inspectors identified a noncited violation of 10CFR Appendix B, Criterion XVIII, "Audits", which required that a comprehensive system of planned and periodic audits be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program as well as follow up action, including re-audit of deficient areas, where indicated. Contrary to this requirement, Pacific Gas and Electric failed to ensure that a comprehensive system of planned and periodic audits were carried out to verify compliance with all aspects of the quality assurance program, determine the effectiveness of the program, and perform necessary follow up actions. Specifically, the 2008 Quality Verification audit of the corrective action program failed to adequately address an adverse trend in the problem evaluation process documented in NRC Inspection report 2008005, which identified eleven examples of an adverse trend in problem evaluation. The licensee entered this into their corrective action program as Notification 50365083 and determined

there was no loss of safety function for the affected components. The inspectors concluded the most significant contributor to the finding was a less than adequate evaluation of the corrective action trending program.

This finding was more than minor because it was associated with the equipment control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined the performance deficiency was of very low safety significance (Green) it was a deficiency 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 coordinate and communicate the results from assessments to affected personnel, and track the corrective actions to address issues commensurate with their significance [P.3(c)].

Inspection Report# : [2010005](#) (*pdf*)

**Significance:** **G** Sep 25, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify a Degraded Fire Barrier**

The inspectors identified a noncited violation of the Diablo Canyon Facility Operating License Condition (5), "Fire Protection," after Pacific Gas and Electric failed to maintain the integrity of a fire door in the rated configuration. On August 19, 2010, the inspectors identified that Fire Door 223 was inoperable. Fire Door 223 was required to provide a 3-hour rated barrier between Fire Areas 5-A-4 and 5-B-4. A fire in either of these areas could have prevented operation of the auxiliary feedwater, auxiliary saltwater, or component cooling water pumps or steam generator level control from the remote shutdown panel. Equipment Control Guideline 18.7, "Fire Rated Assemblies," required the licensee to either maintain Fire Door 223 operable or implement compensatory actions within one hour. The inspectors concluded the most significant contributor to the finding was that licensee personnel did not identify and enter the degraded fire door into the Corrective Action Program. The licensee entered the performance deficiency associated with this finding into the corrective action program as Notification 50336901 and completed repairs to the door on August 23, 2010.

The inspectors concluded that the performance deficiency was more than minor because the degraded fire barrier affected the mitigating systems cornerstone external factors attribute objective to prevent undesirable consequences due to fire. The inspectors determined that the inoperable door was a fire confinement category finding and that the fire barrier was moderately degraded because the door would not perform the rated fire barrier function. The inspectors concluded the finding was of very low safety significance because the degraded barrier would have provided a minimum of 20 minutes fire endurance protection and ignition sources and combustible materials were positioned that had a fire spread to secondary combustibles, the degraded barrier would not have been subject to direct flame impingement. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee did not implement a low threshold for identifying and entering issues into the Corrective Action Program [P.1(a)].

Inspection Report# : [2010004](#) (*pdf*)

**Significance:** G Sep 25, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Risk Assessment during Planned Maintenance Activities**

The inspectors identified a noncited violation of 10 CFR 50.65 after Pacific Gas and Electric failed to perform a risk assessment after plant conditions had changed. On July 13, 2010, Pacific Gas and Electric identified that station personnel failed to complete Technical Specification Surveillance Requirement 3.3.4.2, "Remote Shutdown System," within the specified frequency for both Units. As provided by Surveillance Requirement 3.0.3, the licensee performed a risk evaluation to extend the required surveillance completion time beyond twenty-four hours. The licensee initiated the missed surveillance tests and identified results were outside acceptance criteria. On July 26, 2010, Operations personnel declared several remote shutdown system functions inoperable because reasonable expectation no longer existed that remote shutdown system could perform its safety function. Pacific Gas and Electric failed to reassess the effect on plant risk resulting from inoperable remote shutdown system functions before continuing with scheduled maintenance. A subsequent risk assessment concluded that plant risk was in a higher risk category due to planned maintenance activities conducted during this time frame. The licensee entered the performance deficiency into the corrective action program as Notification 50331841.

The inspectors determined that the performance deficiency is more than minor because the performance deficiency affected the Mitigating Systems Cornerstone attribute of human performance and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Also, the finding is similar to Example 7.e in Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," because the overall elevated plant risk would put the plant into a higher licensee-established risk category. The inspectors concluded that the finding is of very low safety significance (Green) based on an actual incremental core damage probability deficit of less than  $1 \times 10^{-6}$  and an evaluation using Flowchart 1 of Appendix K of Inspection Manual Chapter 0609, "Maintenance Risk Assessment and Risk Management Significance Determination Process." This finding had a crosscutting aspect in the area of human performance associated with the work practices component because the licensee failed to follow its maintenance risk procedure and reassess plant risk due to changing plant conditions [H.4(b)].

Inspection Report# : [2010004](#) (*pdf*)

**Significance:** G Sep 25, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Operability Determination**

The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," after Pacific Gas and Electric failed to promptly evaluate two nonconforming conditions for operability as required by Procedure OM7.ID12, "Operability Determination." The first example involved the failure of engineering personnel to promptly notify plant operations of the failure of the emergency diesel generators to meet licensing and design frequency and voltage recovery requirements. This issue was identified by the NRC on May 11, 2010, but not evaluated for the effect on diesel operability until September 9, 2010. The second example also involved the failure of engineering personnel to promptly notify plant operations to evaluate a nonconforming condition associated with a common cross-tie line that connected both auxiliary saltwater trains. This issue was identified by the NRC on July 22, 2010, but not evaluated for the effect on auxiliary saltwater operability until August 4, 2010. In both examples, engineering personnel failed to follow Procedure OM7.ID12, "Operability Determination," Section 5.1, which required any individual identifying a degraded or nonconforming condition that potentially impacts operability of a system, structure or component to ensure that operations shift management is informed. The licensee entered the performance deficiency associated with this finding into the corrective action program as Notifications 50340417 and 50335847.

The inspectors concluded that the performance deficiency is more than minor because the Mitigating Systems Cornerstone initial design control attribute and objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences were affected. The finding was of very low safety significance (Green) because neither of the two examples was subsequently determined 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 Pacific Gas and Electric did not

thoroughly evaluate the nonconforming conditions for operability [P.1(c)].

Inspection Report# : [2010004](#) (pdf)

**Significance:**  Sep 25, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Design Control for the Auxiliary Saltwater System**

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the failure to maintain adequate design control measures associated with the auxiliary saltwater system. The inspectors identified that the auxiliary saltwater system design did not comply with the plant design bases as described in the Final Safety Analysis Report Update. Specifically, an auxiliary saltwater vent line did not meet the requirements established in General Design Criteria 1, "Quality Standards and Records," and Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants." The licensee entered the performance deficiency into the corrective action program as Notification 50328942.

This performance deficiency is greater than minor because the design control attribute of the mitigating systems cornerstone and the cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences were affected. Using the Significance Determination Process (SDP) Phase 1 Screening Worksheet for the Mitigating Systems Cornerstone, the inspectors concluded the finding was of very low significance (Green) because it was a design deficiency confirmed not to result in the loss of operability or functionality. The inspectors concluded that the finding does not have a crosscutting aspect since the performance deficiency is not reflective of current plant performance.

Inspection Report# : [2010004](#) (pdf)

**Significance:**  Jul 27, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Design Control for the Emergency Diesel Generator**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the failure to maintain adequate design control measures associated with the emergency diesel generating air system. Specifically, failure of non-seismically qualified air compressor unloader sensing lines during a seismic event could impact the safety function of the emergency diesel generators. Subsequent analysis of the nonconforming condition performed by the licensee determined the piping would not fail during a postulated seismic event. The licensee entered this issue into the corrective action program as Notifications 50307496, 50307497, 50307504, 50307670, 50308204, and 50308824.

The finding was more than minor because it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Significance Determination Process (SDP) Phase 1 Screening Worksheet for the Initiating Events, Mitigating Systems, and Barriers Cornerstones the finding was potentially risk significant for a seismic initiating event requiring a Phase 3 analysis. The analyst estimated the nonrecovery probabilities for operators failing to isolate air between the receiver and the compressor prior to air pressure depletion, and operators failing to manually open fuel transfer valves to makeup to the diesel day tank. The final quantitative result was calculated to be  $1.06 \times 10^{-6}$ . However, using a qualitative evaluation of the bounding assumptions, the analyst determined that the best available information indicated that the finding was of very low risk significance (Green). The team determined that the finding was reflective of current plant performance because it had been recently identified during the license renewal inspection and had a human performance crosscutting aspect related to decision making because the licensee did not use conservative assumptions when evaluating this nonconforming condition in previous evaluations.

Inspection Report# : [2010006](#) (pdf)

**Significance:**  Jul 27, 2010

Identified By: NRC



Item Type: NCV NonCited Violation

**Failure to Maintain Proficiency of Operators to Meet the Time Critical Operator Actions**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the failure to ensure that operators are able to implement specified actions in response to operational events and accidents. Specifically, operators could not achieve actions within the analysis time estimates for the cold leg recirculation phase of a loss of coolant accident response and the steam generator tube rupture response as described in the licensee's safety analysis report.

The finding is more than minor because it affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding represented a potential loss of a safety function requiring a Phase 2 analysis. Because the probability of human error is not effectively addressed by a Phase 2 analysis, a Phase 3 analysis was performed. The senior reactor analyst reviewed the actual timing of the walkdowns associated with the steam generator tube rupture time critical actions. The analyst determined that, while the licensee failed to meet the specific cooldown timing documented in the Final Safety Analysis Report, the total time to start cooling the reactor was well within the total critical timing of the event. The analyst found no impact on safety in delaying the cooldown of the reactor for one minute given that the other time critical actions were performed more quickly than required. Therefore, the analyst determined that this portion of the finding was of very low safety significance because it does not represent an actual loss of safety function (Green). The senior reactor analyst reviewed the issue related to the assumed action times associated with switching over to containment sump recirculation lineup for their emergency core cooling system pumps during a large break loss of coolant accident. The analyst noted that this time critical action was only required if a large-break loss of coolant accident occurred simultaneously with the failure of an residual heat removal pump to stop automatically, requiring local isolation of the pump. Given that the frequency of the initial conditions for the time critical action are below the Green/White threshold, the change in core damage frequency associated with this finding must be of very low safety significance (Green). The team determined that the finding was reflective of current plant performance because the licensee participated in a recent industry-wide study on time critical operator actions, but did not implement any of the group's recommendations. The finding had a crosscutting aspect in the area of human performance, decision making, because the licensee did not use conservative assumptions in the decision making process related to verifying the validity of the underlying assumptions used to evaluate the feasibility of operators implementing time critical operator actions.

Inspection Report# : [2010006](#) (pdf)

**Significance: SL-IV** Jul 27, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Submit Complete and Accurate Information for a Requested License Amendment**

The team identified a noncited violation of 10 CFR 50.9(a), "Completeness and Accuracy of Information" with multiple examples. Specifically, information supplied to the NRC in License Amendment Request 01-10, dated February 24, 2010, related to the revision of Technical Specification 3.8.1, "AC Sources - Operating," were not complete and accurate in all material respects. Following NRC questioning of the discrepancies the licensee withdrew the amendment request.

The finding is more than minor because the inaccurate information was material to the NRC. Specifically, this information was under review by the NRC to evaluate specific changes to the surveillance requirements associated with the emergency diesel generators. Following management review, this violation was determined to be of very low safety-significance because the amendment request was withdrawn before the NRC amended the facility technical specifications. Because this issue affected the NRC's ability to perform its regulatory function, it was evaluated with the traditional enforcement process. Consistent with the guidance in Section IV.A.3 and Supplement VII, paragraph D.1, of the NRC Enforcement Policy, this finding was determined to be a Severity Level IV noncited violation. The finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee did not adequately evaluate the extent of condition and take appropriate corrective actions after the NRC identified a similar violation.

Inspection Report# : [2010006](#) (pdf)

**Significance:** G Jul 27, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Untimely and Inadequate Corrective Actions for the Emergency Diesel Generators**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," with two examples for the failure of the licensee to promptly identify and correct nonconforming conditions related to the emergency diesel generators meeting the design basis. The first example resulted from the failure to identify that instrument inaccuracies were not accounted for in the bounding calculations. The second example involved the failure to identify that the worst case loading calculations exceeded the emergency diesel generator operating load limit.

The failure to promptly identify and correct the design deficiencies associated with the emergency diesel generators was a performance deficiency. This finding is greater than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with Inspection Manual Chapter 0609, "Significant Determination Process," the team performed a Phase 1 analysis to analyze the significance of this finding and determined the finding is of very low safety significance because the condition was a design or qualification deficiency confirmed not to result in loss of operability or functionality, did not represent an actual loss of safety function of the system or train, did not result in the loss of one or more trains of nontechnical specification equipment, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had a crosscutting aspect in the area of human performance, decision making, because the licensee did not use conservative assumptions in the decision making process or conduct an adequate effectiveness review to verify the validity of the underlying assumptions for a safety-significant decision.

Inspection Report# : [2010006](#) (*pdf*)

---

## **Barrier Integrity**

**Significance:** G Jun 26, 2011

Identified By: NRC

Item Type: FIN Finding

### **Inadequate Review of Severe Accident Management Guidelines**

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.

Inspection Report# : [2011003](#) (*pdf*)

**Significance:** G Mar 27, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Document Design Basis of Containment Fan Cooler Unit Cooling Coil Casings**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Specifically, prior to December 15, 2010, the licensee failed to assure that the design basis function of the containment fan cooler unit casings was translated into specifications, drawings, procedures, and instructions. The licensee has entered this violation into the corrective action program as Notification 50384801.

The inspectors determined that the failure to establish measures to assure that the design basis function of the containment fan cooler unit cooling coil casings was translated into specifications, drawings, procedures, and instructions was a performance deficiency. The finding was more than minor because it adversely affected the barrier integrity cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Attachment 4, "Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) because it did not represent a degradation of the barrier function of the control room against a smoke or toxic barrier, an open pathway in the physical integrity of reactor containment, or an actual reduction in function of hydrogen igniters in the reactor containment. The inspectors determined that this finding has a crosscutting aspect in the area of human performance because the licensee failed to ensure that personnel, equipment, procedures and other resources were available to assure nuclear safety by maintaining complete, accurate and up-to-date design documentation. [H.2(c)]

Inspection Report# : [2011002](#) (*pdf*)

**Significance:** G Mar 27, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Design Control for the Auxiliary Building Ventilation System Control Panel Modification**

The inspectors reviewed a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," after Pacific Gas and Electric failed to ensure that the design basis requirements for single failure criteria were correctly translated into auxiliary building ventilation system controls modifications. On January 10, 2011, a single failure of a Unit 2 auxiliary building ventilation Train "A" damper resulted in the loss of system safety function for both trains. The loss of safety function occurred because of a logic error in the programmable logic controllers. The licensee programmed and installed the logic controllers in November 2010 for Unit 1 and in November 2009 for Unit 2. The inspectors identified that the engineering department performed a less than adequate review to identify the single point vulnerability during the modification review process. Pacific Gas and Electric entered this issue into the corrective action program as Notification 50370698, replaced the failed damper, and implemented compensatory actions to mitigate the design deficiency. The licensee plans to implement corrective actions to program the logic controller program consistent with the design basis requirements.

The inspectors concluded that the failure to ensure that the modification met design basis requirements was a performance deficiency. This performance deficiency is more than minor because it was associated with the design control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers and radiological barriers, including the Auxiliary Building, protect the public from radionuclide releases caused by accidents or events. The inspectors determined that the finding had very low safety significance because the finding only represents degradation to the radiological barrier function provided for the auxiliary building. This finding had a crosscutting aspect in the area of human performance associated with work practices because the licensee did not ensure human error prevention techniques, such as self and peer checking, were effectively used in the preparation of the modification. [H.4(a)]

Inspection Report# : [2011002](#) (*pdf*)

---

# Occupational Radiation Safety

---

## Public Radiation Safety

---

## Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

**Significance:** N/A Jul 27, 2010

Identified By: NRC

Item Type: FIN Finding

### **Problem Identification and Resolution**

The team concluded that the notification process facilitates the initiation, tracking, and trending of concerns and that the licensee correctly identified deficiencies that were conditions adverse to quality and entered them into the corrective action program in accordance with the licensee's corrective action program guidance and NRC requirements. Prioritization of issues was appropriate. The licensee was inconsistent in the effectiveness of evaluating issues once they were identified. The team's assessment was there was limited effective interdepartmental communication, a lack of cross discipline peer checks, and a failure to assign the appropriate resources to evaluate cross-departmental problems/issues. As a result, the licensee's performance in resolving problems and effective utilization of operating experience was negatively impacted. The licensee performed effective quality assurance audits and self-assessments, as demonstrated by self-identification of poor corrective action program performance and identification of ineffective corrective actions. However, because of challenges in performing evaluations, the licensee had difficulty properly addressing some of these issues. Overall the team concluded that implementation of the corrective action program was adequate with improvements warranted.

The team determined that site personnel were willing to raise safety issues and document them in the corrective action program. The team noted that workers at the site felt free to report problems to their management and the NRC, but were reluctant to take safety concerns to the Employee Concern Program. Additionally, the function and processes associated with the Employee Concern Program was not understood by a majority of the personnel interviewed.

Inspection Report# : [2010006](#) (*pdf*)

Last modified : October 14, 2011