

Diablo Canyon 2

3Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Sep 25, 2009

Identified By: NRC

Item Type: FIN Finding

Failure to Perform Corrective Actions Resulted in an Unplanned Trip

A self-revealing finding was identified after Pacific Gas and Electric failed to implement planned corrective actions resulting in the loss of cooling to a main transformer, a rapid shutdown and a manual reactor trip of Unit 2. On June 30, 2009, cooling to a main transformer was lost because a fuse opened in the 480 volt power circuit due to loose terminal connections in the cooling control panel. Plant operators rapidly shut-down the unit from full power after transformer cooling was lost. A previous failure of transformer cooling due to loose terminal connections occurred on Unit 1, also resulting in a reactor trip. Corrective actions to prevent recurrence following the previous event included replacement of the main transformer terminations in the cooling control panels. Review of the work orders revealed that these corrective actions were not completed and the work documents were closed. While the failure to complete the corrective actions was a latent issue, the inspectors concluded that the licensee had a recent opportunity to identify the issue. Plant technicians implemented thermograph monitoring of main transformer cooling circuits and identified hot 480 volt power terminations in the Unit 2 main transformer cooling disconnect box in April 2009. These hot terminations should have prompted Pacific Gas and Electric to review internal operating experience related to main transformer cooling issues. The licensee entered this finding into corrective program as Notification 50260721. The inspectors concluded that the finding is greater than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of those events that interrupt plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined the finding to have very low safety significance because the condition did not contribute to both the likelihood of a reactor trip and the unavailability of mitigation equipment or functions. This finding has a crosscutting aspect in the area of problem identification and resolution, associated with the operating experience component because Pacific Gas and Electric failed to perform an adequate internal operating experience review following the discovery of hot terminations on Unit 2 main transformer in April 2009.

Inspection Report# : [2009004](#) (*pdf*)

Mitigating Systems

Significance:  Sep 25, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Correct a Degraded Fire Barrier

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

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

Inspection Report# : [2009004](#) (*pdf*)

Significance:  Sep 25, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Emergency Operating Procedures Following a Reactor Trip

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

The finding is greater than minor because the failure of operations personnel to implement emergency operator procedures was associated with the mitigating systems cornerstone human performance attribute to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors concluded the significance of this finding is of very low safety significance because the finding was not a design or qualification deficiency, did not result in loss of equipment operability or functionality, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a crosscutting aspect in the area of human performance associated with the resource component because Pacific Gas and Electric did not have a complete rapid load reduction procedure.

Inspection Report# : [2009004](#) (*pdf*)

Significance: SL-IV Sep 25, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the Final Safety Analysis Report Update with Current Accident Analysis

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

The inspectors evaluated this finding with the traditional enforcement process because the issue affected the NRC's ability to perform its regulatory function. The inspectors concluded that the finding is greater than minor because the failure to update the required critical operator action assumed in the accident analysis could have a material impact on safety or licensed activities. The inspectors concluded that the violation is Severity Level IV because the erroneous

information was not used to make an unacceptable change to the facility or procedures. The inspectors concluded that this finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to implement a corrective action program with a low threshold for identifying issues and failed to identify the inaccuracies in the accident analysis as described in the Final Safety Analysis Report Update.

Inspection Report# : [2009004](#) (pdf)

Significance: SL-IV Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Report a Condition Prohibited by the Plant's Technical Specifications

The inspectors identified a noncited violation of 10 CFR 50.73(a)(1) after Pacific Gas and Electric failed to submit a required licensee event report within 60 days after discovery of a condition prohibited by technical specifications. The licensee failed to correctly evaluate the March 18, 2009, failure of the Unit 2 control rod demand position indicators for reportability. The inspectors concluded that the failure of control rod position indicators was a condition prohibited by Technical Specification 3.17, "Rod Position Indication."

This finding is greater than minor because the NRC relies on licensees to identify and report conditions or events meeting the criteria specified in the regulations in order to perform its regulatory function. This finding affected the mitigating systems cornerstone. 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 I, Paragraph D.4, of the NRC Enforcement Policy, this finding was determined to be a Severity Level IV, noncited violation. The licensee entered this issue into the corrective action program as Notification 50242153. This finding has 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 failure of the Unit 2 control rod demand position indicators for reportability [P.1(c)]

Inspection Report# : [2009003](#) (pdf)

Significance: SL-IV Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the FSARU with Current Plant Design Criteria

The inspectors identified a noncited violation of 10 CFR Part 50.71 after Pacific Gas and Electric failed to update the Final Safety Analysis Report Update with current plant design criteria. The Final Safety Analysis Report Update stated that Diablo Canyon was designed to comply with the Atomic Energy Commission General Design Criteria for Nuclear Power Plant Construction Permits, published in July 1967. The inspectors identified that the Diablo Canyon Safety Evaluation Report stated that the NRC used General Design Criteria published in July 1971 to review the plant design. In addition, during the initial licensing process, the licensee stated that the plant was evaluated against the 1971 design criteria during the licensing process.

The inspectors evaluated this finding using the traditional enforcement process because the failure to update the Final Safety Analysis Report affected the NRC's ability to perform its regulatory function. The inspectors concluded that the failure to update the Final Safety Analysis Report was a Severity Level IV violation based on the General Statement of Policy and Procedure for NRC Enforcement Actions, Supplement I – Reactor Operations, dated January 14, 2005, because the erroneous information was not used to make an unacceptable change to the facility or procedures. The inspectors concluded that this finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner [P.1(d)]

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Corrective Actions Following the Loss of Design Control for the 500 kV Offsite Power Source

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criteria XVI, "Corrective Action," after Pacific Gas and Electric failed to adequately correct a nonconforming condition related to the adequacy of design documentation to demonstrate the acceptability of design control for the 500 kV delayed offsite power system. The licensee stated the design control documentation demonstrated that the offsite power system met the design basis was not retrievable. The licensee entered this nonconforming condition into the corrective action system. On October 28, 2008, plant engineers completed an evaluation of the nonconforming condition and concluded the delayed offsite power system design basis was demonstrated by a "road map" of pre-existing analyses created to support other plant functions. The inspectors concluded that the "road map" was less than adequate because the licensee failed to consider the affect of the loss of reactor coolant pump seal cooling and injection anticipated during the time needed to align the offsite power supply to the engineering safety feature buses. The inspectors concluded that the failure of the licensee to promptly correct the nonconforming condition and ensure that the "road map" implemented measures for verifying or checking the adequacy of design assumptions was reflective of current performance.

This finding is more than minor because 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 was affected. The inspectors concluded this finding is of very low safety significance because the finding was a design 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 Pacific Gas and Electric did not thoroughly evaluate the nonconforming condition to ensure that the offsite power system design basis was met [P.1(c)](

Inspection Report# : [2009003](#) (*pdf*)

Significance: SL-IV Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate a Change to the Facility Associated with the 500 kV Offsite Power Source

The inspectors identified a noncited violation of 10 CFR 50.59 after Pacific Gas and Electric failed to perform an adequate evaluation of a thermal hydraulic analysis to determine if prior NRC approval was required for a 30-minute delay time to align offsite power. This analysis, Calculation STA 274, "RETRAN Evaluation of GDC 17 Loss of AC Scenario," Revision 0, demonstrated that the 30-minute delayed offsite power source was acceptable. On December 31, 2008, a Pacific Gas and Electric 10 CFR 50.59 screen concluded that Calculation STA 274 was not required to be evaluated to determine if prior NRC approval was required for the delay time. On March 31, 2009, the inspectors concluded that the licensee was required to evaluate Calculation STA 274 to determine if prior NRC approval was needed. On May 27, 2009, Pacific Gas and Electric completed the 50.59 evaluation and concluded that prior NRC approval was required for the 30-minute delay time to align offsite power.

The inspectors concluded that the finding is more than minor because the changes made to the facility required prior NRC review and approval. The finding affected the Mitigating Systems Cornerstone because the change described how the delayed offsite power source met the design basis. The inspectors concluded the finding is of very low safety significance because the finding was a design deficiency that did not result in the loss of operability or functionality. Because the issue affected the NRC's ability to perform its regulatory function, the inspectors evaluated this finding using the traditional enforcement process. This issue was classified as Severity Level IV because the violation of 10 CFR 50.59 involved conditions resulting in very low safety significance by the significance determination process. 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 change to the facility as described in the Final Safety Analysis Report Update to determine if prior NRC approval was required [P.1 (c)]

Inspection Report# : [2009003](#) (*pdf*)

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Operation of 230 kV Offsite Power System Outside the Design Basis

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criteria III, Design Control, after

Pacific Gas and Electric failed to adequately translate the design basis for the 230 kV preferred offsite power system into specifications and procedures. Between November 3 and 7, 2008, the licensee operated with both units aligned to a single startup transformer. This created a situation where a dual unit trip or trip on one unit and accident on the other unit could result in loss of the preferred immediate offsite power source offsite power to both units.

The finding is greater than minor because 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 was affected. The inspectors used Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," to analyze the significance of this finding. The inspectors concluded that the finding is a design deficiency that did result in loss of operability. However, the inspectors concluded the finding is of very low safety significance because the actual loss of safety function of the 230 kV offsite power system was less than the Technical Specification allowed outage time. The inspectors also concluded that the finding did not represent a loss of safety function for greater than 24 hours or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that 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 operability of the offsite power circuit prior to removing the Unit 2 startup transformer from service [P.1(c)].

Inspection Report# : [2008005](#) (pdf)

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: FIN Finding

Failure to Implement Effective Actions to Correct an Adverse Trend

The inspectors identified a finding after Pacific Gas and Electric was ineffective in addressing an adverse trend in missed quality control inspection hold points. Licensee Procedure OM7, "Corrective Action Program," required that the licensee evaluate problems commensurate with their significance, determine the cause, and conduct a proper evaluation and resolution of repeat occurrences. The procedure further required that corrective actions are completed in a timely manner consistent with the problem significance. On May 19, 2007, Pacific Gas and Electric identified an adverse trend of missing quality control inspection hold points and requested that an apparent cause evaluation be performed. On July 11, 2007, this adverse trend was also evaluated by the Quality Verification Department as part of an assessment of Refueling Outage 14 maintenance. In March 2008, the licensee completed the evaluations and corrective actions. During the subsequent Unit 2 refueling outage, the Quality Verification Department identified over 11 additional missing quality inspection hold points. The inspectors identified that the licensee's corrective actions were ineffective to correct the adverse trend in missing quality control inspection hold points. Pacific Gas and Electric Company entered this finding into the corrective action program as Notification 50135175.

The finding was more than minor because, if left uncorrected, the failure to perform inspections has the potential to lead to a more significant safety concern. The inspectors used Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of reactor Inspection Findings for At-Power Situations," to analyze the significance of this finding. The inspectors concluded that this finding was of very low safety significance because the uncorrected adverse trend did not represent a loss of system safety function, the loss of safety function of a single train for greater than its Technical Specification allowed outage time, actual loss of safety function of one or more non-Technical Specification trains greater than 24 hours, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating. The finding has 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 adverse trend and take corrective actions that addressed the cause and extent of condition [P.1(c)].

Inspection Report# : [2008005](#) (pdf)

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design Control for the Emergency Diesel Generator

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," after Pacific Gas and Electric failed to provide adequate design control measures for verifying the emergency diesel generators meet the design basis. The inspectors requested to review the design control measures that Pacific Gas and

Electric maintained to demonstrate compliance with General Design Criteria 17, "Electric Power Systems," design basis. The licensee was not able to retrieve the requested design control measures for the onsite electrical power systems. The licensee provided unit specific diesel loading calculations. The inspectors identified that the licensee failed to include all design basis accidents, a single limiting failure, consider bus frequency and voltage fluctuations, motor starting currents, or manually initiated loads in the calculation. In response to the inspectors' observations, the licensee performed an operability evaluation. The inspectors reviewed the evaluation and concluded that the emergency diesel generators remained operable and capable of performing their intended safety function. The licensee has entered this issue into the corrective action program as Notification 50163396.

This finding 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 are affected. The inspectors used Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," to analyze the significance of this finding. The inspectors concluded 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. The inspectors did not assign a crosscutting aspect because the finding represented a latent design issue. Pacific Gas and Electric revised the calculations in September 2006 and did not have a recent opportunity to identify this issue.

Inspection Report# : [2008005](#) (*pdf*)

Significance:  Nov 20, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Correct Violations of the Seismically-Induced Systems Interaction Program

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to properly implement housekeeping procedures to prevent seismically-induced system interactions. Specifically, the team identified two instances during a plant walk down where transient equipment was staged in the vicinity of safety-related equipment identified as seismically-induced system interaction targets. This transient equipment had not been analyzed to assess the risk to these safety-related components. Following identification by the team, licensee staff secured and analyzed the transient equipment. Licensee staff entered this finding into the corrective action program as Notifications 50084856 and 50084761.

The failure of plant personnel to follow the requirements to properly secure or analyze equipment in close proximity to sensitive equipment was a performance deficiency. The finding was more than minor because it was similar to Inspection Manual Chapter 0612, "Power Reactor Inspection Reports" Appendix E, Example 3.j., in that it was indicative of a significant programmatic deficiency in the licensee's Seismically-Induced System Interactions Program that could lead to worse errors if uncorrected. Specifically, a change in program ownership in 2006 resulted in a degradation of the sensitivity of plant personnel to the risk of seismically-induced system interactions due to transient materials, insufficient training of plant personnel on the program, and an absence of quality records over an approximately two-year period. Using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because it did not result in an actual loss of a system safety function, did not result in a loss of a single train of safety equipment for greater than its technical specification allowed outage time, did not involve the loss or degradation of equipment specifically designed to mitigate a seismic, flooding, or severe weather initiating event, and did not involve the total loss of any safety function that contributes to an external event initiated core damage accident sequence. This finding has a cross-cutting aspect in the area of human performance associated with the work practices area component because the licensee failed to define and effectively communicate expectations regarding procedural compliance and personnel failed to follow procedures [H.4(b)].

Inspection Report# : [2008008](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Significance: SL-IV Dec 11, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the Final Safety Analysis Report

The team identified a non-cited violation of 10 CFR 50.71(e) for the failure of the licensee to periodically (every 24 months) update its Final Safety Analysis Report Update with all changes made in the facility or procedures. Specifically, in July 2005, the licensee stopped using the boric acid evaporator system as described in the Final Safety Analysis Report Update, Section 11.2.6, and did not submit an update to the NRC regarding this operational change. This issue was entered into the licensee's corrective action program as Notification 50116337 and licensee representatives stated an update would be submitted.

The team determined that the failure to update the Final Safety Analysis Report Update to reflect changes made to the facility was a performance deficiency. This issue is subject to traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. The finding is characterized as a Severity Level IV, non-cited violation in accordance with NRC Enforcement Policy, Supplement I, Example D.6, in that, the erroneous information in the Final Safety Analysis Report Update was not used to make an unacceptable change to the facility or procedures.

Inspection Report# : [2008009](#) (*pdf*)

Significance:  Nov 20, 2008

Identified By: NRC

Item Type: FIN Finding

Failure to Take Appropriate Actions to Correct an Identified Adverse Trend

The team identified a finding for failure to take adequate corrective actions to correct adverse trends in control of radioactive and potentially contaminated material as required by the corrective action program. Specifically, between May 2005 and June 2008, the licensee on two occasions identified and failed to correct adverse trends in the control of radioactive and potentially contaminated material. Licensee staff entered this finding into the corrective action program as Notification 50085121.

The finding was more than minor because it affected the Public Radiation Safety cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Using Inspection Manual Chapter 0609 Appendix D, "Public Radiation Safety Significance Determination Process," the finding was determined to have very low safety significance because the dose impact to a member of the public was less than or equal to 0.005 rem total effective dose equivalent. The finding has a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action area component; because the licensee failed to thoroughly evaluate problems such that the resolution addressed the cause [P.1(c)].

Inspection Report# : [2008008](#) (*pdf*)

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

Last modified : December 10, 2009