

Diablo Canyon 1

1Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Power Ascension Procedures

The inspectors identified a noncited violation of Technical Specification 5.4.1, "Procedures," after plant operators failed to stabilize reactor power and perform a comparison between the calorimetric heat balance calculation and the power range output prior to exceeding 30 percent power. The inspectors concluded several human performance factors contributed to the procedure violation, including less than adequate pre-job brief and poor operational command and control of the reactor power ascension.

This finding is greater than minor because the failure to follow procedure is associated with the human performance 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. The inspectors used Inspection Manual Chapter 0609, Attachment 4, "Phase 1 Initial Screening and Characterization of Findings," to analyze the significance of this finding. The inspectors concluded the finding is of low safety significance because the violation is not a design or qualification deficiency, did not represent a loss of a system safety function or risk significant equipment, and did not screen as potentially risk significant due to a seismic, flooding, or a severe weather initiating event. This finding has a crosscutting aspect in the area of human performance and the work practices component because the licensee failed to ensure adequate supervisory oversight of power ascension activities.

Inspection Report# : [2009002](#) (*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*)

Significance:  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Scope a Radiation Monitoring System into the Maintenance Rule Program

The inspectors identified a noncited violation of 10 CFR 50.65(b) after Pacific Gas and Electric Company failed to include a radiation monitoring system in the maintenance rule scope for monitoring of maintenance effectiveness. The licensee relied on the radiation monitoring system for use in plant emergency operating procedures. The inspectors concluded that radiation monitoring system maintenance had not been effective. Between June 2006 and April 2008, twenty failures of the system had occurred. The licensee has taken corrective action to remove the radiation monitoring system from the emergency operating procedures and entered the condition into the corrective action program as Action Request A0728599.

This finding is greater than minor because it is associated with the Mitigating Systems Cornerstone attribute of equipment performance and affects the cornerstone 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 is of very low safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than the Technical Specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution, associated with the corrective action program component, because Pacific Gas and Electric Company failed to perform an adequate extent of condition review following a similar finding described in NRC Integrated Inspection Report 05000275 and 05000323/2007003 [P.1(c)].

Inspection Report# : [2008003](#) (*pdf*)

Significance:  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Emergency Diesel Generator Snubber Valve Receipt Inspection

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XV, “Nonconforming Materials, Parts, or Components,” after Pacific Gas and Electric failed to perform an adequate receipt inspection to identify defective emergency diesel generator fuel injector snubber valves. On March 13, 2008, Entergy Nuclear Operations issued Part 21, Report 2008 004 00, “Potential Defect in Fairbanks Morse Emergency Diesel Generator Snubber Valve Material and Heat Treatment,” after observing repetitive diesel generator snubber valve failures. Pacific Gas and Electric evaluated the Part 21 report and concluded that the current receipt inspection was adequate to identify defective snubber valves. However, the inspectors identified that the receipt inspection Procedure RPE M-7297, “DEG - Fuel Injection Pump Snubber Valve,” did not include verification that the snubber valve material had been properly heat treated as described in the 10 CFR Part 21 notification. The inspectors concluded that the potential existed for defective snubber valves to be installed on station emergency diesel generators. The licensee took corrective actions to inspect the installed snubber valves, revise the receipt inspection, and enter the condition into the corrective action program as Action Request A0729807. The subsequent inspection did not identify any defective snubber valves installed in the plant or in the warehouse stock.

The finding is greater than minor because if left uncorrected, less than adequate receipt inspections would become a more significant safety concern. The inspectors concluded this finding is of very low safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than the Technical Specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. 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 Company failed to adequately evaluate a Part 21 notification [P.2(a)].

Inspection Report# : [2008003](#) (*pdf*)

Barrier Integrity

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Operability Evaluation of Reactor Coolant Leakage Detection System

The inspectors identified a noncited violation of Technical Specification 3.4.15, “RCS Leakage Detection Instrumentation,” after the Unit 1 containment atmosphere gaseous radioactivity monitor reactor coolant leak detection system was inoperable for greater than the allowed out of service time. On August 13, 2008, the inspectors identified that the source term assumed in the leak detector design basis was not present in the reactor coolant system. Pacific Gas and Electric personnel performed an operability evaluation of the degraded condition and concluded that the detector was operable. The inspectors identified that the licensee’s evaluation did not consider the effect of the current reactor coolant conditions on the functionality of the detector. The inspectors subsequently concluded that the detector was inoperable from August 16 through September 18, 2008. The licensee declared the leak detector

inoperable on September 23, 2008, and entered the condition into their corrective action program as Action Request A0737958.

This finding was more than minor because less than adequate operability evaluations, if left uncorrected, would become a more significant safety concern. The inspectors determined this finding affected the Barrier Integrity Cornerstone. 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 of low safety significance because the condition was not related to pressurized thermal shock, loss of cooling to the spent fuel pool, or fuel handling errors or the loss of spent fuel pool inventory. This finding has a crosscutting aspect in the

area of problem identification and resolution, associated with the corrective action program component, because Pacific Gas and Electric personnel failed to perform an adequate operability evaluation of a degraded reactor coolant leak detection system.

Inspection Report# : [2008004](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Significance:  Mar 12, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure

The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.4.1 for failure to develop a procedure for removing the reactor head from the reactor pressure vessel and the subsequent filling of the reactor coolant system in a manner that would minimize the potential for airborne contamination. Specifically, on March 5, 2009, while lifting the reactor vessel head in preparation for reloading the reactor core, the licensee experienced airborne radioactivity as high as 4.8 derived air concentrations due to the delay in flooding the reactor refuel cavity. The delay allowed the radioactive contamination on the reactor upper internal structure to dry and subsequent air flow around the upper internal structure caused the contamination to become airborne. The licensee evacuated unnecessary personnel from containment, initiated containment purge to reduce airborne contamination, and obtained air samples until airborne contamination levels were reduced to normal levels (less than 0.2 derived air concentrations). The licensee entered this item into the corrective action program as Notification 50209442 and is conducting an apparent cause evaluation of the event.

The failure to develop and implement procedures for removing the reactor head and filling the reactor coolant system in a manner that minimized the potential for airborne radioactivity is a performance deficiency. The finding is greater than minor because it is associated with the occupational radiation safety cornerstone attribute of program and process and affected the cornerstone objective of exposure/contamination control, in that, failure to develop and implement adequate procedures for removing the reactor vessel head and fill the reactor coolant system resulted in workers' unplanned, unintended dose. Using the Occupational Radiation Safety significance determination process, the inspectors determined this finding had very low safety significance because the finding involved as low as is reasonably achievable planning and work controls, and the licensee's 3-year rolling average collective dose is less than 135 person-rem per unit. Because the AMS-4 on the refuel floor in containment alarmed at an airborne concentration of greater than 0.5 derived air concentrations, the finding is self-revealing. Additionally, the finding had a crosscutting aspect in the area of human performance, work control component, because the licensee failed to plan and coordinate work activities by incorporating job site conditions which may impact radiological safety.

Inspection Report# : [2009002](#) (*pdf*)

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

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