

Diablo Canyon 2

3Q/2004 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Identify Multiple Grounds in Containment Spray Pump 2-2 Control Circuitry

A self-revealing, noncited 10 CFR Part 50, Appendix B, Criterion XVI, was identified for the failure to promptly identify multiple grounds in the breaker control circuitry for Containment Spray Pump 2-2. Specifically, Pacific Gas and Electric Company missed several opportunities, in part because of a failure to utilize the troubleshooting procedure, to pursue the cause of the ground and to address anomalous indications, the proximity of a known ground to other conductors, and operating experience. The grounds degraded control wires affecting the pump's manual/automatic breaker closure circuits, indication circuits, and overcurrent circuits for up to 70 days following the initial ground indication. A problem identification and resolution crosscutting aspect was identified for the troubleshooting and corrective actions associated with the grounds. The grounded cable was subsequently replaced. Similar to Example 4.f in Appendix E of Inspection Manual Chapter 0612, the finding is greater than minor because the multiple grounds affected the operability of containment spray pump 2-2. Using the Inspection Manual Chapter 0609 Phase I Screening Worksheet, the finding was of very low safety significance since there was not an actual reduction of the atmospheric pressure control function for containment.

Inspection Report# : [2004004\(pdf\)](#)

Significance:  Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain Simulator with respect to Backup Seismic Alarm

A noncited violation of 10 CFR 55.46 was identified by the inspectors for the failure to maintain the plant referenced simulator to respond to normal, transient and accident conditions. Pacific Gas and Electric Company removed from service, and abandoned the Backup Seismic System (Terra Tech Instrument) in place in June 2000. However, as of August 31, 2004, the plant referenced simulator still provided an annunciator fed from the backup seismic system when an earthquake of sufficient magnitude was felt. This provided operators with negative training in that operators were trained that the backup seismic system would provide annunciation and indication.

This finding affects the mitigating systems cornerstone and is greater than minor because it results in negative training of the operators to expect an annunciator from a backup seismic system in the event of an earthquake, if the earthquake force monitor was unavailable. Using the flow chart of Appendix I, of Inspection Manual Chapter 0609 of the Significance Determination Process, this issue affects operator actions in that operators may attempt to obtain ground motion from backup seismic monitors that did not exist. Per Inspection Manual Chapter 0609, Appendix I, Item 12, the inspectors determined that the finding was Green because the differences between the plant control room and the plant reference simulator negatively impacted operator actions and resulted in negative training.

Inspection Report# : [2004004\(pdf\)](#)

Significance:  Mar 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Design Basis of Diesel Fuel Oil Storage Tank into Implementing Procedures

A noncited violation of 10 CFR Part 50, Appendix B, Criterion III, was identified for the failure to translate the diesel emergency generator fuel oil usage design basis assumptions into procedures. Specifically, Calculation M-786 provided the basis for the Technical Specification minimum required volume of fuel oil in the fuel oil storage tanks to meet a 7 day fuel oil supply following a loss of offsite power for both units. The minimum volume was based on each unit operating only the minimum safety-related loads to achieve and maintain safe shutdown. However, the diesel engine generator minimum safety-related loads were not translated into procedures, nor were any instructions provided to alert operators to take actions to conserve fuel oil. With all six diesel engine generators running fully loaded there is insufficient fuel oil in the fuel oil storage tanks for 7 days of operation.

This issue affects the mitigating systems cornerstone objective to ensure the availability of onsite emergency AC power during the entire period

described in the design basis. This issue is more than minor because it could have an actual impact on the ability of the diesel engine generators to mitigate a long-term loss of offsite power event. Using the Phase 1 significance determination process the inspectors determined that the issue was of very low safety-significance because the finding does not represent an actual loss of a safety system or a single train and did not meet the criteria for being risk significant because of an external event.

Inspection Report# : [2004002\(pdf\)](#)

Significance:  Mar 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Adequate Procedures for Preventive Maintenance and Operation of Limitorque Motor-operated Valves in a Moist Environment

A noncited violation with two examples was identified by the inspectors for the failure to assure activities affecting quality shall be accomplished in accordance with documented instructions, procedures, or drawings, as required by 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Specifically, Pacific Gas and Electric failed to provide adequate procedures for preventive maintenance and operation of Limitorque motor-operated valves. The inadequate procedures resulted in the degraded operation of three Limitorque motor-operated valves in the auxiliary saltwater system during quarterly valve surveillance activities.

The performance deficiency associated with the finding is the failure to provide adequate instructions for preventive maintenance and operation of Limitorque motor-operated valves. The preventive maintenance aspect was evident with the Limitorque valves located in a moist environment. This finding impacted the mitigating systems cornerstone for the reliability of the auxiliary saltwater system that affects both shutdown and operating equipment. The finding is greater than minor because the finding would become a more significant safety concern if the problem was left uncorrected. Specifically, the problems of undiscovered rust formation on the valve declutch lever and the out-of-adjustment tripper fingers would continue to affect manual operation of the Limitorque valves and the ability to re-engage the motor operator. Using the SDP Phase 1 Worksheet in Inspection Manual Chapter 0609, the inspectors determined that this finding is of very low safety significance. Although operation of the three auxiliary salt water valves were degraded, the three motor-operated valves were available to perform their intended safety functions. The finding did not result in a loss of safety function or screen as potentially risk significant from the consideration of external event impacts.

Inspection Report# : [2004002\(pdf\)](#)

Significance:  Mar 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Control Placement of Temporary Equipment With Regards to Potential Seismic Impact on Safety-Related Systems

A noncited violation of Technical Specification 5.4.1.a. was identified by the inspectors for the failure to adequately control the storage of temporary equipment that has a potential for seismically-induced system interaction with safety systems. Specifically, on March 18 and then on March 31, the inspectors identified an instance where transient equipment was stored in close proximity to safety systems and considered to be potential seismically-induced system interactions. On March 18, Pacific Gas and Electric identified two other instances where temporary equipment could cause a seismically-induce system interaction with safety systems. In each case the equipment was determined not to impact the functionality of the safety systems in the event of an earthquake.

The finding impacted the mitigating systems cornerstone for protection against external hazards. The issue was determined to be more than minor when compared to Example 4.a of Inspection Manual Chapter 0612, Appendix E. Similar to the example, the inspectors and Pacific Gas and Electric found four examples on the auxiliary building 140 ft. elevation where temporary equipment was stored contrary to procedures to protect safety-related systems from seismic impact. Using the Significance Determination Process Phase I worksheet in Inspection Manual Chapter 0609, Appendix A, the finding is of very low safety significance since it did not screen as potentially risk significant due to a seismic event. Specifically, the inspectors determined that the finding did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic event and it does not involve the total loss of any safety function with respect to a seismic event.

Inspection Report# : [2004002\(pdf\)](#)

Significance: TBD Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Train Operations Responders in Support of the Fire Brigade

The inspectors identified a violation of Technical Specification 5.4.1.d which requires written procedures be established, implemented and maintained covering the Fire Protection Program implementation. Specifically, PG&E failed to adequately establish and implement procedural changes that provided for senior control operators, licensed control operators and non-licensed, level 8 nuclear operators to serve in the operator responder position. The inspectors noted that the applicable attachment to the procedure for conduct of the operations response position was not established until after training had been provided on implementing the procedure. Operations responders supporting the fire brigades exhibited a knowledge weakness in activities such as communications with the control room, manual actuation of fire suppression equipment, and providing information to the fire brigade regarding safe shutdown equipment.

The finding is unresolved pending completion of a significance determination. The finding is greater than minor because it affects the

mitigating system cornerstone objective by degrading fire brigade effectiveness, which is a fire protection defense-in-depth element.

Inspection Report# : [2003008\(pdf\)](#)

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Significance: Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Monitor Auxiliary Feedwater System According to 10 CFR 50.65(a)(2)

The inspectors identified a noncited violation for the failure to adequately monitor the performance of the Unit 1 auxiliary feedwater system in accordance with 10 CFR 50.65(a)(2). Specifically, the unavailability time performance criteria for the auxiliary feedwater system had been exceeded during its monitoring period, but the system was not monitored per 10 CFR 50.65(a)(1).

The finding impacted the mitigating systems cornerstone objective to ensure the availability and reliability of the auxiliary feedwater system to respond to initiating events. The finding is greater than minor using Example 1.f of Inspection Manual Chapter 0612, Appendix E. Similar to the example, the inspectors identified that Pacific Gas and Electric did not consider unavailability time for the Unit 1 auxiliary feedwater system, although the unavailability time was due to prior poor maintenance practices on Valve FW-1-FCV-437. If the unavailability time was considered, the 10 CFR 50.65(a)(2) evaluation would be invalid. Using the Significance Determination Process Phase I worksheet in Inspection Manual Chapter 0609, Appendix A, the finding is of very low safety significance since there was no loss of an actual safety function, no loss of a safety-related train for greater than the Technical Specification allowed outage time and the finding is not potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event.

Inspection Report# : [2003008\(pdf\)](#)

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Significance: Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Adequate Technical Bases for Core Exit Thermocouple Radial Temperature Measurement

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, when Pacific Gas and Electric personnel failed to adequately evaluate the capability of core exit thermocouples to measure the radial temperature gradient for Quadrant 1 of the Unit 1 reactor core. Specifically, maintenance personnel inadvertently swapped core exit thermocouples at a connection, leaving only 3 operable thermocouples per Trains A and B for Quadrant 1. When questioned by the inspectors, engineering personnel could not provide an adequate technical bases for how measurement of radial temperature gradient could be accomplished.

The finding impacts the mitigating system cornerstone through degraded overall availability of the components within a system used to assess and respond to initiating events to prevent undesirable consequences. The finding was greater than minor when compared to Example 3.a of Inspection Manual Chapter 0612, Appendix E. Similar to Example 3.a, Pacific Gas and Electric performed additional work to verify the ability of the core exit thermocouples to measure radial temperature gradient within Quadrant 1 of the Unit 1 reactor core. Using the Significance Determination Process Phase 1 screening worksheet from Inspection Manual Chapter 0609, Appendix A, the finding was determined to be of very low safety significance since the deficiency was confirmed not to result in loss of function per Generic Letter 91-18, Revision .

Inspection Report# : [2003008\(pdf\)](#)

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Significance: Dec 31, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct Rockwell-Edwards Valves Susceptible to Packing Gland Follower Flange Failures

A self-revealing violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified for failure to promptly identify and correct a condition adverse to quality. Specifically, in December 2000, Pacific Gas and Electric failed to identify and correct the population of Rockwell-Edwards valves in safety-related and risk-significant systems that were susceptible to failure of the packing gland follower flange from intergranular stress corrosion cracking. Pacific Gas and Electric received an industry notification in December 2000 that Rockwell-Edwards valves were vulnerable for this type of failure, but initiated corrective actions on a very limited population of valves (those involving a trip risk). As a result, on December 3, 2003, the packing gland follower flange for safety injection Valve SI-1-8890A (pressure equalization valve) on the hot leg injection line failed, due to intergranular stress corrosion cracking, resulting in excessive packing gland leakage.

The finding impacted the mitigating systems cornerstone through degraded equipment performance for a system train that responds to initiating events to prevent undesirable consequences. The finding is greater than minor because the finding would become a more significant safety concern if the valve condition was left uncorrected. The amount of leakage from the valve would be significantly greater than a 30 drop per minute leak rate, if the safety injection pumps were fully running in the hot leg injection mode. The Valve SI-1-8890A leak rate is bounded by a residual heat removal pump seal failure. Pacific Gas and Electric concluded the safety injection system was operable but degraded because both safety injection system trains would be available to provide adequate flow if a demand occurs. Using the Significance Determination Process Phase 1 worksheet in Inspection Manual Chapter 0609, Appendix A, the finding was determined to be of very low safety significance, since there is no loss of an actual safety function, no loss of a safety-related train for greater than the Technical Specification allowed outage time, and the finding is not potentially risk significant due to a seismic, fire flooding, or severe weather initiating event.

Inspection Report# : [2003008\(pdf\)](#)

G**Significance:** Oct 07, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform A Prompt Operability Assessment for Multiple Battery Charger Failures

A non-cited violation was identified for inadequate corrective actions for multiple battery charger failures. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that significant conditions adverse to quality shall be promptly identified, the cause shall be determined, and corrective action shall be taken to preclude repetition. Additionally, the identification, cause, and corrective actions associated with a significant condition adverse to quality shall be documented and reported to appropriate levels of management. Contrary to the above, the team discovered multiple examples of PG&E's failure to promptly identify, determine the cause, apply corrective action and report to appropriate management the design deficiency and other causes for multiple failures in vital battery chargers between January 1999 and May 2003. The failure to correct the battery charger design deficiency allowed battery charger failures in both units.

This issue was more than minor because it could become more significant safety concern if not corrected because multiple failures could exist simultaneously without being detected, although this did not represent a common mode failure. It affected the Mitigating Systems Cornerstone. The issue was of very low safety significance because the primary failure mechanism involved an increased failure rate, but did not constitute a common cause failure mode. A Phase 3 SDP determined that there was a good likelihood that at least one 125 Vdc bus would have power during design basis conditions, allowing the plant to reach a safe shutdown condition.

Inspection Report# : [2003010\(pdf\)](#)**G****Significance:** Oct 07, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Multiple Examples of A Violation of 10 CFR Part 50, Appendix B, Criterion XVI, Related to Battery Charger Failures Between 1999 and 2003

The team identified that, in the case of repeated failures of Class 1E battery chargers between January 1999 and May 2003, the licensee's corrective action process was ineffective in a number of ways. The licensee failed to appropriately prioritize and evaluate battery charger failures, individually and collectively. The Action Request Review Team consistently assigned low significance, did not assign any cause investigation, and did not recognize a trend of charger failures existed, even when multiple failures were identified in a short period of time. The licensee inappropriately judged the significance of the charger failures on lack of actual adverse plant consequences rather than the potential consequences of similar failures during a design basis event. Corrective actions were ineffective and limited to component replacement, allowing additional failures to occur. The licensee's Corrective Action Program had little defense-in-depth and no effective feedback mechanisms in the area of determining the significance of an issue and assigning an appropriate type of cause assessment. The licensee did not have a formal program for trending equipment failures. The program did not give adequate consideration to determining the extent of condition or potential for common mode failure.

Inspection Report# : [2003010\(pdf\)](#)**G****Significance:** Oct 07, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Ten Examples of A Violation of Technical Specification 3.8.4 for Battery Chargers Inoperable Longer Than the AOT.

A non-cited violation of Technical Specification 3.8.4 was identified because various Class 1E DC chargers in both units were incapable of performing their intended safety functions of supplying 125 Vdc loads and recharging the associated battery for longer than permitted by the associate action statements during various times between January 1999 and May 2003. This condition was allowed to occur because the licensee failed to identify the cause and take effective corrective actions from earlier failures. Specifically, multiple, and in some cases repetitive, failures occurred which were undetected until the chargers were fully loaded, as would be the case during performance of its intended safety function.

This issue was more than minor because it could become more significant safety concern if not corrected because multiple failures could exist simultaneously without being detected, although this did not represent a common mode failure. It affected the Mitigating Systems Cornerstone. The issue was of very low safety significance because the primary failure mechanism involved an increased failure rate, but did not constitute a common cause failure mode. A Phase 3 SDP determined that there was a good likelihood that at least one 125 Vdc bus would have power during design basis conditions, allowing the plant to reach a safe shutdown condition.

Inspection Report# : [2003010\(pdf\)](#)

Barrier Integrity

G**Significance:** Sep 30, 2004

Identified By: NRC

Item Type: FIN Finding

Failure to properly implement an operating instruction for an inoperable containment isolation valve.

The inspectors identified a finding for the failure to properly isolate containment isolation Valve VAC-2-FCV-681 (an air-operated containment isolation valve) after it failed to fully stroke open and was declared inoperable. Operators hung administrative tags on the control room switch for the valve but failed to remove the motive force from the valve by isolating air to the actuator. The associated operating instruction required that the valve be closed and deactivated. A human performance crosscutting aspect was identified for the failure to properly implement the operating instruction for an inoperable containment isolation valve.

This issue affects the barrier integrity cornerstone objective to ensure that systems penetrating the containment and are connected directly to the containment atmosphere have adequate isolation to protect the containment barrier. This issue is greater than minor because failure to properly close and deactivate containment isolation valves could have an actual impact on the ability to isolate a fault outside of containment. Using the Phase 1 significance determination process, the inspectors determined that the issue was of very low safety significance because the finding did not represent an actual open significant pathway to the environment and the penetration was isolated by an active valve having secured flow.

Inspection Report# : [2004004\(pdf\)](#)

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Significance: Sep 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Submit Change to the Emergency Plan with respect to Backup Seismic System

A violation of 10CFR 50.54(q) was identified by the inspectors for failure to update and submit changes to the emergency plan within 30 days. Specifically, Section 7.5.1 of the Diablo Canyon Emergency Plan stated that a supplemental seismic system, supplied by Terra Tech Corporation, provided backup local indication and control room annunciation on strong ground motion. The Terra Tech system was removed from service, along with its annunciation in the control room, and abandoned in place in July of 2000, but as of September 30, 2004, Pacific Gas and Electric had not revised its emergency plan to reflect this change.

The finding was evaluated using NUREG-1600, "General Statement of Policy and Procedure for NRC Enforcement Actions," Section IV, because licensee reductions in the effectiveness of its emergency plan impact the regulatory process. The finding had greater than minor significance because deletion of conditions indicative of a site area emergency has the potential to impact safety. The finding was determined to be a noncited Severity Level IV violation because the finding involved a violation of a regulatory requirement and did not constitute a failure to meet an emergency planning standard as defined by 10 CFR 50.47(b). This finding has been entered into the licensee's corrective action program as Action Request A0618799.

Inspection Report# : [2004004\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

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Significance: Dec 31, 2003

Identified By: NRC

Item Type: FIN Finding

Failure to Maintain Collective Doses ALARA

A finding was identified because Pacific Gas and Electric failed to maintain collective doses as low as is reasonably achievable. Specifically, work activities associated with Radiation Work Permit 03-2055, "Reactor Coolant Pump (RCP) 2-2, 10 year inspection," exceeded 5 person-rem and the dose estimation by more than 50 percent due to a miscommunication among work groups.

The failure to maintain collective doses as low as is reasonably achievable is a performance deficiency. This finding was more than minor because it is associated with the Occupational Radiation Safety Cornerstone attribute (program and process) and affected the associated cornerstone objective (to ensure adequate protection of workers' health and safety from exposure to radiation). This occurrence involved inadequate planning which resulted in unplanned, unintended occupational collective dose for the work activity. When processed through the Occupational Radiation Safety Significance Determination Process, this finding was found to have no more than very low safety significance because the finding was as low as is reasonably achievable planning issue and Pacific Gas and Electric Company's 3-year rolling average collective dose was less than 135 person-rem.

Inspection Report# : [2003008\(pdf\)](#)

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : December 29, 2004