

# Diablo Canyon 1

## 1Q/2005 Plant Inspection Findings

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### Initiating Events

**G****Significance:** Mar 31, 2005

Identified By: NRC

Item Type: FIN Finding

**Failure to follow procedure resulted in unplanned transient**

A self-revealing finding was identified for operators failing to follow Procedure OP J-4A:IV, "Generator Stator Cooling Water-Heat Exchanger Removal from and Return to Service," Revision 5, for isolation of flow to both of the stator cooling water heat exchangers by operating valves out of sequence. This finding resulted in an unplanned transient from a generator runback from 50 to 15 percent power. This finding has human performance crosscutting aspects for failing to follow procedures when removing a stator cooling water heat exchanger from service.

The failure to follow Procedure OP J-4A:IV affects the initiating events cornerstone and is more than minor because it resulted in actual impact to the facility. This failure resulted in an inadvertent reactor transient from 50 percent to 15 percent reactor power. This finding screened to green because no loss of safety functions or other adverse impacts to the facility occurred, and was therefore of very low safety significance.

Inspection Report# : [2005002\(pdf\)](#)**G****Significance:** Jun 30, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Inadequate procedure for reactor vessel draining resulted in inadvertent two feet level change**

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V was reviewed for failure to provide a procedure appropriate to the circumstances. Specifically, Procedure OP A-2:II "Reactor Vessel – Draining the RCS to the Vessel Flange with Fuel in the Vessel," Revision 28, was not appropriate to the circumstances in that Attachment 9.5 prescribed opening cross-tie valves between the pressurizer and reactor vessel head following reactor vessel drain down to the reactor vessel flange. This resulted in an alignment in which the reactor vessel head was not vented, and caused an inadvertent loss of control of vessel level and an inadvertent increase of two feet in vessel level. In addition to the procedure aligning the system at an inappropriate point in the evolution, operators did not maintain the valve status board and assumed that the reactor vessel was adequately vented. Human performance crosscutting aspects were identified involving adequacy and verification of a procedure development and implementation, and system status awareness. Following the above event, and others described in 1R.14.1, .2, .3, and .4, that included inadvertent losses of control of system status by operations leadership, the operations director initiated an operations stand down with the senior reactor operators and day shift plant operations staff, emphasizing the need to control overall system status.

This finding was of greater than minor significance because it involved the Initiating Events cornerstone and represented a loss of control of reactor vessel level. This finding was assessed using the Significance Determination Process found in Inspection Manual Chapter 0612, Appendix G, "Shutdown Operations," and determined to be of very low safety significance (Green). Item II.C(5) of the shutdown Significance Determination Process ("Drain down controlled") applies. Although this violation resulted in an inadvertent level change of approximately two feet, the level change resulted in an increase in vessel water level, thus not decreasing the time to boil.

Inspection Report# : [2004003\(pdf\)](#)**G****Significance:** Jun 30, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Exceeding pressurizer heat up rate**

A self-revealing noncited violation of TS 5.4.1.a was reviewed for failure to implement procedures. Specifically, Pacific Gas and Electric Company failed to implement Procedure OP A-2:IX "Reactor Vessel – Vacuum Refill of the RCS," Revision 3, by exceeding the required pressurizer heatup rate of 100 degrees in any one hour. On May 11, 2004, during drawing of a pressurizer steam bubble, operators allowed a pressurizer heatup rate of 129 degrees in one hour. A human performance crosscutting aspect was identified for the failure to establish adequate configuration controls for the conduct and monitoring of the pressurizer heat up as well as for the initiation of the technical review following the identification that the heat up rate had been exceeded. An engineering evaluation was performed that demonstrated the stresses experienced during the heat up were within allowable limits.

This issue affects the barrier integrity cornerstone objective to ensure that the pressurizer, part of reactor coolant system barrier, remains intact, and not subject to excessive thermal stresses. This issue is more than minor because it could have had an actual impact on the ability to minimize stresses on the reactor coolant pressure boundary. Using the Phase 1 Significance Determination Process screening worksheet the inspectors determined that the issue was of very low safety-significance (Green) because engineers performed an evaluation of the condition

and determined that the pressurizer remained operable because the condition was bounded by a previous analysis. Previous analysis indicated that the pressurizer could withstand a maximum heat up rate of up to 282 degrees F per hour without excessive stresses.

Inspection Report# : [2004003\(pdf\)](#)

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## Mitigating Systems

**Significance:**  Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to correct fire program violation concerning qualifications of Operations Responders in support of the fire brigade**

The inspectors identified a noncited violation of Technical Specification 5.4.1.d for failure to implement procedures for Fire Protection Implementation, because of failure to provide adequate training for operations fire responders. Procedure OM8, "Fire Protection Program," Revision 2B, Section 7.8 states, in part, that quality problems associated with the Fire Protection Program shall be documented and resolved in accordance with Procedure OM7 "Corrective Action," Revision 2B. Section 9.5.1 of the Final Safety Analysis Report states that measures are established to ensure conditions adverse to fire protection are identified, reported and corrected, and that administrative procedures are established to implement this requirement. Contrary to the above, Pacific Gas & Electric Company did not adequately implement and maintain a procedure for fire protection. Specifically, Pacific Gas & Electric Company failed to adequately resolve a condition adverse to fire protection in accordance with Procedure OM7. As of March 1, 2005, operations responders were not required to participate in fire drills for initial qualification or maintenance of qualification, as was noted as a qualification deficiency in Non-cited Violation 50-275;323/2003-08-01, and Action Request (AR) A0600934. This finding has problem identification and resolution cross cutting aspects for failure to correct operations responder training deficiencies.

The performance deficiency associated with this finding is a failure to adequately implement the fire protection program with respect to the qualifications of the fire brigade operations responder. The finding impacted the mitigating systems cornerstone and was more than minor since there was an adverse impact to a fire protection defense-in-depth element. Using the Significance Determination Process (SDP) Phase I Screening Worksheet and the SDP Phase II Notebook in Appendix F of Inspection Manual Chapter (IMC) 0609, the inspectors determined that the finding was of very low safety significance. Specifically, the significance of the finding was evaluated by considering fire scenarios in the vital 4 kV Bus F switchgear room and auxiliary saltwater Pump 1-1 vault. These two areas have the highest dependence on fire brigade response since they have the highest fire ignition frequency for areas that do not have automatic fire suppression. The inspectors evaluated the risk-significance using half the nominal credit for manual fire suppression as a result of the finding. Using Tables 5.4, 5.5, and 5.6 of IMC 0609, both fire scenarios screened as very low safety significance. Since the two fire scenarios were considered worst-case for the finding, the inspectors determined that the finding was of very low safety significance.

Inspection Report# : [2005002\(pdf\)](#)

**Significance:**  Feb 15, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **No procedure for cross-tying trains of the diesel fuel oil transfer system**

A noncited violation was identified for not having a procedure to cross-tie fuel oil transfer trains in response to certain failures, contrary to the design and licensing basis of the system. The design and license basis of the diesel fuel oil transfer system credited the capability to cross-tie trains in order to meet requirements to maintain the system function and be able to withstand a worst-case single failure. The team identified that the licensee did not have a procedure or training to accomplish this task. Failure to incorporate design and licensing requirements into plant procedures was a violation of 10 CFR Part 50, Appendix B, Criterion III. This issue was entered into the licensee's corrective action program under Action Requests A0630010 and A0630015.

The failure to have a procedure needed to meet the design and license basis of the fuel oil transfer system was a performance deficiency. This finding was more than minor because it impacted the Mitigating Systems cornerstone objective of procedure quality to ensure the capability of the system, in that, the system would not be capable of supplying the emergency diesel generators for the required 7-day mission time in the event of a single failure. The team concluded that this would not result in a loss of function in accordance with Generic Letter 91-18; since procedures direct monitoring of fuel capacity, operators would be aware of the need for action for the following reasons: 1) there should be a relatively long time available to detect and correct the problem (in excess of 24 hours), 2) the expected actions are not complex, and 3) existing procedures require monitoring of the remaining fuel oil capacity during extended diesel runs. Therefore, this finding was determined to be of very low safety significance (Green) in Phase 1 of the significance determination process. The licensee took prompt compensatory measures to ensure the full mission time could be met.

Inspection Report# : [2005006\(pdf\)](#)

**Significance:**  Feb 15, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Diesel fuel oil storage tank calculation did not adequately account for vortexing**

A noncited violation was identified for inadequate design control because the licensee did not properly account for vortex prevention in the calculation used to determine the usable volume in the diesel fuel oil storage tank, which could cause the pump to ingest air. The licensee was unable to locate a technical basis for this part of the calculation. The team independently calculated that 4.1 inches was necessary, compared to the 2.0 inches used in the calculation. The licensee performed a similar calculation and reached the same conclusion, which reduced the tanks' unusable volumes by a little less than 1,000 gallons in this 50,000 gallon tank. Failure to properly account for the unusable fuel oil storage tank volume necessary to prevent vortexing was a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." This issue was entered into the licensee's corrective action program under Action Request A0629779.

The failure to properly evaluate and document the unusable volume of the diesel fuel oil storage tank needed to prevent vortexing and ingesting air into the transfer pump was a performance deficiency. Through calculations, the licensee was able to demonstrate that there was sufficient available margin in both the tank capacity and the existing technical specification requirement to account for this without affecting operability or necessitating a technical specification change. This finding affected the Mitigating Systems cornerstone. The issue is more than minor because it was similar to Example 3.i of Appendix E to Manual Chapter 0609, since it was necessary to re-perform a calculation to determine whether the existing condition was acceptable. The finding was determined to be of very low safety significance (Green) during Phase 1 of the significance determination process, since there was available margin in the tank capacity and technical specification minimum required volume and it was confirmed not to involve a loss of function of the system in accordance with Generic Letter 91-18.

Inspection Report# : [2005006\(pdf\)](#)

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**Significance:** Feb 15, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to use the highest pressure in calculation to verify adequate auxiliary feedwater flow**

A noncited violation was identified for inadequate design control, because Calculation STA-135, "Auxiliary Feedwater System," Revision 2, which was intended to demonstrate that the auxiliary feedwater pumps have adequate capacity to meet their design basis, did not correctly identify the highest pressure under which the pumps needed to function. Specifically, the calculation did not account for the dynamic pressure loss between the feedwater inlet ring and the main steam safety valves. The licensee was able to perform an analysis that concluded the pumps had sufficient flow margin at the new pressure. Failure to properly translate the peak pressure against which the auxiliary feedwater pumps must deliver the required flow rate was a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." This issue was entered into the licensee's corrective action program under Action Request A0630804.

The failure to document the capability of the auxiliary feedwater pumps to deliver the required flow at the maximum possible pressure was a performance deficiency. The issue is more than minor because a calculation was needed to determine whether the existing condition was acceptable, consistent with Example 3.i of Appendix E to Manual Chapter 0609. This issue affected the Mitigating Systems cornerstone. Because there was available margin in the pump capacity, this issue was confirmed not to involve a loss of function of the system in accordance with Generic Letter 91-18. Therefore, the finding was determined to be of very low safety significance (Green) during Phase 1 of the significance determination process.

Inspection Report# : [2005006\(pdf\)](#)

G

**Significance:** Feb 15, 2005

Identified By: NRC

Item Type: FIN Finding

**Incomplete action for setting auxiliary feedwater pump minimum flow values**

The team identified a Green finding for inadequate response to industry operating experience regarding establishing minimum flow for the auxiliary feedwater pumps. The team concluded that the licensee recognized that the conditions reported in NRC Bulletin 88-04 were present in auxiliary feedwater pumps because of low settings in the minimum flow lines, but failed to take appropriate actions to minimize and manage, or to eliminate, the potential for pump damage.

This finding represented a performance deficiency because the licensee did not adequately address a degradation mechanism identified in NRC Bulletin 88-04, as required by the station's operating experience program. As a result, the auxiliary feedwater pumps continued to be operated with insufficient minimum flow to avoid unusual wear and aging without establishing increased monitoring and maintenance, or other compensating actions.

This issue was more than minor because it affected the equipment reliability objective of the Mitigating Systems cornerstone. This issue screened as Green during a Phase 1 significance determination process, since the performance deficiency was confirmed not to result in a loss of function in accordance with Generic Letter 91-18. This issue will be treated as a finding in accordance with Manual Chapter 0612: FIN 05000275, 323/2005006-08, Inadequate Response to Operating Experience for Auxiliary Feedwater Minimum Flow.

Inspection Report# : [2005006\(pdf\)](#)

G

**Significance:** Feb 15, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate power operated relief valve accumulator calculation**

A noncited violation was identified for inadequately translating design requirements into calculations used to demonstrate the capabilities of the pressurizer power operated relief valve backup accumulators. The calculation was found to contain a number of non-conservative errors and did not contain the most current acceptance criteria from accident analyses. As a result, this calculation failed to demonstrate that the backup nitrogen accumulators could operate the pressurizer power operated relief valves for the required number of cycles. Failure to properly demonstrate that design requirements for the number of power operated relief valve cycles needed to respond to an inadvertent safety injection actuation were satisfied through a design calculation was a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." This issue was entered into the licensee's corrective action program under Action Requests A0631420, A0630719 and A0630740.

The failure to adequately assess and document the capability of the backup accumulators to provide enough gas to operate the power operated relief valves through the required number of cycles was a performance deficiency. This issue was greater than minor because it was similar to Example 3.i in Manual Chapter 0612, Appendix E, in that, calculations had to be performed to demonstrate that the system could satisfy the accident analyses. This finding affected the Mitigating System cornerstone. This finding screened as having very low safety significance (Green) during a Phase 1 significance determination process, since the issue was confirmed to not have resulted in a loss of function in accordance with Generic Letter 91-18.

Inspection Report# : [2005006\(pdf\)](#)

G

**Significance:** Feb 15, 2005

Identified By: NRC

Item Type: FIN Finding

**Diesel fuel oil transfer modification did not adequately assess reliability impact**

A finding was identified for modifying the diesel fuel oil transfer system without properly assessing the resulting net affect on reliability from introducing a new failure potential associated with new active components. As a result, the licensee rejected a small design change, which would have eliminated the failure mode when it was recognized that failure of the new pressure control valves could fail the train. Because the failure potential was not fully assessed, the licensee decided not to implement a change that would have eliminated the impact of the failure, nor were the pressure control valves subject to any preventive maintenance to ensure their reliability. This issue was entered into the licensee's corrective action program under Action Request A0630383.

The failure to properly assess the net effect on system reliability and risk due to the positive and negative effects of this modification, or to mitigate or eliminate a new failure mode created by the modification was a performance deficiency. This issue is more than minor because it affected the design control attribute of the Mitigating Systems cornerstone objective to assure the reliability and capability of equipment needed for accident mitigation. This finding was determined to be of very low safety significance (Green) during a Phase 1 significance determination process, since the performance deficiency was confirmed not to result in a loss of function in accordance with Generic Letter 91-18 based on test results.

Inspection Report# : [2005006\(pdf\)](#)

G

**Significance:** Feb 15, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Analyses did not demonstrate proper load sequencing with timer anomalies**

A noncited violation was identified for failure to demonstrate that load sequencing would satisfy regulatory requirements. The team identified that a single postulated fault occurring during load sequencing with offsite power available could restart load sequencing timers in all three engineered safety features buses and result in a more limiting scenario than previously analyzed by the licensee. This could result in overlapping starting transients for motors that were intended to start separately, which was not evaluated in existing calculations. The combined effects of this could cause later starting times for safety-related loads, potentially affecting system performance assumed in accident analyses. Failure to demonstrate that the system could perform as required considering a single fault was a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." This issue was entered into the licensee's corrective action program under Action Request 0630036.

This failure to demonstrate through analyses that the electrical distribution system was capable of performing its required function following a single postulated fault was a performance deficiency. This issue was more than minor because it affected the Mitigating System cornerstone objective of ensuring availability, reliability, and capability of systems needed to respond to a design basis accident. The licensee was subsequently able to demonstrate that there would be no loss of safety function even considering the effects of a fault as described above. Therefore, this finding was determined to be of very low safety significance (Green) in Phase I of the significance determination process.

Inspection Report# : [2005006\(pdf\)](#)

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**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Adequately Correct ECCS Voiding Following Operation of the Positive Displacement Pump**

The inspectors identified a noncited violation of 10 CFR 50 Appendix B, Criterion XVI, for the failure to take adequate corrective actions to prevent a void space in the Unit 1 emergency core cooling system piping from exceeding the volume allowed by plant procedures. The void space volume caused operators to declare the emergency core cooling system inoperable and enter Technical Specification 3.0.3 twice on October 21, 2004. Operation of the positive displacement pump, with subsequent operation of the centrifugal charging pump, had been

discovered to create a void in the emergency core cooling system piping approximately five months earlier on Unit 2. This finding had problem identification and resolution crosscutting aspects for determining the extent of the condition and preventing its recurrence.

The finding affected the Mitigating System cornerstone for ensuring the capability of systems that respond to initiating events to prevent undesirable consequences and it affected the equipment performance attribute for availability and reliability. The finding is greater than minor because it is similar to Example 2.f in Appendix E of Inspection Manual Chapter 0612. Similar to the example, the void size had exceeded the limit described in Calculation STA-108, "Allowable Accumulated Gas Volume in the CCPs' [centripetal charging pump] and SIPs' [safety injection pump] Suction Cross-Tie Piping," Revision 3. Using the Inspection Manual Chapter 0609 Phase 1 Screening Worksheet, the finding was of very low safety significance (Green) since the finding is not a design or qualification deficiency that was confirmed to result in a loss of function per Generic Letter 91-18.

Inspection Report# : [2004005\(pdf\)](#)

**G**

**Significance:** Dec 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Inadequate ASCO Valve Qualification Causes Plant Trip**

A self revealing violation of 10 CFR 50.49(f) was identified for the failure to maintain approximately 70 safety related solenoid operated valves in an environmentally qualified condition. On February 9, 2002, an age related ASCO solenoid operated valve failure caused a loss of steam generator feedwater event and a Unit 2 manual plant trip. Further, the licensee did not promptly evaluate the extent of condition of the ASCO failure (coil insulation failure), which delayed the identification of elastomer qualification issues for approximately 1 year. In a related finding, the team identified that the licensee had missed earlier opportunities to identify ASCO elastomer qualification issues, in that they failed to thoroughly evaluate several pertinent NRC information notices and previous valve failures. The failure to: 1) properly establish equipment qualification limits; 2) thoroughly evaluate plant events and failures; and 3) properly evaluate industry operating experience constituted performance concerns. PG&E entered this issue into their corrective action program as Action Request 0613008. These issues have cross-cutting aspects in the area of problem identification and resolution because the original problem investigation did not identify the full scope of the cause and extent of condition, delaying some important corrective actions for approximately 1 year.

This finding was greater than minor because, if left uncorrected, these deficiencies would become a more significant safety concern by increasing the failure rate as the components age. An NRC Senior Reactor Analyst performed a Phase 3 significance determination and the estimated delta-CDF for the finding is 2.2E-8/yr. This violation was of very low risk significance.

Inspection Report# : [2004005\(pdf\)](#)

**G**

**Significance:** Sep 30, 2004

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Address Extent of Condition on Broken Pressurizer Heater Cable**

A finding was identified by the inspectors for Pacific Gas and Electric Company's failure to assess the extent of condition regarding a broken wire at a pressurizer heater electrical connection during Refueling Outage 1R11. As a result, the corrosive agent left on the connections corroded all the Unit 1 pressurizer heater electrical connections as discovered in Refueling Outage 1R12. The finding was greater than minor because it affected the reliability attribute and objective of the Mitigating Systems Cornerstone. Using the SDP Phase I worksheet in Inspection Manual Chapter 0609, Appendix A, the finding is of very low safety significance since the degraded connections were confirmed not to result in a loss of function per Generic Letter 91-18, Revision 1.

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

**G**

**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\(pdf\)](#)

**G****Significance:** Jun 30, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Violation of T.S. 3.0.4 for changing modes with an AFW pump inoperable**

A self-revealing (Green) noncited violation of Technical Specification 3.0.4, was reviewed for entry into Mode 3 when the specified condition in the Technical Specification APPLICABILITY section was not met. Specifically, a transition from Mode 4 (Hot Shutdown) to Mode 3 (Hot Standby) was conducted with the Turbine-Driven auxiliary feedwater Pump 1-1 inoperable. Operators closed Valves LCV [level control valves]-106, -107, -108, and -109, the remote-manual isolation valves for auxiliary feedwater Pump 1-1 when entering Mode 5 on May 27, 2004. The valves were not reopened prior to entering Mode 3 on May 30. This condition existed for 21 hours. The valves were immediately opened when the condition was identified. A primary contributor to this issue involved human performance crosscutting aspects related to configuration control and control board awareness. Operators failed to track the status of these valves, and failed to perform an adequate review of system status during mode transition (Mode 4 to Mode 3) and shift turnovers.

This issue affects the mitigating systems cornerstone and is more than minor because it adversely affects the cornerstone objective of availability and reliability of a risk significant system auxiliary feedwater. Using the Phase 1 Significance Determination Process screening worksheet, the inspectors determined that the issue was of very low safety-significance (Green) because the time of inoperability (21 hours) was less than the 72 hours allowed in Technical Specification 3.7.5. Although auxiliary feedwater Pump 1-1 was inoperable per the Technical Specification, the pump was available for operators to manually initiate auxiliary feedwater if needed during a transient or accident. In addition, both 100 percent capacity motor-driven auxiliary feedwater pumps were also available if needed.

Inspection Report# : [2004003\(pdf\)](#)**G****Significance:** Jun 25, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Design and Test Controls of the Diesel Emergency Generator Fuel Oil Level Control Valves**

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, for the failure to maintain design control of the diesel emergency generator system fuel oil transfer system requirements. Specifically, the fuel supply to each diesel required that an adequate air supply to operate the air-operated day tank level control valve be maintained in the starting air receivers. The team identified that when the licensee recognized that this design basis was not documented, a calculation was performed to support creating the design basis which did not account for operational leakage from the system, nor did it verify that existing leakage would not prevent fulfilling the safety function. This failure potentially affected the ability of each diesel emergency generator to provide sufficient fuel oil to support 7 days of continuous diesel generator operations following a loss of offsite power. This issue was entered into the corrective action program under Action Request A0613008. This finding involved cross-cutting aspects in the area of problem identification and resolution because the original corrective actions did not correct the problem and properly establish the design basis.

This finding was greater than minor because it was similar to Example 3.i of Manual Chapter 0612, Appendix E. This finding affected the mitigating systems cornerstone. This finding was evaluated using NRC Manual Chapter 0609, Significance Determination Process, Phase 1 worksheet under the mitigating systems cornerstone. The finding was determined to be of very low safety significance because the deficiency was confirmed not to result in a loss of function of the diesel engine generator as a power source per Generic Letter 91-18, Revision 1. The licensee was able to demonstrate that compensatory measures were in place so that this function could be performed manually in a reliable manner because operators would receive a control room alarm which triggered implementation of proceduralized step to manually perform the function. The team confirmed that operators were trained to perform this action.

Inspection Report# : [2004006\(pdf\)](#)

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## Barrier Integrity

**G****Significance:** Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to properly pre-plan CRVS maintenance when opening the control room boundary**

Two examples of a self-revealing violation of Technical Specification 5.4.1.a were identified for failure to pre-plan maintenance associated with the Control Room Ventilation System (CRVS). On January 4 and February 1, 2005, both trains of CRVS were rendered inoperable for short periods of time when the system was opened to the atmosphere for maintenance without pre-planning the administrative controls prescribed by Technical Specification 3.7.10, because of personnel error. Technical Specification 3.7.10 states that the control room boundary may be opened intermittently under administrative controls, and that if two trains of CRVS are inoperable because of the control room boundary being open, then the system must be restored to operability within 24 hours. The Bases for Technical Specification 3.7.10 states that proper administrative controls to invoke this Technical Specification exception consist of stationing a dedicated individual who is in continuous communication with the control room, who has a method of rapidly closing the control room boundary, and has been specifically trained on these duties. These administrative controls were not in place when the control room boundary was inadvertently opened on January 4 and February 1, 2005. A human performance crosscutting aspect was identified for failure to pre-plan maintenance associated with the CRVS that

resulted in the control room boundary being opened without administrative controls.

This issue is more than minor and affects the Barrier Integrity Cornerstone, because it represents partial losses of function of the CRVS on two occasions. On January 4 (for 15 minutes) and February 1, 2005, (four hours) both trains of CRVS were rendered inoperable because of an opening in the CRVS boundary which would have prohibited pressurization of the control room. Although Technical Specification 3.7.10 allowed this condition for up to 24 hours, it only allows opening of the control room boundary under strict administrative controls, that were not in place. This issue screens to Green in accordance with Item 1 of the Containment Barriers Cornerstone Phase 1 review, because it constitutes a CRVS issue only, and is therefore of very low safety significance.

Inspection Report# : [2005002\(pdf\)](#)

**G**

**Significance:** Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Promptly Correct Containment Fan Cooler Unit Reverse Rotation**

The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to promptly correct reverse rotation of containment fan cooler units (CFCUs) for both Units 1 and 2. PG&E observed reverse rotation of CFCUs for approximately 13 years, as a result of the CFCU backdraft dampers sticking partially open. The purpose of the backdraft dampers is to prevent reverse rotation of the CFCUs, which could cause the fan motor to trip on overcurrent when the CFCUs are started following a loss of coolant accident. Prior to Refueling Outage 2R12, 2 CFCUs in Unit 1 and 3 CFCUs in Unit 2 exhibited reverse rotation. One of the CFCUs in Unit 2 was considered inoperable due to reverse rotation and another was only considered operable if it was running.

The finding impacts the Barrier Integrity Cornerstone to provide reasonable assurance that physical design barriers protect the public from radio nuclide releases caused by accidents or events and is associated with the barrier performance attribute. The finding is more than minor when considering Example 3.g of IMC 0612, Appendix E. Similar to the example, PG&E observed reverse rotation of CFCUs for 13 years, and the reverse rotation impacted the operability of the CFCUs. Using the SDP Phase 1 Screening Worksheet from IMC 0609, the finding was determined to be of very low safety significance since it was determined that there was not an actual loss of defense-in-depth in containment pressure control or hydrogen control .

Inspection Report# : [2004005\(pdf\)](#)

**G**

**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\(pdf\)](#)

**G**

**Significance:** Jun 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to take corrective actions for stuck open safety injection check valve**

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI was identified by the NRC for failure to identify and correct a condition adverse to quality. Specifically, Pacific Gas and Electric Company failed to inspect and repair the corroded internals of Valve SI-1-8820 prior to changing operating modes. Safety injection check Valve SI-1-8820, listed in the Final Safety Analysis Report as the inboard containment isolation valve for the common high pressure injection header, was found stuck open during a back flow leak test. Pacific Gas and Electric Company mechanically agitated the valve to close it, but did not verify through testing that the valve would forward flow to meet its safety injection function or determine and correct the cause for the valve failing to close. A problem identification and resolution crosscutting aspect was identified for the failure to identify and correct the cause for the valve remaining open. Pacific Gas and Electric Company subsequently placed the unit into a condition that permitted repair of the valve and completed the back flow and forward testing.

This issue affects the barrier integrity cornerstone objective to ensure that systems penetrating the containment and are connected to the reactor

coolant system have adequate isolation to protect the containment barrier. This issue is more than minor because it could have an actual impact on the ability to isolate a fault outside containment given a single failure. Using the Phase 1 Significance Determination Process screening worksheet the inspectors determined that the issue was of very low safety significance because the finding did not represent an actual open pathway in the physical containment.

Inspection Report# : [2004003\(pdf\)](#)

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## Emergency Preparedness

**Significance:**  Dec 31, 2004  
Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Establish Compensatory Measures to Ensure the Implementation of the Diablo Canyon Emergency Plan**

The inspectors identified a violation of 10 CFR 50.54(q) and 50.47.b(4) for the failure to maintain the seismic force monitors during the periods, June 16-19, 1999, December 1-4, 2000, April 25-27, 2002, May 25-29, 2002, November 6-8, 2003, December 30-31, 2003, and August 9-10, 2004, such that the emergency plan designed to meet planning standard (4) in 10 CFR 50.47(b) could be promptly implemented.

Specifically, PG&E failed to provide a means for the emergency director to promptly classify seismic events at the notification of unusual event, alert or site area emergency levels, while the seismic force monitor utilized by the operators (emergency director) was out of service or being replaced. This finding had a human performance cross-cutting aspect associated with identifying compensatory measures to address the removal of the earthquake force monitors.

This performance deficiency impacted the emergency preparedness cornerstone because PG&E did not meet an emergency planning requirement and the cause was reasonably within PG&E 's control and should have been prevented. It is greater than minor because it has a potential to impact safety and because it was not a record keeping or administrative issue or an insignificant procedural error. This deficiency could have affected the EP Cornerstone objective of ensuring the capability to implement measures to protect the health and safety of the public during an emergency, and is associated with attributes of facilities and equipment, and offsite emergency preparedness. The finding is evaluated using the Emergency Preparedness "Failure to Comply" flowchart of the SDP and is a violation of 10 CFR 50.54(q) and planning standard 50.47(b)(4), which states, in part, that a standard emergency action level and classification system... is in use Utilizing the Failure to Comply Flow Chart in Manual Chapter 0609, the performance deficiency does not result in a failure of the risk significant planning standard (RSPS) or a degraded RSPS in that the unavailability of the seismic monitors would not prevent the declaration of a Site Area Emergency, Alert or Notification of Unusual Event .

Inspection Report# : [2004005\(pdf\)](#)

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## Occupational Radiation Safety

**Significance:**  Jan 14, 2005  
Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### **Failure to Perform an Adequate Survey to Evaluate Radiological Hazards**

A self-revealing non-cited violation of 10 CFR 20.1501(a) was identified when the licensee failed to perform an adequate survey to evaluate the radiological hazards associated with venting the steam generator exhaust into containment during the Unit 2 refueling outage. On February 7, 2003, the licensee failed to take air samples to account for the decay of tellurium-132 into iodine-132 in the steam generator exhaust prior to venting into the containment building. Consequently, fifty-two workers in containment received unplanned and unintended low-level intakes (less than 10 millirem) of iodine-132. This issue has been entered into the licensee's corrective action program as Action Request No. A0628334.

The failure to perform a survey to evaluate radiological hazards is a performance deficiency. The finding is more than minor because it affected the Occupational Radiation Safety cornerstone objective to protect worker health and safety from radiation and radioactive materials. This finding was associated with the cornerstone attribute of Exposure Control and involved unplanned and unintended dose to workers that resulted from actions contrary to NRC requirements. Therefore the Occupational Radiation Safety Significance Determination Process was used to analyze the significance of the finding which was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

Inspection Report# : [2004009\(pdf\)](#)

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**Significance:**  Sep 30, 2004  
Identified By: Self Disclosing  
Item Type: NCV NonCited Violation

### Two Examples of a Failure to Follow Radiation Work Permit Requirements

The inspector reviewed two examples of a self-revealing noncited violation of Technical Specifications because Pacific Gas and Electric Company personnel failed to follow radiation work permit requirements. Specifically, all station radiation work permits required individuals to exit the area and return to access control when their personnel electronic dosimeter alarmed due to an accumulated dose. On April 8, 2004, a radiation worker failed to follow this requirement by not exiting containment and returning to access control when the radiation worker's personnel electronic dosimeter alarmed due to accumulated dose. A second example occurred on April 20, 2004, when a radiation protection technician responsible for controlling radiation exposure to a steam generator worker failed to instruct the worker to exit the area and return to access control when the worker's personnel electronic dosimeter alarmed on accumulated dose. In each case, the licensee returned to compliance when the workers exited the area and returned to access control. These two examples were entered into Pacific Gas and Electric Company's corrective action program as Action Request A0605254 and Action Request A0608007, respectively.

The failure to correctly respond to a personnel electronic dosimeter dose alarm as required by the radiation work permit is a violation of a Technical Specification 5.4.1. a. and is a performance deficiency. This finding is greater than minor because it affected the Occupational Radiation Safety cornerstone objective to ensure adequate protection of a worker's health and safety from exposure to radiation and is associated with the cornerstone attribute of Program and Process. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because the finding was not associated with as low as is reasonably achievable planning or work controls, there was no overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. This finding also had crosscutting aspects associated with human performance.

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

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## Public Radiation Safety

**Significance:**  Jan 14, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### Failure to control radioactive material contained in certain generally-licensed devices in accordance with 10 CFR 31.5

The team identified a non-cited violation of 10 CFR 31.5(c) because the licensee failed to maintain a program for generally-licensed radioactive devices used for reactor operations in accordance with the regulatory requirements. The licensee failed to implement a program for the use of generally-licensed devices used for monitoring personnel, and consequently failed to maintain and test 14 radioactive sources housed within the generally-licensed devices. Specifically, the licensee had not (1) conducted contamination leak tests on the device and the 10-millicurie Nickel-63 source housed in each device at the required frequency and (2) assigned an individual with the regulatory knowledge or authority to ensure compliance with 10 CFR 31.5. This issue has been entered into the licensee's corrective action program as Action Request A0628345.

The licensee's failure to control generally-licensed devices containing radioactive material in accordance with 10 CFR 31.5 was a performance deficiency. The finding was more than minor because it affected the Public Radiation Safety cornerstone attribute and affected the associated cornerstone objective. In order to ensure adequate protection of the public health and safety from exposure to radioactive materials released into the public domain, the licensee is required to leak test each generally-licensed device. Using the Public Radiation Safety Significance Determination Process, the finding had very low safety significance (Green) because: (1) it was not a transportation issue, (2) public exposure was not more than 5 millirem, and (3) there were not more than five occurrences. This finding also had crosscutting aspects associated with the effectiveness of problem identification and resolution.

Inspection Report# : [2004009\(pdf\)](#)

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## Physical Protection

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

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## Miscellaneous

**Significance:** N/A Jun 25, 2004

Identified By: NRC

Item Type: FIN Finding

### Problem Identification and Resolution

The team concluded that the licensee was effective in identifying, evaluating, and correcting problems, although the team identified some examples where conditions adverse to quality were not properly entered into the Action Request system, allowing problem

recurrence. The team found that the evaluation and prioritization of problems were mostly conducted properly, although some significant issues were identified as routine because the licensee's process assigned significance based on the actual consequences of problems, rather than considering the potential consequences under design basis conditions. Corrective actions were generally implemented in a timely manner. However, the team found weaknesses with the alignment of corrective actions with the cause, and with the quality of operability evaluations for issues assigned routine significance, because the licensee did not assign a probable cause statement to routine issues. Licensee audits and assessments were found to be responsive to plant performance issues and effective in identifying areas for improvement. During interviews, station personnel communicated a willingness to enter issues into the corrective action program. The team reviewed the licensee's improvement plans for significant cross-cutting issues in human performance and problem identification and resolution. Although it was too early to determine if these will be effective, the team noted that the Human Performance Improvement Plan did not address problems observed in coordinating and supervising operations during outages.

Inspection Report# : [2004006\(pdf\)](#)

Last modified : June 17, 2005