

## Diablo Canyon 2

### Initiating Events

### Mitigating Systems



**Significance:** Oct 05, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Willful violation of maintenance procedure when torquing atmospheric dump valve nuts.**

A violation of Technical Specification 5.4.1.a occurred for failure to follow a maintenance procedure for torquing atmospheric dump Valve PCV-21 bonnet cover bolts. The maintenance procedure required incrementally torquing the studs and nuts using a calibrated torque wrench. However, the mechanics willfully violated the procedure by using a hammer and extender to tighten the bolts, resulting in cracking of 7 out of 8 of the stud and nut combinations. This Severity Level IV violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. Although this violation was willful, the licensee promptly reported the results of the investigation to the NRC, the acts were committed by low level individuals, management was not involved nor was the action due to lack of management oversight, and the licensee took significant remedial action. This violation is in the corrective action program as Nonconformance Report N0002134. The inspectors evaluated the as-found condition of the studs and nuts on Atmospheric Dump Valve PCV-21 using the Significance Determination Process. The inspectors determined that the multiple stud and nut failures represented a credible impact on safety in that their failure could have resulted in the body-to-bonnet separation of Valve PCV-21. The failure would have been similar to a failed open atmospheric dump or secondary safety relief valve. The inspectors considered that the failure of the degraded studs would result in a potential loss of the main steam boundary and a direct release path following a postulated Unit 2 Steam Generator 3 tube rupture. Although the condition resulted in a minor steam leak, the licensee completed a metallurgical analysis that demonstrated the remaining studs and nuts had sufficient strength, along with the stud configuration around the valve bonnet, to prevent catastrophic failure of Valve PCV-21. No immediate operability concerns were identified for any of the other atmospheric dump valves. Based on the determination that the valve body and bonnet would not have separated, the inspectors concluded the issue had very low safety significance.

Inspection Report# : [2002004\(pdf\)](#)



**Significance:** Jul 11, 2002

Identified By: NRC

Item Type: FIN Finding

#### **Grounding resistor vulnerability**

The plant electrical distribution consisted of a design where the three redundant 4160 V safety buses and a non-safety bus were supplied from a common transformer winding during both normal and emergency operation. The 4160 V buses were interconnected by conductors so that a voltage disturbance on any part of the system would affect the entire system. The system had a high resistance grounding design to limit the magnitude of ground faults and to enable continued operation of a faulted load. The grounding resistor admits sufficient fault current to prevent severe over-voltages that could occur. However, if the grounding resistor developed an open circuit, the entire system would be susceptible to over-voltage. The licensee was periodically checking the continuity, but not the actual resistance of the grounding resistors and, thus, assumptions in the design were not being verified. The licensee issued Action Request A0561002 to evaluate the preventive maintenance program of the high resistance grounding program. This issue did not involve a violation of NRC requirements, but was considered to be a finding because it revealed a vulnerability in the licensee's design and maintenance that could result in a safety problem. However, the finding was determined to be of very low safety significance because there was no evidence that the grounding resistor had ever been degraded and that the probability of a grounding resistor failure in combination with a sparking ground fault was very small.

Inspection Report# : [2002006\(pdf\)](#)

**Significance:** TBD May 31, 2002

Identified By: NRC

Item Type: FIN Finding

#### **The installation of the ventilation louver, and the subsequent electrical fault associated with Startup Transformer 1-1 Grounding Transformer Fuse Box.**

The inspectors identified a finding with respect to the placement of ventilation louvers on 12 kV grounding transformer fuse boxes. On August 4, 2001, Units 1 and 2 experienced a loss of startup power as a result of multiple electrical faults in Startup Transformer 1-1 Grounding Transformer Fuse Box. Nonconformance Report N0002130, "Loss of Unit 1 and 2 Startup Power," determined the primary cause of the electrical faults to be condensation inside the fuse box. The contributory cause of the event was the ventilation louver, which allowed outside (salty) air to be drawn into the fuse box. The inspectors' Phase 2 evaluation of this issue using the Significance Determination Process indicated

a condition that was potentially greater than green. The inspectors determined that the installation of the ventilation louver, and the subsequent electrical fault associated with Startup Transformer 1-1 Grounding Transformer Fuse Box represented an actual impact on safety since the preferred offsite power was momentarily lost from both units. Subsequently, auxiliary power continued to supply power to plant loads during the loss of startup power, and diesel generators were also available to supply power to safety-related equipment. This issue will remain as an unresolved issue (URI 50-275; 323/2002-02-01) pending completion of the significance determination process (Section 40A2).

Inspection Report# : [2002002\(pdf\)](#)

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**Significance:** May 31, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**The failure to initiate an operability assessment for a nonconforming condition associated with adequate fuel storage capacity to address increases of diesel generator loads in Calculation M-786.**

The inspectors identified a violation of Technical Specification 5.4.1.a for the failure to initiate an operability assessment for a nonconforming condition associated with adequate fuel storage capacity to address increases of diesel generator loads in Calculation M-786. The licensee, contrary to the procedural requirements, placed the issue in a process to validate the initial perception that diesel fuel oil tank capacity would meet design requirements. The licensee documented on July 19, 2001, that Calculation M-786 had not been updated with regard to changes that would affect diesel fuel usage in the Technical Specifications, Design Criteria Memorandum, the Final Safety Analysis Report Update, and the Emergency Operating Procedures. The licensee determined that such changes could have an adverse impact on the design and licensing basis related to adequate diesel fuel oil storage. The issue was determined to be of very low risk significance during Phase 1 of the NRC Significance Determination Process, because the Calculation M-786 was found to be conservative with respect to diesel generator loads and, therefore, the diesels remained operable. The failure to adequately address operability of potentially nonconforming conditions, if left uncorrected, could become a more significant safety concern, therefore, the issue was determined to be more than minor. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the corrective action program as Action Request A0553285. (Section 40A2).

Inspection Report# : [2002002\(pdf\)](#)

G

**Significance:** Apr 11, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to limit the proximity of transient equipment near safety-related systems due to seismic interaction concerns**

The inspectors identified a violation of Technical Specification 5.4.1.a for the failure to adequately limit the proximity of transient equipment from safety-related systems that may be required during a seismic event. Technical Specification 5.4.1.a requires that written procedures be implemented for equipment control. Procedure AD4.ID3, "SISIP Housekeeping Activities," Revision 4A, Section 5.1.1, required that transient equipment not create a potential seismically induced system interaction. Contrary to the above, on January 14, 2002, the inspectors discovered an unsecured portable welding machine staged approximately 8 inches from the normal and Class 1 air supply lines for Unit 2 atmospheric dump Valve MS-2-PCV-21. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Action Request A0547478. This violation was more than minor because there was a credible impact on safety because the atmospheric dump valve could not be remotely operated due to loss of air supply in a seismic event. This issue was determined to be of very low safety significance because the other three atmospheric dump valves on the steam generators could be used to adequately cool the reactor coolant system.

Inspection Report# : [2001011\(pdf\)](#)

G

**Significance:** Apr 11, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Exceeding the licensed power limit due to a failure to follow procedures**

Technical Specification 5.4.1.a requires the implementation of procedures listed in Regulatory Guide 1.33, Appendix A. Procedures OP L-4, "Normal Operation at Power," Revision 39, Section 5.4 and OP B-9:I, "Primary Sampling System - Make Available and Place in Service," Revision 7, stated, in part, that when pressurizer steam space sampling to the volume control tank was initiated, two backup pressurizer heaters were to be placed in service. On December 28, 2001, operators initiated pressurizer steam space sampling to the volume control tank without placing two backup pressurizer heaters into service. This resulted in a dilution of the volume control tank that increased reactor power above 100 percent for approximately 2½ hours. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Action Request A0546623. This violation was more than minor because it had credible impact on safety due to the unplanned change in reactivity. This issue was determined to be of very low safety significance (Green) because the reactivity addition was not of an appreciable amount to challenge the safety systems or operating limits, and operators were able to return reactor power to desired levels in a controlled manner.

Inspection Report# : [2001011\(pdf\)](#)

G**Significance:** Apr 11, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to perform adequate postmaintenance test of a reactor protection system analog input card**

Technical Specification 5.4.1.a requires the implementation of procedures listed in Regulatory Guide 1.33, Appendix A. Regulatory Guide 1.33 lists procedures for surveillance tests. Procedure STP I-33, "Reactor Trip and Engineered Safety Feature Response Time Test," Revision 6, partially implemented this requirement and stated in Section 3.3.3.b that replacement of an Eagle-21 card required time response testing of the appropriate channels. Contrary to the above, the licensee replaced Card 2 of Rack 13 of the Unit 2 Eagle 21 system on September 18, 2001, but did not perform time response testing as a postmaintenance test and returned the component to service. This card affected reactor trip and safety injection setpoints for Loop 3 reactor coolant system temperature, pressurizer pressure, and pressurizer level. Upon discovery, the time response test was successfully performed on March 7, 2002. This event is described in the licensee's corrective action program, reference Action Request A0550656. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation was more than minor because it had credible impact on safety due to the card affecting several mitigating systems and actuations. This issue was determined to be of very low safety significance (Green) because when the post maintenance testing was conducted, the applicable channels passed.

Inspection Report# : [2001011\(pdf\)](#)G**Significance:** Apr 05, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Licensee Restarted Unit 2 Before Recognizing Reactor Trip and Engineered Safety Features Actuation Associated with Lo-lo Steam Generator Water Level was Inoperable**

The failure to promptly identify and correct the steam generator narrow range water level-low low reactor trip system and engineered safety system instrumentation nonconservative setpoint bias following the Unit 2 manual reactor trip on February 9, 2002, is a violation of 10 CFR Part 50, Criterion XVI. The licensee's event review failed to recognize that an engineered safety feature, including a reactor trip, failed to actuate when required during a loss of feedwater event to Steam Generator 2-4. This failure resulted in the licensee restarting Unit 2 with the reactor trip and engineered safety system instrumentation inoperable, and in the operation of both units with the same instrumentation inoperable, in violation of Technical Specification 3.3.1. This issue is being treated as a noncited violation, consistent with Section VI.A of the Enforcement Policy (50-275; 323/2002-07-01). The licensee documented this deficiency in Action Request A0549031. The failure to promptly recognize inoperable trip and actuation functions and comply with Technical Specification requirements had a credible impact on safety. The resulting delays in an automatic reactor trip and engineered safety features actuations would have delayed the plant's response to a loss of feedwater event and reduced the water mass available for the heat sink function in the affected steam generator(s). Further, this deficiency had the potential to affect the integrity of the reactor coolant system boundary. A Phase 3 Significance Determination Process evaluation concluded that the issue had very low safety significance (Green). The finding represents a condition that existed for 5-days. The significance of the steam generator narrow range water level-low low setpoint offset (bias) is reduced if feedwater flow is lost to two or more steam generators. Based on the short duration from the time a single steam generator would dryout (the limiting initiator is a loss of feedwater to a single generator) and actuation of auxiliary feedwater, the condition does not result in an appreciable increase in the probability of a steam generator tube rupture occurring. The licensee's analysis using the plant specific simulator showed that the engineered safety feature actuation and reactor trip on steam generator water level-low low would have initiated at or before steam generator dryout would occur. The reactor coolant system physical over pressure protective features (safety relief and power operated relief valves) should not be challenged and there were other protective trips in place (over temperature-delta temperature and over pressure delta-temperature) in place that would have protected the reactor coolant system and fuel integrity in the event a manual reactor trip is not initiated on a loss of feedwater flow to a steam generator [Sections 40A2.a.(2) and 5].

Inspection Report# : [2002007\(pdf\)](#)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

G**Significance:** Jan 08, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Airborne radiation monitor inoperable when required during work in spent fuel pool**

Technical Specification 5.4.1.a. requires the implementation of procedures listed in Regulatory Guide 1.33, Appendix A. Attachment 10.7 of Procedure RCP D-200, "Writing Radiation Work Permits," Revision 22A, states, in part, that radiation protection shall ensure that a constant air monitor is in operation in the fuel handling building while underwater work is being performed. On August 29, 2001, the licensee identified that underwater work was being performed in Unit 1 spent fuel pool without the required constant airborne monitor in operation. This event is described in the licensee's corrective action program, reference Action Request A0539922. The safety significance of this finding was determined to be very low by the Occupational Radiation Safety Significance Determination Process because there was no overexposure or substantial potential for an overexposure and the ability to assess dose was not compromised.

Inspection Report# : [2001009\(pdf\)](#)

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## Public Radiation Safety

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## Physical Protection

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## Miscellaneous

**Significance:** N/A May 31, 2002

Identified By: NRC

Item Type: FIN Finding

**Identification and Resolution of Problems**

The licensee was effective at identifying problems and placing them into the corrective action program with one exception in the area of operability determinations. Occasionally an operability determination being reviewed by engineering was not timely. For example, the licensee failed to identify and evaluate how differential pressure affected steam generator instrumentation and its affect on operability prior to starting the plant following a trip with unusual steam generator level indications. The licensee appropriately determined the extent of evaluation of individual problems and prioritized the schedule for implementation of corrective actions to address the safety significant issues. In general, corrective actions, when specified, were effective and were implemented in a timely manner. The licensee performed effective audits and assessments. Based on the interviews conducted during this inspection, workers at the site felt free to input safety issues into the problem identification and resolution program.

Inspection Report# : [2002002\(pdf\)](#)**Significance:** N/A Apr 05, 2002

Identified By: NRC

Item Type: FIN Finding

**Identification and Resolution of Problems**

The team determined that a critical opportunity was missed to promptly identify and correct a risk significant condition adverse to quality involving a nonconservative safety features set point. The licensee's post trip event review process did not ensure that the Unit 2 plant response to a loss of feedwater flow to Steam Generator 2-4 was appropriate in that the steam generator level lo-lo engineered safety features and automatic reactor trip actuations did not occur when required.

Inspection Report# : [2002007\(pdf\)](#)

Last modified : March 25, 2003